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The role of regional development banks

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THE ROLE OF REGIONAL DEVELOPMENT BANKS

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Declaration and Consent

I hereby declare that this thesis is the results of my own investigations, except where otherwise stated. All other sources are acknowledged by bibliographic references. This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree unless, as agreed by the University, for approved dual awards.

Yr wyf drwy hyn yn datgan mai canlyniad fy ymchwil fy hun yw'r thesis hwn, ac eithrio lle nodir yn wahanol. Caiff ffynonellau eraill eu cydnabod gan droednodiadau yn rhoi cyfeiriadau eglur. Nid yw sylwedd y gwaith hwn wedi cael ei dderbyn o'r blaen ar gyfer unrhyw radd, ac nid yw'n cael ei gyflwyno ar yr un pryd mewn ymgeisiaeth am unrhyw radd oni bai ei fod, fel y cytunwyd gan y Brifysgol, am gymwysterau deuol cymeradwy

ABSTRACT

This thesis studies the role of public banks operating at a regional level, namely regional development banks (RDBs) in addressing the market failure due to the preferential lending in the banking sector. This study concerns RDBs in Indonesia. We employ three different approaches to understand the role of RDBs that will be discussed in three investigative chapters; which are, how RDBs deal with political issues, geographical issues, and opaqueness issues in micro, small and medium enterprises (MSMEs). This thesis enriches literature by presenting unique data, some of which are collected by hand at the regional level. Employing the regional election data, the first chapter (Chapter Two) investigated the political motives behind the lending. We found that near to the election years, allied RDBs seem to attract more voters from low-income societies by distributing more loans to MSMEs, while the clientelism is detected in allied RDBs once the election ends and leads to a negative spread. Political lending can also be seen when RDBs have more politicians sitting in as commissioners, but unclear findings were found when we examined an elected governor who will run for a second time. Moreover, we have little evidence that the National Government is involved in directing the political loans in RDBs during election years. Furthermore, as we focus on public banks at a regional level, geographical issues are crucial in explaining the role of RDBs, which is discussed in Chapter Three. By comparing with the non-RDBs, we found that, the quantities of the RDBs' loans are disproportionately distributed due to the differences in endowment levels across regions. The same phenomenon is also detected when a region is far from a strategic location or from a financial centre. This sheds light on the crucial contribution of RDBs, whilst non-RDBs allocate their capital so as to maximise a positive return. Concerning the potential of spatial dependence, we found that the capital flight tends to occur in non-RDBs, but no indication that spatial clustering affects loans to MSMEs. While using spatial panel models, we indicated that the poverty gap is the main issue in the triggering of capital outflows for both banks (RDBs and non-RDBs). To examine the RDBs' attitude towards small business, the third investigative chapter (Chapter Four) observes how the support from RDBs to MSMEs, through lending, boosts regional economic growth. Empirically, the quantities of lending in combination with better allocations stimulate regional economies as an aggregate, and especially affect the sector that most MSMEs operate—the agriculture sector; yet loans do not help to mitigate the income inequalities across regions and within regions; instead MSMEs loans erode RDBs' NPL. Whilst, the contribution of RDBs on improving their region becomes significant when the banking market is less concentrated. Regional income increased as well as income in the agriculture sector. Unemployment also lowered, yet it does not affect the poverty gap within regions and across regions, as it might have related with their effort to maintain their NPL. Concerning the spatial impact, the profit orientated banks are effective in preventing capital spill-over, while cost orientated banks, if neighbouring regions have more endowment, tend to allocate their capital outside their region.

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Introduction

1.1 Background

The existence of market failure is the reason we need an intermediary in the financial market. As an intermediary, banking sector is unique because it provides important capital in the economy (that is, funding) and it supports monetary policy by being a transmission belt for the economy (Levy-Yeyati, Micco & Panizza, 2007). Above all, the banking sector is an agent for promoting economic growth[1] (Levine, Loayza, & Beck, 2000; Beck, Levine, & Loayza, 2000). To be a good intermediary, the banking sector is expected to be efficient in producing and allocating resources (Wachtel, 2003). Nevertheless, sometimes this goal makes the banks focus more on maximising profits or minimising costs. There is nothing wrong with these objectives; the problems arise when this profit orientation creates another market failure by shifting the focus of banks onto certain activities that offer more benefits or advantages for them. Thus, the existence of public banks is rooted in the problem of market failure of the banking system due to dysfunctional banking as an intermediary; that is, the existence of public banks is rooted in the problem of the market failure of the banking system due to dysfunctional banking as an intermediary; that is, unfair allocation, such as the lending distribution driven by certain motives, for instance, political connection and or lending for specific places, which strategically benefits the banks or potentially offers a high probability for the bank[2] to obtain higher profitability.

Richard A. Musgrave, in his theory of public finance (1959), notes three important factors that should be implemented by public finance: allocation, distribution and stabilisation. Public finance has to satisfy what the 'public wants' by allocating resources or funding in the right places (Stiglitz, Jaramillo-Vallejo & Park, 1993). Levy-Yeyati et al. (2007) state that the public bank should be an agent of social and development mandates, by taking into account the social sector, such as lending to small businesses, facilitating lending for remote areas, or distributing funds to reduce the impact of a bad macro economy, when private banks are trying to avoid these. Thus, these objectives may lead them to experience low profit. Williams and Nguyen (2005) and Micco, Panizza and Yañez

[1] As a pioneer, Schumpeter (1934) places important concept of connectivity between financial sector and economic growth. Patrick (1966) introduces significant concepts about how the financial system and economic growth work in tandem. The first Patrick's concept is demand-following theory, it defines that the financial sector has passive influence on economic growth. The second Patrick's theory is supply-leading theory which this theory explain that the growth of economy occurs because of the conformation of financial market or financial institutions and that induces the supply of financial services and finally escalates economic growth.

[22] Hakenes & Schnabel (2006); Levy-Yeyati et al. (2007) and World Bank (2012)

(2007) find that public banks have a low performance, but Levy-Yeyati et al. (2007) argue that finding a profitable public bank may indicate the failure of its incentive schemes, rather than its success. They state that this underperformance can be justified as long as the performance is related to the bank's implementation of its social and development mandates.

Brei & Schclarek (2013) and Bertay, Demirgüç-Kunt and Huizinga (2014) find that public banks actuate their countercyclical role, but Micco and Panizza (2006) and Cornett, Guo, Khaksari and Tehranian (2010) find that the lending of public banks tends to be procyclical. There are several reasons why the behaviour of public banks does not follow their original mandate. Sapienza (2004), Dinç (2005), Micco et al. (2007), and Berger, Klapper, Martinez Peria and Zaidi (2008) state that political issues are important factors in lending distribution. On the other hand, some researchers state that lending distribution connects with agency problems (Altunbas, Evans, & Molyneux, 2001; Sapienza, 2004).

When we study the public banks operating at a regional level, the concept of market failure engaged with spatial depending. Dietsch and Lozano-Vivas (2000), Conrad, Doris, Gamarra, and Lucinda (2009), and (OECD, 2009) state that it is important to consider the situation, condition, and/or geographical conditions of each bank in explaining the process of intermediation. As referenced in the OECD report in year 2009, the geographical issues are vital to promote regional economy growth, which is crucial to national welfare. The lagging regions in OECD countries contribute more than 50% of national growth and are a tool for national prosperity (OECD, 2009). Whilst, the RDBs exist to make sure that each region has access to financial support. The tendency to save on costs (i.e., be efficient) and attain maximum profit might direct the banks' focus on large potential markets with high access, high potential demand, and large firms or industries with high prospective returns. This eventually leads to market agglomeration. Furthermore, the ease of getting a loan in the city attracts more firms to move, and on other hand influences workers to migrate. This self-enforcement leads to agglomeration and increases the disparity between locations. Agglomeration economies happen when a firm enjoys increasing returns to scale in a certain place, due to the presence of natural advantage, monopolistic protection, political reasons, or some other reason (World Bank, 2012). Therefore, what steps should be taken to reduce agglomeration? High levels of agglomeration can cause negative externalities. Governments should intervene by making policies that promote economic growth in remote areas (World Bank, 2012).

1.2 Motivation

The existence of public banks is the answer to market failure due to the imperfect market caused by disintermediation (Hakenes & Schnabel, 2006; Brei & Schclarek, 2013). Many scholars have studied the role of public banks and how they implemented their specific mandates, namely social and development mandates. Levy-Yeyati et al.,(2007) linked public banks and their contribution to the high social impact industries, while Micco & Panizza (2006), Cornett et al., (2010), and Brei & Schclarek (2013) explained how their existence would mitigate the impact of a bad macro-economy; nevertheless, there are few studies into the role of the public banks at a regional level. This study aims to carry out an extensive analysis of the role of RDBs in affecting the regional economy by studying how they implement their calling as social and development agents.

As a public bank, the political factor becomes a crucial matter to be examined. The World Bank (2012) states that the existence of public banks might have positive externalities for the economy, but can also be vulnerable to misallocation, which leads to a deterioration in the quality of intermediation. As the owner of a public bank, the government is also the one who regulates the financial markets and has the authority to monitor the market. These power circuits may tempt them to deviate from their original mandate. Megginson (2005) states that the ownership status is the key to understanding the underperformance of public banks. The first motivation comes from the fact that the studies about political lending in public banks are many, but it is rare to find literature that discusses how RDB deals with preferential lending due to the political factor. To our knowledge, only two papers explored the regional analysis in explaining the political issue in banking, Önder and Özyıldırım (2013) and Infante and Piazza (2014). Employing a Turkish national election, Önder and Özyıldırım (2013) found that state-owned bank lending at the provincial level related to politics. While observing the political connection at the regional level in Italy, Infante and Piazza (2014) found that an autonomy policy raises agency problems in the politically connected banks (identified as banks with politicians on their boards) as they found an additional discount for 5–10 per cent of the average interests rate. Furthermore, none of these studies examines the behaviour of the public banks at the regional level (RDBs) dealing with political lending, when the political lending tends to occur, and in what circumstances the politics strongly affect their lending target.

Using the local context of Indonesia, this research considers another unique fact that links the political issues, regional government and RDBs. Nys, Tarazi, and Trinugroho (2015) state that Indonesian commercial banks are mostly involved in politics or politically connected and observing the law of the Ministry of Home Affairs of Indonesia, no. 58, year 1999, it is possible that the political motives are higher in the RDBs. Referring to the law, the reason for this is the regional leader or governor is allowed to choose his/her own people as the head of the RDB. While as a major shareholder in RDBs, regional governments can choose their board members, either as a commissioner or as director, and they might select candidates based on political not professional reasons. In addition, the decentralisation programme established in year 2004 might strengthen the political issue at the regional level, as this policy enlarged the authority of the regional leaders but no support from a good check and balance system; hence, with wider power, it might increase the chance of misusing lending as discussed by Infante and Piazza (2014).

As this thesis focuses on studying regional banks, observations about the geographical conditions should be concerned with valuing the contribution of the RDBs in implementing their mandates (Levy-Yeyati et al., 2007; Conrad et al., 2009; Tabak et al., 2013). Dietsch & Lozano-vivas (2000) give a strong point by saying that disregarding environmental variable might lead to misperception or false analysis of banking performance. Krugman (1999) states that in the absence of economies of scale, producers would have no reason to concentrate their activities. Spatial clustering might attract another market failure if a certain business or economic activities relocate based on the positive endowment that the regions have which leaves the less developed regions unserved. Established a theoretical model, Hakenes & Schnabel (2006) proved that the regional banks have a crucial contribution in preventing the capital drain from poorer regions due to the different level of endowments compared to the rich regions. Yet, to be our knowledge, no empirical paper has proved the theory of Hakenes & Schnabel (2006), while the closest one is study from Hakenes, Hasan, Molyneux, & Xie (2015) ; they found that the small banks operate in the regional level is crucial in affecting to the regional economy. Whereas employing European countries, Hasan, Koetter, & Wedow (2009) found that the increase of the aggregate lending in the neighbouring regions triggered a pull effect, though after all they concluded that spatial effect has less impact on affecting the regional growth. Therefore, the second motivation arises when we examine that none have been studied the behaviour of public banks in regional level dealing with the geographical circumstances and how their responses regarding the spatial dependences. As the RDBs are created to support their regions and examining the unique pattern of the geographical factors in Indonesia, this paper connects the implications of social and development mandates in RDBs with spatial dependence. With 17,508 islands of which about 6000 are inhabited and more than 250 tribes, Indonesia is the world's largest archipelagic state[3]. By having many groups of islands, it might elucidate facts how the spatial clustering across regions be able to explain the preferential lending while most of the prior literature explored a continental country characteristic which mostly shares a border (or a vertex). Indonesia

[3] See https://www.cia.gov/library/publications/the-world-factbook/geos/print_id.html

can be a good laboratory because consisting of the group of islands, there is certain regions/islands/area that very remote, or we call periphery areas, and there are core islands/regions that where the major Indonesian economy activities occur. Hence, it is able to explain the agglomeration due to the scale of economies, which expect that RDBs as the public banks operate in regional level be able to provide a service to fulfil all demands regardless the local situation of their region (Stiglitz & Weiss, 1981; Greenwald & Stiglitz, 1986).

Nevertheless, the OECD (2009) states that leading regions are important for national welfare, but empirical data shows that the economy of lagging regions contributes strongly to national growth, generating more than 50% of national growth, while the MSME sector is found to be the vital contributor to the economy. According to the World Bank current report, small and medium enterprises contribute almost 60 per cent of the total unemployment and 40 per cent of the national income in emerging economies.[4] Studying 76 countries, Ayyagari, Beck, and Demirguc-Kunt (2007) found that 50% of the national income on average supported by the MSME sector, whilst Dietrich (2012) stated that MSMEs that have less than 250 employees employ two-thirds of the formal workforce. MSME is proved as a channel to absorb the labour, thus, effective to lower the unemployment level, yet the lack of financial support from banks is currently the main problem (De la Torre, Martínez Pería, & Schmukler, 2010; Ardic, Mylenko, & Saltane, 2011). The third motivation comes from observing that many scholars have examined the links between the opaqueness conditions and the impact of the MSME on the economy, while none have studied how the banks, in this case, RDBs deal with the MSMEs sector through their support of the MSMEs in distributing credit. Since MSMEs are very dependent on the banking sector (Bhaumik & Piesse, 2008), it is possible that the loans might easily be refused by banks due to the lack of information. Carrying their social and development mandate and having advantages in local knowledge, the RDBs might behave differently towards the MSMEs; the '*conventional wisdom'* stated that their position is strategically beneficial to retrieve the information that is usually difficult to generate by the big banks due to their scale (Berger, Kashyap, Scalise, Gertler, & Benjamin, 1995; Strahan and Weston, 1998; Williams & Gardener, 2003; Berger, Miller, Petersen, Rajan, & Stein, 2005; Beck, Demirgüç-Kunt and Martínez Pería, 2011; Hendrik Hakenes et al., 2015; Zhang, Song, & Zhong, 2016).

[4] See https://www.worldbank.org/en/topic/smefinance

1.3 The Origin of Government Intervention

As the financial sector is crucial for economic growth, Wachtel (2003) stated,

'The financial sector is important because the financial intermediaries are responsible for resource allocation' (p. 35).

If the market mechanism works properly, it can be expected that the level of supply and demand can achieve the equilibrium price and quantity. This equilibrium is the indicator of the effective allocation of resources in the market. However, sometimes, the market fails to deliver the best level of output for the society. Market failure is a situation where the market fails to work efficiently to provide the goods and services demanded by consumers (Stiglitz, 1998). When this condition occurs, the market will not produce the supply of a good that is socially optimal. Government intervention is required to correct market failures in a variety of ways. Sloman (2006) listed the main causes of market failure: a lack of competition/market power, externalities, lack of a public good/missing market, and asymmetric knowledge. In financial sector, there are seven type of market failure based on Stiglitz (1994), which are monitoring as a public good; externalities of monitoring, selection, and lending; externalities of financial disruption; missing and incomplete markets; imperfect competition; pareto inefficiency of competitive market; uninformed investor. While Levy-Yeyati et al. (2007) stated that market failures in the banking sector are related to information asymmetries, intangible assets, spatial spill-over, and large external financing needs. The World Bank (2012) in their Global Financial Development Report stated at least that there are four major reasons for market failure in the financial sector that need to be regulated: anticompetitive behaviour, market misconduct, information asymmetries, and systemic instability. Anticompetitive behaviour and market misconduct are the types of market failure that can cause inefficiencies that need to be resolved through market regulation, while the last two underpin the case for prudential regulation.

Richard A. Musgrave, in his book The Theory of Public Finance (1959), distinguished three aspects of the public household, which he calls the allocation, distribution, and stabilisation branches. In terms of the allocation function, a state-owned bank is required to allocate its resources to social projects or primary sectors (Stiglitz, 1994; (Bencivenga & Smith, 1991). Regarding the distribution function, as public banks, state-owned banks are expected to be intermediaries that distribute excess funds to those in need. The intermediary function encourages capital investment and increases the growth rate (Stiglitz, 1994). Regarding the stabilisation function, the presence of state-owned banks is crucial in handling macroeconomic conditions. The main objective of the allocation factor is to allocate resources to satisfy what Musgrave called "public wants". The only difference between social and private wants is that the private market system in some cases fails to deliver the "wanted" amount, and in many of these cases, the government can correct the allocation and bring about better satisfaction of the preferences of individual consumers. However, public banks, as state-owned companies created by the government, are built to address market failures in the banking sector (Stiglitz, 1994).

Generally, the objective of a private bank is to maximise profitability, and for that reason, a private bank pays little attention to projects that have a relatively low return. Thus, state-owned banks are created to meet the social and development mandate, which cannot be met or are actually ignored by profit-oriented enterprises. Levy-Yeyati et al. (2007) listed four objectives of state intervention: the purpose of public banks is to maintain the safety and soundness of the banking system; the existence of public banks can reduce market failure caused by asymmetric information; the objective of public banks is to finance socially valuable activity; and public banks boost financial development by providing access to competitive banking services to residents of isolated areas.

1.4 Public Banks and Politics

Government ownership in the banking sector raises three topics that continue to be debated: social, political and agency factors. (Stiglitz, 1993)) stated that, the

'social view emphasizes the role of the public sector in making up for market imperfections that leave socially profitable investment under-financed.' (p.210)

This means that public banks are crucial for encouraging economic development and increasing the aggregate welfare of the people (Stiglitz, 1993). In contrast, the political view states that public enterprises might be used by politicians to support their political interests because, as the major owner, the government can insert their interests into public bank policies by using public banks to transfer resources to the government's allies or supporters (Megginson, 2005). Such a distortion of resources will generate another problem: inefficiency. Inefficiency occurs because of unfair allocation[5] caused by special connections or relationships and lending decisions that depend on political motives and may lead to a high level of risk. However, the agency view shares a social objective, meaning that public banks can fail to allocate their funds properly if a conflict of interest exists in the policymaking.

[5] Allocation is defined as the provision of banking services in all areas and at reasonable prices (Gärtner, 2009), while as an intermediary, the equal allocation opportunity may not be obtained if the banks have a conflict of interest triggered by certain conditions or motivations, such as political or personal-interest motives. It leads to less resource allocation for productive activities, economic and political uncertainties, and an increased in business costs.

The probability of an agency conflict is higher in public banks than in private banks for several reasons. First, the controlling and monitoring system is usually quite weak in public banks (Altunbas et al., 2001), leading to the potential for abuse of authority by managers pursuing their own agendas. Sapienza, 2004 found that public bank managers often have political motives, where they try to divert banking resources to certain people or companies they have political connections with. Second, public banks have more funds and are easily recapitalised. The soft budget constraints and capacity to obtain additional funds in terms of recapitalisation causes public bank managers to focus less on cost minimisation (Altunbas et al., 2001) and become less efficient in decision making. Third, unattractive incentives offered by public banks. Micco & Panizza (2006) argue that unattractive incentives may drive the behaviour of managers, but they remain undecided whether the behaviour is driven by passivity or political motives. They found that public bank managers tend to play a smoothing role, not aggressively looking for lending opportunities during expansion periods and not cutting lending during recessions. Micco & Panizza (2006) state this can be driven by two factors: either the managers do not have an incentive to work properly, or they may be politically motivated.

Dinç (2005) states that political influence is greater for banks than other government-owned enterprises, due to information asymmetry between banks and outsiders about the quality of the loans. This might make it easier to insert political motives into loans, and the disclosure of any borrowing costs driven by politics can be postponed until the end of the loan term. The banking sector connects with almost all industries and firms, where it provides a greater opportunity for politicians to access funds. Porta, Lopez-de-silanes, & Zamarripa (2003) state that having special connections makes it easy for some firms to obtain loans through related loans. An optimistic perspective states that related loans are very efficient, because banks have more information about related borrowers than unrelated borrowers. As the banks have connections with, or may represent the board of directors, this helps banks to monitor day-to-day activities (Stiglitz & Weiss, 1981). However, a pessimistic perspective is connected with looting. This special connection allows insiders and bankers or managers to take resources from depositors or minority shareholders for themselves, a process known as ‘tunnelling’.

Some scholars have documented findings regarding politics in public banks. Dinç (2005) found that politicians used the resources of public banks to reward their allies and punish their opponents. By maintaining their cronies, who have similar political views, politicians may secure their place for political event such as the election event. Using Italy as an example, Sapienza (2004) found that a party affiliated with public banks can influence the proportion of loans disbursed by the public banks. Studying IMF lending, Presbitero & Zazzaro (2011) proved that having similar political backgrounds to G7 countries increases the probability of entering a loan agreement. Instead of studying the lending distribution, Cole (2009) found that public banks tend to write-off loans in districts where the winning party was based. Infante and Piazza (2014); Nys et al. (2015) and De Marco and Macchiavelli (2016) considered political connections by identifying the presence of politicians who were members of a bank's board of commissioners. Another interesting phenomenon was found by Bertrand et al. (2004) using French data, and Carvalho (2014) with Brazilian data. By focusing on one important macroeconomic indicator, employment, Bertrand et al. (2004) found that CEOs with connections to politicians hire more people in politically contested areas. Carvalho (2014) found that there is a reciprocal action between the incumbent and the firms near election years, stating that incumbent leaders use loans from public banks to influence local firms' decisions regarding employment close to election times, such as postponing employee terminations or hiring more people to increase the employment level.

1.5 Regional Development Banks in Indonesia

Regional Development Banks (RDBs) were created based on Indonesian Government Regulation No. 13, 1962. The reasons for creating the Regional Development Banks were to accelerate development efforts evenly throughout Indonesia, to have an intermediary capital provider in regional areas, and to mobilise capital to the potential sectors in regional areas. Originally, Indonesia consisted of 26 provinces, which meant there were 26 RDBs. While the number of provinces has changed in line with the development plan undertaken by the national government, the number of RDBs remains the same. The current addition of the RDB's bank has occurred in year 2016, called RDB Banten, which we do not include in this study. RDBs have an inseparable relationship with their regional economy. Hence, the name of the RDB often matches the name of the province in which they originated. For instance, RDB Nusa Tenggara Timur (NTT; East Nusa Tenggara) originates from the NTT province. Besides running the regular activities of commercial banks, RDBs also serve as the cashiers of the local government. Table 1-1 shows the details of the provinces in Indonesia.

Table 1- 1. RDBs and formation of the provinces in Indonesia

No	Provinces in Indonesia/Original Provinces	Regional Development Bank	Established	New Provinces	Year of Formation
Sumatera Island					
1.	Nanggroe Aceh Darussalam	Bank Aceh	1960		
2.	North Sumatera	Bank Sumut	1961		
3.	Riau	Bank Riau Kepri	1961	Riau = Riau + Kepulauan Riau[6]	2002
4	West Sumatera	Bank Nagari	1962		
5	Jambi	Bank Jambi	1959		
6	Bengkulu	Bank Bengkulu	1969		
7	South Sumatera	Bank Sumselbabel	1957	South Sumatera = South Sumatera + Bangka Belitung[7]	2000
8	Lampung	Bank Lampung	1966		
Kalimantan Island					
9.	West Kalimantan	Bank Kalbar	1963		
10.	Central Kalimantan	Bank Kalteng	1955		
11.	South Kalimantan	Bank Kalsel	1964		
12.	East Kalimantan	Bank Kaltim	1965	East Kalimantan = East Kalimantan + North[8] Kalimantan	2012
Java Island					
13.	DKI Jakarta	Bank DKI	1961		
14.	West Java	Bank BJB	1960	West Java = West Java + Banten[9]	2000
15.	Central Java	Bank Jateng	1963		
16.	DI Yogyakarta	Bank BPD DIY	1961		
17.	East Java	Bank Jatim	1961		
Bali Island					
18.	Bali	BPD Bali	1962		
West Nusa Tenggara Island					
19.	West Nusa Tenggara	Bank NTB	1964		
East Nusa Tenggara Island					
20.	East Nusa Tenggara	Bank NTT	1961		
Sulawesi Island					
21.	South Sulawesi	Bank Sulselbar	1961	South Sulawesi = South Sulawesi + West Sulawesi[10]	2004
22.	Central Sulawesi	Bank Sulteng	1969		
23.	Southeast Sulawesi	Bank Sultra	1969		
24.	North Sulawesi	Bank Sulutgo	1961	North Sulawesi = North Sulawesi + Gorontalo[11]	2000
Maluku Island					
25.	Maluku	Bank Malukumalut	1961	Maluku = Maluku + North Maluku[12]	1999
Papua Island					
26.	Papua	Bank Papua	1970	Papua = Papua + West Irian Jaya[13]	1999

(Source: Ministry of Internal Affairs of Indonesia and Bank Indonesia (BI))

[6] Based on Law No. 25/ 2002
[7] Based on Law No.27/2000
[8] Based on Law. No.25/ 2012
[9] Based on Law no.23/2000
[10] Based on law No. 26/2004
[11] Based on Law No.38/2000
[12] Based on Law. No.46/ 1999 and Law no.6/2003
[13] Based on Law no.45/ 1999 and Government Regulation no.24/2007

Table 1-1 shows that Indonesia created eight (8) new provinces between 1999 and 2012, while the number of RDBs remained at 26. Banten was part of West Java previously, but in 2000, Banten was independently established as a new province, while Bank BJB remains serving in Banten territory. Since 2016, the Banten region has received its own bank, called Bank Banten[14] (Indonesian financial services authority (OJK) Stipulation No.12/ KDK.03/2016), which was known as a Bank Pundi. Thus, to make the provinces comparable with RDBs over the observation period, all new provinces are grouped with their original provinces' geographical data.

RDBs are commercial banks, based on Law No.10/1998. Commercial banks perform conventional activities based on Sharia principles, with activities that provide services in payment transfer (Anderson & Hipgrave, 2015). Commercial banks include national public banks, private banks (including Sharia banks), joint venture banks, foreign banks, and RDBs. Most of the RDBs were established around 1960, but the oldest one is the RDB from Kalimantan Tengah (Central Kalimantan), built in 1955. The share of RDBs gradually increased from year to year, except during the monetary crisis from 1997 to 1999. The percentage of ownership for some RDBs was less than 50%, because the central government injected a large amount of funding during that time, meaning the primary shares belonged to the government of Indonesia. In 2010, Bank BJB, followed by Bank Jatim, decided to sell 25% to 30% of their shares to the public. With these two RDBs having already gone public, others are preparing to do so in the future. The government allows RDBs to go public under Central Bank Regulation No. 14/8/PBI/2012, which relates to the shareholding of commercial banks.

Regarding flexibility, RDBs in Indonesia are allowed to open branches outside their base region; however, not many RDBs opt to do so. Only Bank NTT, Bank Jatim, Bank BJB and Bank DKI have branches outside their home regions. With new regulations from the Central Bank of Indonesia (BI), RDBs are obliged to have certain levels of capital to open branches in zones 1 and 2[15], which are congested areas. BI created certain coefficient factors for each zone, the highest of which is for the densely populated regions.

[14] We do not include Bank Banten in our study.

[15] Zone 1: DKI Jakarta and foreign countries; zone 2: West Java, Banten, Central Java, DI Yogyakarta, and Bali; zone 3: East Kalimantan, Riau islands, North Sumatera; zone 4: Riau, South Sumatera, Central Kalimantan, South Kalimantan, North Sulawesi; South Sulawesi, Papua; zone 5: DI Aceh, Jambi, West Sumatera, Bangka Belitung, Lampung, Bengkulu, West Kalimantan, Southeast Sulawesi; zone 6: East Nusa Tenggara, West Nusa Tenggara, Central Sulawesi, Gorontalo, West Sulawesi, North Maluku, Maluku, West Papua.

RDBs are built to encourage development in their regions; RDBs are expected to support infrastructure development, micro, small and medium enterprises (MSMEs), agriculture and other economic activities in the framework of regional development. To strengthen the banking structure, especially for RDBs, BI launched the BPD Regional Champion (BRC) initiative on 21 December 2010 in Jakarta. BI has set certain steps to achieve this target. Regional banks must commit to increasing capital and boosting efficiency to achieve an adequate level of profitability, supported by the extension of credit to the community with a competitive interest rate. In their role as agents of regional development, regional banks must target a larger portion of credit to productive sectors and increase their intermediation function, particularly for MSMEs, through cooperation with rural banks by way of linkage programs or becoming an APEX bank[16]. Regional banks are expected to become the front line in the development of local economies, to support government programmes to create jobs and raise the standard of living in regional areas, which will collectively alleviate poverty and improve the welfare of the nation.

According to the monitoring scheme, RDBs are supervised by two parties: regional government and the Central Bank of Indonesia (BI) and/or the Financial Service Authority of Indonesia (OJK)[17]. Local authorities conduct surveillance relating to their position as major shareholder of RDBs. Local government expects that RDBs can properly manage the funds that could be useful for regional economy. Regarding the implementation of social and developmental mandates, there is no special monitoring scheme related to these objectives; whereas, based on the regulation[18], RDB was created to encourage the local economy, help local firms/businesses to develop, and support small businesses in their operations, etc. The second party that monitors RDBs is the BI and/or OJK. BI conducts macro-prudential monitoring and OJK conducts micro-prudential monitoring[19]. BI focuses on establishing and maintaining rupiah stability by setting limits for the minimum down payment for car loans, mortgage loans, and the rule of minimum reserve requirements. The OJK regulates and supervises individual banks or financial institutions. For example, banking criminal cases, bank management, and quality of human resources fall under the administration of the OJK.

1.6 The characteristic of Indonesia

Indonesia is an archipelago in Southeast Asia that has approximately 17,504 large and small islands, about 6,000 of which are uninhabited. Indonesia is located at coordinates 60 north latitude – 110 south

[16] APEX bank is a mini central bank for the Rural & Community Banks (RCBs).
[17] This is based on regulation no. 21 in the year 2011 regarding the role of the OJK.
[18] Regulation no.13/1962
[19] These new roles were implemented 31 December 2013, while before the new regulation was announced, the BI conducted both micro- and macro-prudential.

latitude and 950 west longitude – 1410 east longitude and positioned between two continents, Asia and the Australian continent. Indonesian territory extends along 3,977 miles between the Indian Ocean and the Pacific Ocean. Indonesia's land area is 1,904,569 km^2 and its broad waters 3,257,483 km^2. One of the world's largest archipelagic nations, it is spread over three-time zones[20] (www.worldbank.org)[21]. Table 1-2 shows the characteristic of each provinces in Indonesia based on the current data. The full map of Indonesia can be found in the appendix A1-1.

Table 1- 2. Provinces in Indonesia

NO	Provinces	Capital City	Area (km^2)	% of National Area	No.of Islands
1	Nanggroe Aceh Darussalam	Banda Aceh	57,956.00	3.03	663
2	North Sumatera	Medan	72,981.23	3.82	419
3	West Sumatera	Padang	42,012.89	2.2	391
4	Riau	Pekanbaru	87,023.66	4.55	139
5	Riau Islands	Tanjung Pinang	8,201.72	0.43	2,408
6	Jambi	Jambi	50,058.16	2.62	19
7	South Sumatera	Palembang	91,592.43	4.79	53
8	Bangka Belitung Islands	Pangkal Pinang	16,424.06	0.86	950
9	Bengkulu	Bengkulu	19,919.33	1.04	47
10	Lampung	Bandar Lampung	34,623.80	1.81	188
11	DKI Jakarta	Jakarta	664.01	0.03	218
12	West Java	Bandung	35,377.76	1.85	131
13	Banten	Serang	9,662.92	0.51	131
14	Central Java	Semarang	32,800.69	1.72	296
15	DI Yogyakarta	Yogyakarta	3,133.15	0.16	23
16	East Java	Surabaya	47,799.75	2.5	287
17	Bali	Denpasar	5,780.06	0.3	85
18	West Nusa Tenggara	Mataram	18,572.32	0.97	864
19	East Nusa Tenggara	Kupang	48,718.10	2.55	1,192
20	West Kalimantan	Pontianak	147,307.00	7.71	339
21	Central Kalimantan	Palangka Raya	153,564.50	8.04	32
22	South Kalimantan	Banjarmasin	38,744.23	2.03	320
23	East Kalimantan	Samarinda	129,066.64	6.75	370
24	North Kalimantan	Bulungan	75,467.70	3.95	–
25	North Sulawesi	Manado	13,851.64	0.72	668
26	Gorontalo	Gorontalo	11,257.07	0.59	136
27	Central Sulawesi	Palu	61,841.29	3.24	750
28	South Sulawesi	Makassar	46,717.48	2.44	295
29	West Sulawesi	Mamuju	16,787.18	0.88	–
30	Southeast Sulawesi	Kendari	38,067.70	1.99	651
31	Maluku	Ambon	46,914.03	2.46	1,422
32	North Maluku	Ternate	31,982.50	1.67	1,474
33	Papua	Jayapura	319,036.05	16.7	598
34	West Papua	Manokwari	97,024.27	5.08	1,945
	Indonesia	**Jakarta**	**1,910,931.32**	**100**	**17,504**

(Source: Central Bureau of Statistics Republic of Indonesia, 2016)

[20] Indonesia Western Standard Time—seven hours in advance of Greenwich Mean Time (GMT), Indonesia Central Standard Time— eight hours ahead of GMT; and Indonesia Eastern Standard Time—nine hours ahead of GMT.
[21] See http://www.worldbank.org/en/country/indonesia/brief/world-bank-and-environment-in-indonesia

Table 1-2 shows that DKI Jakarta as a capital city of Indonesia with a total area of only 3%, population growth in the Jakarta urban area between year 2000 and 2010 was higher than in any other urban area in East Asia excluding China. Jakarta's population increased by 7 million people between 2000 and 2010[22]. As a metropolitan city abundant in a large number of big firms, reputable universities and modern hospitals, Jakarta will always be a primary destination for the people. However, some islands have lower populations due to their size or the specific region, e.g., Papua, East Indonesia, at 319,036.05 km^2. The World Bank (2016) states that Indonesia has recorded significant economic growth but that many problems still need to be addressed by the government. It has been documented that from 2007 to 2011, the country's poverty line has declined by only 1%, whereas from 2012, it has reduced by only 0.3% annually. This means that 28 million Indonesians (out of 252 million) still struggle with poverty. In terms of health facilities, it has been reported that one in three children under the age of five suffer from stunting, or shorter height, which reflects impaired brain development that will affect the child's future opportunities. The investment environment is also somewhat hampered by regulatory issues and political uncertainties (Anderson & Hipgrave, 2015). Problems are caused by the presence of close ties between the political and corporate elite in Indonesia, both at the central and local level; these parties pursue only their own benefits and not the welfare of the local society (see our findings in the second chapter).

Regarding the disparity factor, Indonesia's GINI ratio is roughly 41, higher than in neighbouring countries, Vietnam, Laos, and Cambodia (The World Bank, 2016). Regarding the distances between regions, it takes roughly 6.5 hours to get from Jakarta to Papua, while it only takes six hours to reach Japan from Jakarta. Concerning the gap in oil prices, BBC Indonesia state in their reports that the current President of Indonesia, Jokowi Widodo, is attempting to promote equality in Indonesia by setting a one price system for oil in Indonesia; in the previous period, the oil price in Papua was roughly Rp.100,000[23], while people in Java can buy the oil at Rp.6500; therefore, the people in Papua have to pay 15 times more than people in Java and other regions.

1.7 Research Objectives

This thesis consists of three empirical chapters bookended by this introduction and a conclusion. The overarching objective is to study how RDBs implement their mandate as social and development

[22] Based on the report of the worldbank.org. [see: http://www.worldbank.org/en/news/feature/2015/01/26/urban-expansion-in-east-asia-indonesia]

[23] The new President, Jokowi has determined to apply the equality across Indonesia, and therefore started from October 18, 2016, the fuel price in Papua has the same price with the national price. "Harga BBM di Papua Dulu Rp 100 Ribu, Kini Rp 6.450 per Liter" [The fuel Price in Papua that used to be Rp 100 thousand, now Rp 6,450 per liter], liputan6, October 18, 2016.

agents by observing how they deal with political issues (Altunbas et al., 2001; Grinblatt & Keloharju, 2001 ; Sapienza, 2004 ; Dinç, 2005; Micco et al., 2007; Berger, Klapper, Martinez Peria & Zaidi, 2008), with geographical issues (Gallup et al., 1999; De Young et al., 2004; (Levy-Yeyati et al., 2007); Conrad et al., 2009), and with micro- and small business, for instance small firms and highly social industry, which are often neglected by private banks because they are economically not very profitable (Micco et al., 2007). These topics are presented in chapters two, three and four respectively. These chapters provide the empirical contributions of this study.

In chapter two, we study politics at the regional level and how this affects the role of RDBs through their lending, using the local context of Indonesia. This connects the relationship between the heads of regional governments and the heads of RDBs (referring to regulation no.58 issued by the Ministry of Home Affairs of Indonesia in 1999); because with the wider authority granted after the decentralisation of 2004 and the implementation of direct elections at the regional (or provincial) level, it might strengthen the allegation of political lending in RDBs. To determine the level of political lending in RDBs, we conduct several tests, considering three political indicators that might explain loan distributions during regional elections. We examine the alignment of the regional or provincial government with the national winning party, the status of the incumbent, and the percentage of politicians sitting as bank commissioners. We divide the regional election into three different phases, pre-election (one year before the scheduled election), during election and post-election (one year after the scheduled election), to see the pattern of political lending in RDBs, as we suspect that the political impact will be revealed leading up to the election year. In addition, we observe lending patterns and the price of lending, as the growth of loans can be affected by supply and demand shocks (Micco et al., 2007). To gain a robust understanding, we also consider the effect of RDBs' attitudes on the price of deposits close to the election year in order to study whether they increase their efforts to collect funds (that are to be distributed) near such years. If a pattern is consistently discovered in these variables, we surmise that this will confirm the spread of RDBs and might affect their non-performing loan (NPL). Lastly, we test whether the motive for political lending involves the central government or is a deliberate impulse of RDBs by examining the proportion of funds placed in securities and whether this decreases during election years.

In chapter three, we test whether RDBs implement their mandate by allocating credit despite the differences in regional geography. By comparing the lending of non-RDB banks regionally, we study whether RDBs' loans are disproportionately distributed due to the differences in endowment levels across regions. We also test whether the supply of funds (including the supply to MSMEs) from RDBs is disproportionately distributed in respect to distance from the financial centre compared to that from non-RDBs. Subsequent, we test whether spatial dependence affects the loans distributed by RDBs compared to those of non-RDBs. We use differences in the regional Gross Domestic Product or regional GDP (per head) as a proxy for endowment levels. To measure the distance between Jakarta, the main financial centre, and each bank, we use Euclidian distance analysis with the help of the latitude and longitude points for each region. However, unlike Koetter and Wedow (2010) and Hendrik Hakenes et al. (2015), we use three different measurements to test the importance of the spatial issue's effects on the loans distributed by RDBs. We build a simple model with two different intuitions. First, we posit that the influence of neighbouring regions depends on distance, such that the closer the region, the stronger the impact. Second, we assume that neighbouring regions are equally likely to affect home regions if they are located within a certain threshold. The second approach may be more appropriate for the Indonesian context, as Indonesia is an archipelago country whose landscape is geographically distinct from that of a continental country. The locations of regions might not be contiguous, and they might not share a border (or vertex). To achieve a firm conclusion, third, we apply a spatial panel model.

In chapter four, we study whether RDBs' support to MSMEs through lending distribution is important in improving regional GDP. By considering the potential for failure in the MSME market due to MSMEs' opaqueness, we test whether RDBs, with their social and development mandates and their regional knowledge, are able to mitigate the credit rationing in this sector. Combining the ideas of Hakenes and Schnabel (2006), (Mourougane, 2012), and Hakenes et al. (2015), we test the contributions of RDBs to the regional economy through their provision of credit to MSMEs by considering intermediation quality, the sizes of RDBs and spatial dependence. We use cost and profit efficiency indicators as proxies for the banks' intermediation quality and the ratios of the RDBs' sizes in proportion to commercial banks to determine whether their existence is crucial in encouraging the economies of the regions. We also identify whether spatial clustering influences RDBs' support for MSMEs, which might eventually have less effect on the home region's economy and instead affect the economies of neighbouring regions. Furthermore, in this chapter we provide a broad insight by testing the implications of MSMEs' credit not only in the regional economy as an aggregate but also for the agriculture sector, as most MSMEs operate in this sector in Indonesia (Mourougane, 2012). Finally, noting the findings of Beck, Demirguc-Kunt and Levine (2005) and Karnani (2007), we assess whether the support of RDBs for MSMEs' credit encourages job availability by observing how much it decreases the unemployment rate, whether decreases in the unemployment rate parallel decreases in the poverty gap, and whether this is related to the motives of the banks revealed in their financial figures.

1.8 Contribution

This thesis offers a comprehensive analysis of regional development banks (RDBs) — how they operate and how well the mandate is implemented at the regional level — which can be seen through three indicators: how they engage with politics, how they deal with spatial differences (geographical issues), and how they support the MSMEs (micro, small and medium enterprises). As this topic is less studied in the literature, this is the first study that contributes in a comprehensive way to the literature on how regional public banks engage with politics. We not only test how RDBs operate, we also fill the gap in the literature by studying which channels politicians use to obtain support from the RDBs and whether there is any indication that pressure from the national government directs the distribution of lending in the RDBs during election years. Using regional data from 1993 to 2016, we study the impact of regional elections — not presidential elections, which have been studied by Sapienza (2004), Micco & Panizza (2006), Micco et al. (2007), Presbitero & Zazzaro (2012), and Önder & Özyıldırım (2013).

A novelty of this thesis is the construction of a database using hand-collected data. We classify the political connection in three ways. Firstly, by observing the political connection between the national winning party and the regional leader (the governor) as this connection with the higher authority shows the potential for moral hazard (i.e. more power and less monitoring) (La Porta, Lopez-de-silanes, & Shleifer, 2002; Faccio, 2006); secondly, by checking the name of the incumbent in each region who will run for a second time to examine their motivation to remain in power and whether they use support from the public banks to prevent competition (Shleifer & Vishny, 1994; Rajan & Zingales, 2003; Besley & Burgess, 2004; Imai, 2009(Lazzarini, Musacchio, Bandeira-de-Mello, & Marcon, 2015); and thirdly, by checking the background of each commissioner (politician, bureaucrat, professional) sitting in the RDBs every year in order to see any potential misuse of funds due to rent-seeking motives (Lazzarini, Musacchio, Bandeira-de-Mello, & Marcon, 2015). Following the method of (Baum, Caglayan, et al., 2010), we divided the data into three periods — pre-election year (one year before the scheduled election), during the election year, and post-election year (one year after the scheduled election year) — in order to provide a clear judgement about the political lending in RDBs, as we suspected that the pattern would be more pronounced near an election year. This chapter reveals that we detected political lending in the run-up to the election year, even though, using the same method, (Baum, Caglayan, et al., 2010) did not detect any preferential lending near the election year. Only a few studies have attempted to examine the impact of alignment with the national winning party (e.g. Solé-Ollé & Sorribas-Navarro, 2006; Brollo & Nannicini, 2012). In elucidating the facts about political loans on a regional basis, this chapter considers that the public banks' lending to small businesses, could imply that the loans to the small business sector are exploited to get more voters.

By taking into account the position of the incumbent, regardless of their connection to the national winning party, this chapter complements the papers of Imai (2009) and Carvalho (2014) by suggesting that politics have less influence on the incumbents' lending decisions, because it is possible that an incumbent has been chosen for the second time on the basis of good performance. Unlike Infante and Piazza (2014), who only considered the existence of politicians on the board, we also include bureaucrats when studying the political connections of RDBs because they have similar rent-seeking roles (Khwaja & Mian, 2005; Arocena & Oliveros, 2012). To avoid drawing a wrong conclusion about the pattern of political lending that might be triggered by demand shock, this paper provides a robust outcome by testing the price of loans charged during the election years, following the ideas of Pasour (1987) and Micco et al. (2007). Yet, we enlarged the literature by testing the possibility that RDBs might also increase their price of deposits during election years. In general, we fill the gap in the literature about how political lending might hamper the banks' margins as well as their NPL and provide an in-depth understanding about whether the RDBs' decision to distribute loans during an election year is deliberate, or whether there is an intervention from the national government during election years.

Furthermore, as the social and economic development mandate of RDBs is expected to encourage the regional economy, the second empirical paper contributes to the literature by studying the implementation of RDBs' mandate concerning the geographical situation. This paper fills the gap in the literature by considering three main geographical factors: level of endowment, strategic location, and spatial clustering. By comparing RDBs with non-RDBs, or the banks that have no regional mandate at the regional level, we present a robust analysis of how and why the attitudes of these two types of banks' differ. Studies into the connection between bank behaviour and geographic conditions are also very rare in the literature, as many scholars (such as Micco & Panizza, 2006; Cornett, Guo, Khaksari, & Tehranian, 2010; Brei & Schclarek, 2013; Bertay et al., 2014) tend to examine the public banks' intermediation role as countercyclical during economic downturns. Levy-Yeyati et al. (2007) proposed the idea that spatial spillover effects might cause market failure in the banking sector; whereas, in applying the theoretical model, Hakenes and Schnabel (2006) proved that the regional banks are important in preventing capital drain due to the different endowments that poor regions and rich regions have. Yet no empirical analysis has been conducted to prove the theory; apart from a study by Hakenes et al. (2015) who, using German data, found that small banks at the regional level seem to help in preventing capital outflows to rich regions; and a cross-section study of European countries by Hasan et al. (2009), who tested spatial indications using banks in Europe.

Empirically, we test the propositions of the theories of Hakenes and Schnabel (2006) about regional banks, first, by comparing the pattern of lending of the RDBs versus non-RDBs related to the different levels of regional endowment, and secondly, by testing if the regional public banks are able to prevent the capital drain compared to the non-RDBs. To our knowledge, this chapter is the first study that empirically tests the Hakenes and Schnabel (2006) theory using the data of public banks that have a mandate to operate at the regional level and attach and connect with the geographical situation. This chapter also enriches (Gallup, Sachs, & Mellinger, 1999) by analysing the agglomeration due to the economies of scale used in the banking sector, which is possibly due to the potential market and the size of the market (Gallup, Sachs, & Mellinger, 1999).

To capture spatial dependence, we built a spatial weight matrix, which maps the neighbours of each region. We did not apply Queen contiguity as Hasan et al. (2009) did; instead we used the distance approach based on a certain threshold because, as an archipelago country, most of the regions do not share the same borders, as in Europe (Hasan et al. 2009), and there are several regions that have been classified as remote regions. Unlike Hasan et al. (2009) and Hendrik Hakenes et al. (2015), we used three main spillover approaches, which enabled us to see the consistency of the capital drain in the RDBs. The first approach refers to the idea of Tobler (1970), which asumes that the spatial effect is stronger when the distance of the neighbouring regions is closer to the home regions; the second approach considers that the neighbouring regions might have a similar opportunity to affect the home regions. We built the simple model to analyse the outcomes using the first and second approaches. For the third approach, we use spatial-panel analysis — namely, the Spatial Autoregressive Model (SAR), the Spatial Durbin Model (SDM), and the Spatial Error Model (SEM). To our knowledge, this study is the first study that employs spatial-panel analysis to study regional public banks at the regional level. Exploiting Indonesia's geographical environment, this chapter gives a complete picture about the geographic conditions and how they influence the RDBs' versus non-RDBs' lending in each region.

Nevertheless, the OECD (2009) stated that the leading regions are important for national welfare and make a strong contribution to national growth (generate more than 50% of national growth). Moreover, the contribution of MSMEs is significant to boost growth (Ayyagari, Beck, & Demirguc-Kunt, 2007; Dietrich, 2012; Hendrik Hakenes et al., 2015). Many scholars focus on examining how MSMEs affect the economy (Beck et al., 2005; Ayyagari, Beck, & Demirguc-Kunt, 2007; Dietrich, 2012), or how the MSMEs effectively lower unemployment (Ayyagari, Beck, & Demirgüç-Kunt, 2007; Karnani, 2007; Nikaido, Pais & Sarma, 2015; Wellalage & Locke, 2017), or how the MSMEs have a problem with lack of information and distance (Berger et al., 1995; Ardic et al., 2011; Beck et al., 2011; Berger et al., 2005; Petersen & Rajan, 2002; Strahan & Weston, 1998; Zhang, Song, & Zhong, 2016). But none of these studies actually connect MSME loans, regional banks and the regional economy.

Using the Indonesian context, this third paper fills the gap in the literature, first, by comprehensively explaining how the contribution of RDBs in distributing MSME loans is able to spur the regional economy; secondly, by testing in which condition RDBs are able to affect the regional economy through their support in allocating MSME loans; thirdly, by studying the implications of spatial dependence in affecting the impact of MSME loans on the regional economy. This chapter complements the study of Beck et al. (2005), by providing another possibility that the MSME loans might not strongly affect the aggregate economy, but might significantly connect with certain sectors where the MSMEs mostly operate, such as the agricultural sector. Beck et al. (2005) and Karnani (2007) found that, while the MSMEs are able to lower unemployment, the poverty level remains high; hence, this study enlarges the literature by examining whether MSME loan distribution might affect the disparity across regions and within regions. As no studies to date have observed the possibility that there might be a connection between equal lending and the banks' motive, this chapter enlarges the literature by studying the implications of distributing MSME loans with the price of lending, the margin, and the NPL of the RDBs.

Appendix

Figure A1- 1. Map of Indonesia

(Source : http://www.worldbank.org/)[24]

[24] The map presents the current condition of Indonesia, which consists of 34 provinces that are mostly located on five (5) main islands, Sumatera, Java, Kalimantan, Sulawesi, and Irian Java, while in total, Indonesia has more than 13,000 islands, of which 6,000 are inhabited. The regions (provinces) in Indonesia change from time to time.

Chapter Two

Politics and the behaviour of the Regional Development Banks

2.1 Introduction

The political issue is crucial in elucidating public banks' intermediation function, as Sapienza (2004) and Levy-Yeyati, Micco and Panizza (2007) agree that public banks' reduced performance can be explained by two factors: either the implementing mandate or political issues. Numerous studies have shown that public banks' lending tends to exhibit electoral cycles. By comparing with the private banks, Sapienza (2002), Dinç (2005), Micco et al. (2007), Iannotta, Nocera, and Sironi (2013) found that public banks increase the volume of loans during the election year, while Chen & Liu (2013) using Taiwan's database studied that the ROA (Return on Assets) and the growth of loans are higher in private banks than the government and foreign-owned banks, but the Taiwan's public banks' behaviour does not follow the election cycle seen by the ROA, interest margin, and overhead cost.

Employing India data, Cole (2009) found that during the election years, there is no increase in agricultural output, despite an increase in agricultural lending, whereas in Turkey, Önder & Özyıldırım (2013) found that albeit state-owned banks involve in political lending they also play an important role in offsetting the adverse effects caused by the economic crisis. Another interesting finding around this political event is found by Bertrand, Kramarz, Schoar, and Thesmar, (2004) by using the evidence from France. They found that near to election years, firms that are managed by connected CEOs (CEOs that have a connection with the politicians) create more jobs in politically more contested areas. Having a similar idea in examining the economic output in employment sector, Carvalho (2014) examined that there is a reciprocal action between the political banks with the politically related firms. Since public banks are controlled by the government, higher credit volume increases the chances of the incumbents to be reelected through the expansion of one of the macroeconomic indicators, employment.

Political issues become important in explaining the performance of public banks not only in developing countries, which are still learning to be open towards democracy but also in developed countries (Goldman, Rocholl and So, 2009). The dysfunction of being an intermediary in public banks occurs when the resources are only directed to certain companies, groups, cronies, political parties, families, or individuals. (Faccio, 2010) stated that mostly looting happens when managers with enormous information and power use their authority by diverting the fund to their pocket or managers can be an instrument to provide the fund with a special price for politicians or political bureaucrat with a promise to get a big incentive. There are several benefits of having political connections, such as paying lower taxes, having stronger market power (Faccio, 2010), paying lower interest (Sapienza, 2004), having more access to imports (Faccio, 2006), and an increased possibility of being bailed out (Faccio, 2006).

Indonesia was chosen to be investigated in this study since Indonesia has a long history with the issue, starting with the phenomenon of Suharto (the second president of Indonesia) and his allies that made Indonesia one of the three worst countries in the world in terms of corruption in 1999[1]. Therefore, Indonesia has been studied by many scholars such as Fisman (2001), Leuz & Oberholzer-Gee (2003), Green (2004), Poczter (2015), and (Volz, 2015), who believe that politics has been the main source of social problems in the country. Indonesia has been trying to remedy the problem, but in the 2016 Corruption Perceptions Index, it was still ranked near the bottom (90th out of 176[2]). This was worse than its neighbour, Malaysia (ranked at 55). The banking sector in Indonesia plays an important role in the Indonesian economy, as it accounts for 79.8% of the financial system (Volz, 2015), but more than half of Indonesia's commercial banks are politically connected[3] ((Malley, 2009)

This chapter examines the impact of political interests on public banks' lending. Employing a unique dataset, this is a regional study using regional public banks, called Regional Development Banks (RDBs), established by a regional mandate. Applying a panel data model, with regional data covering 1993 up to 2016, this study explores politically connected lending in regional areas using regional elections and regional political conditions. This study is motivated by observing the relationship between the provincial government and the RDBs. Based on regulation no.58 issued by the Ministry of Home Affairs of Indonesia in 1999, the provincial government was given the authority to appoint the heads of RDBs, in addition to be a major shareholder in RDBs. The regional government could also choose people to sit as board members, either commissioners or directors. This political situation was amplified in RDBs in 2004, Indonesia implemented a direct election[4] through a decentralisation programme. One of the important aspects in the implementation of decentralisation was the introduction of the direct election, which previously, district heads, mayors, and governors were to be elected by local parliaments, majority of which were of Suharto's party (Golkar or Golongan Karya)[5]. The discovery of many rent-seeking practices causes the system to be considered incapable of

[1] Based on the report: https://www.transparency.org/country/IDN
[2] Based on the report: https://www.transparency.org/country/IDN
[3] Commercial banks perform conventional activities and/or those based on sharia principles, with activities that provide services in payment transfer (OJK, 2016). Commercial banks include national public banks, private banks (including sharia banks), joint venture banks, foreign banks, and RDBs (Law No.10/1998).
[4] Based on Law no.32/2004.
[5] See: Michael Buehler, 'Decentralisation and Local Democracy in Indonesia: The Marginalisation of the Public Sphere,' in Problems of the Democratisation in Indonesia, ed. by Marcus Mietzner and Edward Aspinall. (Singapore: Institute for Southeast Asian Studies, 2010), 268-269

resolving challenges ensuing from a well decentralised democracy (Kirana, 2014). Thus, with more resources and wider authority, but no support from a good check and balance system, the decentralisation policy opened the possibility for a higher level of corruption (Dreher & Jensen, 2007). This fact was evident in 2006, in the 265 corruption cases across Indonesia, where 61 regional governors or district heads became case suspects (Kirana, 2014). In 2008, more than 20 governors, former governors, district heads, and mayors were detained or suspected to be involved in corruption cases (Kirana, 2014). While the initial objective of decentralisation was to improve equality across regions and reduce centralised corruption, it brought the opposite results due to weak mechanisms and preparation. From centralised corruption came widespread corruption across Indonesia, and RDBs may be the key strategic tool to facilitate political interests.

Therefore, the aim of this chapter is to examine the impact of political factors in the Regional Public Banks, called Regional Development Banks (RDBs), and to observe how the political issues affect the behaviour of the RDBs. We use the regional elections as our main political variable and not presidential elections, as the latter has been studied by many scholars (Sapienza, 2004; Micco and Panizza, 2006; Micco, Panizza and Yañez, 2007; Presbitero and Zazzaro, 2012; Önder and Özyıldırım, 2013). This chapter contributes to the literature by providing a clear explanation about the behaviour of RDBs pre-election year (one year before the scheduled election), during the election year, and one year after the scheduled election year (post-election). This method enables us to see the pattern of the political issue in RDBs' behaviour, as we suspect that the political impact will be obvious near the election year. To capture the connection of the regional and the RDBs, we consider three conditions that might interact with the election periods. Firstly, we consider the background political party of the Governor of the region (province) or if the governor of the province allied with the national winning party. The idea is since the governor has the right to choose the head of RDBs, then this variable describes the potential political influence of the national winning party in managing the local resources through the provincial leader. Aligning with the ruling party may have two consequences in this context: local officials will have more support in terms of political funds (Brollo and Nannicini, 2012), and local politicians must provide political capital for their parties, as they can mobilise voters and/or funds for higher-tier politicians (Brollo and Nannicini, 2012). These two explanations connect with one motive, which is increasing the possibility of being re-elected. Secondly, this study addresses the role of being elected as a governor who will run for a second time, elucidating the political lending close to the election years. Regardless of having alignment or not, being an elected governor means more networking and power over the new candidates, as it opens the possibility to abuse their power to sustain their position (Imai, 2009; Halling, Pichler, and Stomper, 2010). In this study, we use the first term elected governor that is subsequently elected in the second term because the term limits regents, mayors, governors, presidents and vice presidents to two 5-year terms; thus, examining their behaviour when facing their second and last election might give some beneficial information about how they link with the RDBs' behaviour. Thirdly, this study involves the background (politicians, bureaucrats, professionals) of commissioners who sit on the board of RDBs to trace the impact of political connection on a bank's decisions (Sapienza, 2004). This variable explicitly exposed the direct connection between the politicians and the RDBs.

To indicate the political lending, we also considered other factors that might enable us to get a robust conclusion about the issue of politics in RDBs. We investigated the price charged by RDBs during the election period following the suggestions by Pasour (1987) and Micco et al. (2007) . This factor was important to consider, as it helps to reduce the potential of coming to the wrong conclusion; the growth of loans can be affected by supply and demand shocks (Berry, Rodriguez, & Sandee, 2001). To strengthen our analysis, we considered the price of deposits, as it was related to the possibility that the banks may increase the interest rate to attract more depositors' run-up to the election year. If this occurs, then we expect the spread declines in the run-up to the election year, as it is defined as the difference between the price of loans and the price of a deposit. We also examined the possibility of RDBs misusing funds intended for micro, small and medium enterprises (MSMEs) for political purposes. Loans for MSMEs were promoted by the Indonesian government since MSMEs have been indicated as an important contributor to the Indonesian economy and were a very strong economic cushion when the crisis hit Indonesia in 1998 (Berry, Rodriguez, & Sandee, 2001)[6]. To resolve the conclusions, this study observes how RDB finances their loans, whether there is an intervention from the central government such as cash injections in their assets near the election years, or whether the loans disbursed run to the election is a deliberate decision as they reduce their holdings of securities run-up to the election year.

Not many countries have a regional bank, this study therefore contributes to the literature on how regional banks engage with politics, how they operate, and which channels are used to accomplish their mission. In addition, by focusing only on RDBs without comparing them to private banks as Khwaja and Mian (2005) explain that even with efficient lending, it is possible to find a difference in average loan returns in public banks compared to private banks. This is because of the implementation of social and development mandates in public banks. Hence, with the objective to reduce the potential bias due to different characteristics, this paper emphasises only government-owned banks to

[6] See chapter 4 (four), 'The RDBs and MSMEs' (2018), by Ottemoesoe, Williams, ApGwilym (2018) for the details of MSMEs in Indonesia.

distinguish the genuine impact of politics on this type of institution. This study also provides a knowledge of the practice of decentralisation, which is not optimally executed. The implementation of decentralisation policies (especially the direct election policy in regional areas) without strong regulation and preparation in regional areas has led to counterproductive conditions, and local government banks allegedly play an important role in the flow of political funds to the regions.

The remainder of this chapter is organised as follows. Section 2.2 presents the motivation based on the background literature. Section. 2.3 formulates the hypotheses. Section 2.4 discusses the methodology and data set. Section 2.5 presents the empirical results. Section 2.6 concludes.

2.2 Literature

2.2.1 Political lending

Political lending is the type of loan distributed based on political impetus. The election event has been used by many studies to prove politically connected lending, especially in the case of public banks. The distribution of loans near to election years capture the motive behind the loans disbursement such as the desire to remain in power (Shleifer and Vishny, 1994) and to protect the politicians from competition (Rajan and Zingales, 2003; Besley and Burgess, 2004). These are in line with the evidences found by Imai (2009) and Carvalho (2014) that government loans increased when the local member of the ruling party became more senior and/or when those incumbents became electorally vulnerable. The political loans might enable them to get more voters by applying some political strategies, for instance, mobilizing electoral support from low-income people. In this regard, (Kirana, 2014) state that by providing the main consumption goods, politicians easily "buy" voters in Brazil. The similar situation is also found in Indonesia, gift giving mostly covers food, cigarettes and assorted daily necessities (sembako) mostly occur when the campaign period started (Kirana, 2014). In this case, a norm of reciprocity might expect to work, as the recipient highly values the gift due to their unfavourable income. The recipients might feel a sense of obligation to give a party their vote in return for a bag of food.

Using national elections, Micco et al. (2007) conclude that the different performance of public banks versus private banks was not driven by their status of ownership, but by political factors. They proved that the public banks' lending widens during the election year. While employing provincial outcomes of a Turkish national election from 1992-2010, Önder & Özyıldırım (2013) studied how politically connected lending can be observed by examining the implications of loans during election years, and during a bad economic situation. The idea is; if the motive of the lending is related to politics, then, there should be no impact on the economic growth, whereas the loans distributed during the crisis should have an impact to offset the consequences of the economic tribulation. Moreover, concerning social lending, Khwaja and Mian (2005) studying the impact of loans on the agricultural sector output, found no political bias in distributing loans in India by examining the government banks that have an explicit social objective.

Another characteristic that has been found regarding the political loans is the interest charged on loans during the election years. Price of lending is the interest charged by lenders on their capital rented to borrowers. In a banking system, interest rate depends on many factors, as it may reflect the risk exposed by borrowers, the risk faced by banks, and the monetary conditions. When applying a regional perspective, the price of loans may relate to the endowment that the region has (Kashyap and Stein, 1994; (Pasour, 1987))[7]. The price of loans should be tested during an election period and/or politically connected firms should be considered (Pasour, 1987). This is because price indicates the objectives of the intended loans (Sapienza, 2004; Khwaja and Mian, 2011). Following the suggestion of Micco et al. (2007), we should distinguish the impact of demand shock from that of supply shock. A higher number of loans followed by a higher price during an election period may indicate demand shocks and not political lending.

Empirically, it has been found that state-owned banks are likely to offer a lower price on loans than private banks (Bhaumik and Piesse, 2008) during an election period. Using national elections but provincial electoral results, Sapienza (2004) found that the price charged by public banks in Italy was lower during electoral years compared to private banks. Geographically, Sapienza found lower interest rates related to the level of influence of political parties in particular areas. Micco and Panizza (2006) found that during election years, public banks experienced less profit and this condition was more prominent during election periods. This indicates that cheap credit is not the result of a social mandate but of political motives, through which the government appointed public banks to channel funds to specific investors or borrowers who have relationships with them.

Furthermore, in relation to political lending, it is important to understand how the bank finance their loans growth during this political event. There is a possibility that due to the needs during the election years, public banks need to attract more depositors for which it may undermine the market discipline.

[7] Theoretically, Hakenes and Schnabel (2006) mentioned the interest rate in explaining a potential capital drain due to different endowment levels between two regions. Entrepreneurs in a rich region can promise a high interest rates as they have more endowment and need to borrow less, which mitigates the moral hazard problem, while in a poor region cannot; this causes capital drain from poor regions to rich regions, as lenders attempt to maximise their profits. However, due to the moral hazard problem, lenders may face a potential high risk if they lend to entrepreneurs in poor regions, because they may switch to risky projects.

The politically connected banks might have a chance to get more depositors as the depositors perceive these banks to be safer as they have more guarantee from the government in case of distress. Studying the implementation of the limited guarantee in Indonesia, Nys et al. (2015) found the supply of funds in politically connected banks to be higher compared to their counterparts. Albeit market discipline improves after removing the blanket guarantee, the limited guarantee attracts more depositors for the politically connected banks, as they argue that with the limited guarantee, depositors still expected an insurance by investing in a politically connected bank. In Japan, Imai (2006) found that the limited guarantee system has enhanced the market discipline by increasing the sensitivity of deposit interest rates and by increasing the sensitivity of deposit quantity to default risk.

2.2.2 Corruption

Discussing about corruption, we should refer to the concept of rent seeking. The concept was developed by Tullock in 1967, but the term was coined by Krueger (1974). The definition of rent does not denote payment on a lease but relates to the concept of gaining control of resources without making any contribution to productivity (Krueger, 1974; Pasour, 1987; (Kaufmann & Vicente, 2011). Corruption is dishonest or unethical behaviour by those entrusted with positions of authority for the sake of personal or group benefit (Kaufmann & Vicente, 2011). For instance, government officials ask for additional fees for providing services such as providing documents, issuing business licenses, or giving passage through customs. Rent seeking may discourage investment and economic growth (Mauro, 1995). This occurs because of the transfer of wealth only to certain people or groups. However, there is an opposing argument about corruption: corrupt practices help an individual to avoid bureaucratic delay (Mauro, 1995), but this only applies in countries where the bureaucratic regulations are cumbersome.

2.2.2.1 Corruption and Banking

In financial markets, especially in the banking market, rent seeking can take many nuanced forms involving bureaucrats, politicians, and market players, such as investors and banks. As an intermediation tool, banks are an important resource for the economy, but at the same time, public banks' connection with the authorities/government or politicians may affect the allocation of funds. In relating to government banks, rent-seeking can be defined as a behaviour to create and maintain the objective of maximize their (bureaucrats and/or politicians) own personal objectives or to support their crony (Lazzarini, Musacchio, Bandeira-de-Mello, and Marcon, 2015), which Khwaja and Mian (2005) found that government banks support firm-connected to the politician's political party.

Corruption involves power and public interest, with the government playing the main role. Public officials such as bureaucrats and politicians[8] are often related to the corruption. According to King (2000), corruption involving officials occurs because of their low salary and considerable power. As politicians focus on power and how to sustain their position, bureaucrats have a different story regarding their behaviour as a rent seeker. The position of bureaucrats is considered to have a prestigious position, and with these two conditions, it creates feelings of personal status discrepancy, causing these bureaucrats to feel the need to match their prestige and power with wealth, which can be attained with corruption. Theoretically wages and corruptions has a negative connection, Herzfeld and Weiss (2003) found that increased in wages might help to reduce the level of corruptions although they have a mixed result on their models, while Brunetti and Weder (2003) said that the quality of bureaucrats is important to press the potential of having corruption. In another aspect, corruption might occur because the bureaucrats tend to maintain their relationships with the politicians to keep their positions or even get promotions (Cornett, Guo, Khaksari, and Tehranian, 2010) by helping the politicians to obtain their objectives.

There are main determinants of corruption, such as: rent-seeking opportunities and corporate competition (Ades and Tella, 1999); culture, religion, type of economy (Treisman, 2000; Del Monte and Papagni, 2007), while using developing countries, Mumtaz Anwar and Ghulam (2007) found an opposite result which is the socio-political and religious norms have no impact on corruption. Another factor is weak management control increases the level of corruption (Shleifer and Vishny, 1993). Corruption may affect a society in some ways. Mauro (1995) and Mo (2001) found that corruption tended to lower the investment and ultimately lowering economic growth, which Mo (2001) stated that 1% increase in the corruption level reduces the growth rate by 0.72%.

2.2.3 Politics in Indonesia

The transfer of power from President Suharto to Vice President B.J. Habibie on May 21, 1998 brought significant changes to the political system in Indonesia. At the macro level, the change is evident in the transformation of the Indonesian political system from the previously authoritarian one to a more democratic one. The reform is particularly obvious in the relationship between the central government and the local governments, which shifted from a centralised pattern to a more decentralised one. Before the reform, for 32 years, Indonesia had only three parties, but only one party, Golongan Karya (GOLKAR)[9], consistently won elections. However, under the new regime, the government allows

[8] We define bureaucrat is current or former officer of the central or local governments. However, politician is a person active in party politics, or a person holding or seeking office in government.
[9] GOLKAR is known as Suharto's party (former president of Indonesia for 32 years).

multiple parties to create a more democratic environment. Two important changes followed the reformation in Indonesia in 1997. First, elections are no longer held merely for the appearance of democracy (since GOLKAR and Suharto or people affiliated with him always won), as people are allowed to choose their own party with their own representatives without fear and intimidation; second, the implementation of local government reforms started with regional autonomy through Law No. 22/1999 about decentralisation and Law No. 25/1999 concerning fiscal administration between the central and regional governments.

Under the centralisation regime (in the Suharto era), all the decisions were centralised in the central government. A high discrepancy among regions occurred because of favouritism in transferring funding[10], and there was a high level of corruption due the difficulties in the bureaucratic system. This led people to believe that the decentralisation system should be the answer to these problems. Applying decentralisation, the central government transferred some of their responsibilities to the regional governments. Regions are permitted to perform all local government functions, such as transportation, health, local economics, and other local/region-specific sectors (Ahmad and Hofman, 2000) , while the central government manages foreign policy, national security and defence, national finance, law, religion, and macroeconomic and macro-political policy. This new policy also allows the regions to cooperate with organisations/firms/institutions in a foreign country, both publicly and privately owned. These opportunities enable regional governments to develop their economies through domestic and international cooperation agreements. Another important factor in decentralisation is that provincial leaders, previously appointed by Parliament, are now elected through local elections. These elections take place at the provincial level, where the administrator is the governor, and at the municipal/regency level, where the administrator is the mayor or regency head.

There are two main concerns regarding the decentralisation implementation, political and fiscal issues. The political issue relates to citizen confidence that the decentralisation will improve the social and economic level of the nation, while the fiscal issue relates to the heavy dependence of local governments on fund transfers from the central government. Regarding the political problem, government revised Law 22/99 and introduced direct elections for both local executive and legislative offices (Mobarak and Purbasari, 2006). It is assumed that direct elections will create more accountable and responsive local governments. In addition, it is expected to form a more reliable parliament.

[10] In the Suharto era, regions on Java island received more attention compared to other regions, especially some poor regions such as those in eastern Indonesia.

2.2.3.1 Politics, Decentralisation, and Regional Public Banks in Indonesia

The abbreviation 'KKN' stands for corruption (**k**orupsi), collusion (**k**olusi), and nepotism (**n**epotisme). Indonesia has been an example used by many scholars in discussing the implications of strong political patronage (Schwarz, 1997; Fisman and Gatti, 2002; Faccio, 2006). During the 32 years under Suharto's rule, Indonesia experienced an adverse political impact because of its weak legal and managerial systems. Consistently placing as one of the most corrupt countries in the world prior year 2000, Indonesia saw corruption, spread to various places in the country. In the old regime, having a political connection with Suharto's allies was like a highway to reach many goals; for example, (Tan, 2006) find that import licenses were easily awarded to firms with a political connection with Suharto.

Furthermore, when the new regime took over in 1997 as a reform movement and a political rival to the New Order, new hope came with the collapse of Suharto's kingdom. By allowing decentralisation, the new government hoped that it would reduce disparity among provinces and give an equal chance to every province to grow (not just Java). Each governor was given the right to manage and organise their own area to achieve a higher level of welfare.

Theoretically, decentralisation and direct elections on a provincial/municipal basis would create a new culture of democracy that is good in increasing mass participation. With the new policy, local governments received both more resources and wider authority (Tan, 2006); however, practically, they might not be ready to implement their mandate properly (Gonschorek, Hornbacher-Schönleber, and Well, 2014) considering the inequality of economic development and human development in Indonesia in the Suharto era. This new course was in line with the demands of the people but had negative side effects on the distributional pattern of corruption. There were 265 corruption cases involving local legislative bodies with almost 1,000 suspects by across Indonesia in 2006, along with 46 corruption cases implicating 61 provincial governors or district heads (Dreher and Jensen, 2007).

In particular, it is observed that the corruption has done in a collective way, or it is called '*korupsi berjamaah*' (corruption in groups or corruption committed by many people). As Rinaldi, Purnomo and Damayanti (2007) found in many regions in Indonesia, corruption involves both the legislators (generally politicians) and the executors (mostly political bureaucrats or bureaucrats). If the supervising and the supervised already jointly agree to engage in corruption, the process of legally proving the existence of corruption will be complicated, as those involved will attempt to cover for and support each other.

Thus, bribe-taking is no longer 'coordinated' as it was in the past; rather, it has become fragmented and unclear (Kirana, 2014). This is due to the idea that new democracies do not have a good mechanism for oversight and supervision (Kirana, 2014), and lack of transparency and accountability in its early stages makes it easier for rent seekers to exploit the system and have greater access to public officials without opening them to public scrutiny. In the reform era, almost all groups, almost all candidates / candidates for regional heads, almost all people are involved in election crimes. Direct elections have given rise to rampant 'money politics' by local elites to gain and sustain power in the local area (Keefer & Khemani, 2005; Mebane & Wawro, 2002). Candidates use money politics for 'pork-barrelling' and clientelism. Using America as a sample, 'pork-barrel' or targetable spending using public funds to please voters or legislators is also found in developed country (Stokes, 2011). While clientelism occurs when the patrons (leaders/ politicians) provides material support for the clients (followers or citizens or people) in exchange with the political supports (Stokes, 2011), which (Mietzner, 2007) stated that these practises can be found in many Asian countries, such as Indonesia, Philippines and Thailand.

Based on the data from KPK (Komisi Pemberantasan Korupsi/ Indonesia's Corruption Eradication Commission), in the provincial/regional level, the politicians (candidate) need to spend at least US$10 million, and US$1.6 million at the municipality/regency level (Kompas, 2016; VOA Indonesia, 2018), while base salary of the regent/mayor is around Rp 2.1 or around 150 US$ per month and the governor Rp 3 million(US$200) every month. If coupled with the allowance of wife and children, the salary is taken home Rp 5.6 million-Rp 8.7 million (US$600). However, the regional head does have the right to operational expenses and incentives for levies. For instance, with Rp 44 trillion (Rp 44 trillion or around US$3.2 billion) of regional revenue of DKI Jakarta, the operational support of the Governor and Vice Governor of DKI will be Rp 66 billion per year or US$ 5 millions) (Kompas, 2016). Although regional heads have other income other than salary, the cost of 'pilkada' or the direct election is still considered very large. Therefore, the pilkada event is the moment when the bureaucrats and wealthy businessmen connected (OJK, 2016b), which this might be root of pork barrelling and clientelism system. If the candidates thought that they are not be able to finance their political cost, then they use to have backup, which is from investors, that usually called success team (tim sukses). The businessmen that used to be the investors might be interest to join as this partnership will generate some benefits for them. First benefit is access to power. Second, is the accommodation of business interests in regulation produced in the legislature. Third, is the advantage of ease of access and certainty of the implementation of the regulation that benefit the person or the business.

Hence, after implementing the direct election, there is an increasing in the number of political parties, or from the cadres of politicians, and interestingly the businessman started to took part in politics in Indonesia. They even become party heads, such as Yusuf Kalla (Golkar Party) and followed by Aburizal Bakri (Golkar Party) and then Setya Novanto (Golkar Party), Hary Tanoesoedibjo (Perindo Party or the Indonesian Unity Party), Yusuf Kalla, Sutrisno Bachir (PAN[11]), Surya Paloh (NasDem Party[12]). While currently, Vice Governor of DKI Jakarta (2017-2022), Sandiaga Salahuddin Uno is one of the forty richest businessmen in Indonesia based on Forbes Magazine 2018[13], while Aburizal Bakri, Hary Tanoesoedibjo and Surya Paloh owned the television stations in Indonesia, and it opens possibility to use their television to do campaign when the election years occur.

Relating to RDBs, the Financial Service Authority of Indonesia (Asosiasi Jasa Keuangan/OJK) reported in 2016 that the contribution of RDBs to local economic growth remained low, at approximately 30% productive credit from the total credit channelled (Imai, 2009). While most of the credit distributed by RDBs is dominated by consumption credit such as car finance loans, RDBs' assets have grown by 6.48% since 2015. Based on data from the Central Bank of Indonesia, RDBs have been found to place their funds in Bank Indonesia Certificates, a pattern that appears to be increasing annually. The OJK suggests a minimum of three primary factors that should be considered to improve the performance of RDBs: corporate governance, risk management, and a lack of sufficient infrastructure.

In RDBs, the potential corruption can be observed by examining the relationship between the regional leaders and the head of the RDBs. Based on the regulation of the Ministry of Home Affairs of Indonesia no. 58 of 1999, the governor in every province is given the right to choose the head of the RDB in the province. This process creates a conflict of interest between the two parties, and RDBs can be easily used as a political tool by the regional government. The governor can certainly choose his/her own people, and newly elected governor can also simply change the board of directors if they are not among his/her own people. The Indonesia Corruption Watch (ICW) is an Indonesian-based and led non-governmental organisation (NGO), whose primary mission is to monitor and report to the public incidents of corruption in Indonesia states that RDBs are exploited by their local governments and pay fees for some bureaucrats with no official reports of interest payments (Tempo, 2010).

[11] PAN or the National Mandate Party
[12] NasDem or National Democratic Party
[13] "Indonesia's 40 Richest", *Forbes*, February 12, 2009

2.3 Hypothesis Development

The focus of this paper is to observe the influence of politics in RDBs in the run up to the election year. The relationship between the local government and the RDBs has been described in regulation no.58 issued by the Ministry of Home Affairs of Indonesia in 1999. It is suggested that this has opened many political paths between the two, as they have mutual interests which theoretically could lead to an abuse of power. The local government has an interest to exert its power (Imai, 2009), while bank leaders want to maintain their positions as superiors (Maurer & Haber, 2007; Halling, Pichler, & Stomper, 2010). We suspect that RDBs might be an electoral machine that was developed for politicians to gain much needed resources to finance their political activities close to the election.

Albeit, Chen and Liu (2013) found no evidence of use in Taiwan's public banks. However, in examining the specific connection between the local government and the RDBs, we conjecture that if a relationship exists then the RDBs' loans should tend to exhibit the election cycle, as this has been found by (Bertrand et al., 2004). However, our analysis is developed to focus not only on the aggregate loans, but also on a specific loan type: loans to small business enterprises (MSMEs). If there is an increase in aggregate loans due to the events, the MSME loans might suffer, as the RDBs might have to shift their MSME loans to finance the political activities. On the other hand, MSME loans might increase near election years, as politicians try to generate a reputation as one who cares for the underclass, and one who provides employment in their region (Bertrand et al., 2004). Examining the loans disbursed during the election might not be enough evidence to conclude whether or not there is a political pattern in RDBs, as it is possible that any increase may be caused by economic growth. Thus, we suspect that if the loans are cycling with the election cycle, then there is a compromise on the price of loans during or near the election, which reflects the potential of looting (Pasour, 1987 ; Micco et al., 2007). In addition, another asset that might be affected in financing the political lending are deposits. The banks might try to attract more depositors by increasing the interest paid near the election. If so, we would expect that the interest spread should be smaller nearer to elections, as it is in line with the previous conditions stated.

Hypothesis (1) : Politics influences the government-controlled banks' behaviour run-up to the election years.

Hypothesis (1.1) : In the run up to elections, the government-controlled banks increase loans per capita.

Hypothesis (1.2) : In the run up to elections, the government-controlled banks reduce the price of loans.

Hypothesis (1.3) : In the run up to elections, the government-controlled banks increase the price of deposit.

Hypothesis (1.4) : Politics affects the loans to MSMEs in the government-controlled banks.

Furthermore, we suspect that the impact of a direct election on RDBs will show a clear pattern if we put certain conditions into account. Alignment means the provincial leader has a similar political view to the National winning party, which would explain connections with the higher authority. Having alignment means more power and less monitoring and it causes moral hazards in RDBs (La Porta et al., 2002; Faccio, 2006). So, if political factors exist in RDBs due to alignment then we would expect aligned RDBs would be less serious about implementing their mandate. Distribution of loans may be less with a higher price while, during elections, the loan distribution may increase as they are trying to stay in power by winning people over. It is important as a supporting mechanism to exert the power nationally. Hence, an interaction between the election years with alignment status leads to hypothesis 2.

Hypothesis (2) : Local governments that have aligned with the ruling party influence the government-controlled banks' behaviour in the run up to the election.

Hypothesis (2.1) : The government-controlled banks that align with the government tend to increase their loans close to the election.

Hypothesis (2.2) : The government-controlled banks that align with the government tend to reduce the price of loans close to the election.

Hypothesis (2.3) : The government-controlled banks that align with the government tend to increase their price of deposits close to the election.

Hypothesis (2.4) : Loans to MSMEs are affected close to the election under the allied government.

To narrow down the analysis, we considered the status of being an incumbent leader in affecting loan distributions close to the election, as they are comparably powerful and may attempt to sustain their position in many ways, including the exploitation of public banks (Imai, 2009; Carvalho, 2014). In this study we define incumbent as the first-term of the elected government which, subsequently, will be elected for a second term. This indicator might provide evidence about the effort invested by the ruling leader to become elected for the second time. Regardless of the status of being aligned with the ruling party, we suspect that there is a strong political interest for an incumbent to maintain their power. Carvalho (2014) proved that politicians in Brazil use bank lending to shift employment towards politically attractive regions in order to increase the chance of re-election, while in France, Bertrand et al., (2004) showed that the loans raised by public banks was used to affect the employment decisions of the politically connected CEOs. Thus, a discussion of the incumbent status leads to the formulation of the following hypotheses

Hypothesis (3) : An incumbent leader influences the government-controlled banks' behaviour near to election years.
Hypothesis (3.1) : The government-controlled banks under an incumbent leader tend to increase their loans close to the election.
Hypothesis (3.2) : The government-controlled banks under an incumbent leader tend to reduce the price of loans close to the election.
Hypothesis (3.3) : The government-controlled banks under an incumbent leader tend to increase their price of deposits close to the election.
Hypothesis (3.4) : Loans to MSMEs are affected close to the election under an incumbent leader.

Going deeper, this study adds in the proportion of politicians on the commissioners board, as this variable identifies the direct connection between the local government and the RDBs. Appointing their own people to the RDBs' board may help the politicians to monitor the banks, the managers, as well as the directors, and also to facilitate their objectives easily (Infante & Piazza, 2014 ; (Hoechle, 2007). Therefore, this study will observe the impact of politics on the loans per capita as seen by certain political variables, which leads to hypothesis 4:
Hypothesis (4) : A higher proportion of politicians sitting as commissioners in the government-controlled banks affects their behaviour close to the election.
Hypothesis (4.1) : A higher proportion of politicians sitting as commissioners in the government-controlled banks will increase loans close to the election.
Hypothesis (4.2) : A higher proportion of politicians sitting as commissioners in the government-controlled banks will reduce the price of loans.
Hypothesis (4.3) : A higher proportion of politicians sitting as commissioners in the government-controlled banks will increase the price of deposits.
Hypothesis (4.4) : Loans to MSMEs are affected close to the election when the government-controlled banks have a higher proportion of politicians sitting as commissioners.

Concerning the hypotheses so far, we try to analyse the outcomes of the behaviour of RDBs affected by the political climate. However, such behaviour cannot be separated from the alleged financial intervention by the central government such as injecting RDBs finances near to the election years, because after all the central government has the interest to remain on top of power. However, other possibilities may occur, where the credit distribution of RDBs close to the election years is the deliberate decision by adjusting the position of RDBs' assets, such as reduce their holdings of securities. Hence, this discussion leads to hypothesis 5 and hypothesis 6.

Hypothesis 5 : The behaviour of the government-controlled banks' (such as increase more loans, reduce the price of loans, increase the price of deposit) close to election years is intervened by the central government.

Hypothesis 5.1 : The government-controlled banks get an injection from the central government near to the election years.

Hypothesis 6 : The behaviour of the government-controlled banks (such as increase more loans, reduce the price of loans, increase the price of deposit) close to the election years is a deliberate decision.

Hypothesis 6.1 : The government-controlled banks need to reduce their holding of the securities near to election years in order to finance the political events.

2.4 Methodology and Data

This section explains the methodologies that will be applied in this paper. It will start by describing the techniques used to accommodate the causal effect in the econometric model, before continuing with a presentation of the variables used in this study.

2.3.1. Methodology

This study examines the causal effect of independent variables on dependent variables. It employs 26 sets of regional data from 1993 up to 2016 (panel data). A panel data set has three main advantages over the use of a 'pure' time series or a cross-sectional regression (such as an OLS regression). Firstly, it may solve the bias problem that can be experienced because of unobserved heterogeneity. Secondly, it may show dynamics that cannot be detected using a cross-sectional regression. Thirdly, its multi-dimensional nature has the effect of increasing the sample sizes. This study introduces panel regression in order to detect potential bias caused by a potentially unobserved individual firm effect. The fixed effect (FE) method is the main method used in panel data as this method control the variety due to the diversity of the data as we assume that although we employ one country but concerning the type of the country as the biggest archipelago country in the world, each region has their own characteristic due to the natural resources and the endowment that they have.

If we assume that panel data is as follows:

$y_{it} = \alpha + x'_{it}\beta + z'_i\gamma + c_i + u_{it},\ i = 1,2 \ldots., N; t = 1,2 \ldots., N\ldots\ldots\ldots\ldots$ Eq. 2- 1

Where y_{it} is the dependent variable, x'_{it} is a K-dimensional row vector of time-varying explanatory variables, z'_i is a M-dimensional row vector of time-invariant explanatory variables excluding the constant, α is the intercept, β is a K-dimensional column vector of parameters, γ is a M-dimensional column vector of parameters, c_i is an individual-specific effect, and u_{it} is an idiosyncratic error term. FE explores the relationship between the explanatory variables and the outcome variables within an entity, such as country, region, district, person, company, etc. As each entity may have its owned characteristics, it may or may not affect the outcome variables. FE is applied when we assume that something within the individual may bias the predictor or the outcome variables. Therefore, we need to control for such variables. Geographical features, such as the location of the capital city in the certain country, population numbers, age, race, and education may be included in c_i (Wooldridge, 2009). Employing FE helps to remove the effect of the time-invariant characteristics, and thus we can assess the net effect of the predictors on the outcome variables. It is worth noting that it is important to conduct a specification test when dealing with panel data, in order to check whether the independent variables correlate with the error term. This may be an issue when we use the incorrect function form, if there is an omitted-variable bias, or if an irrelevant variable is included in the model. Additionally, the dependent variable may be part of a simultaneous equation, or measurement errors may affect the independent variables. Thus, there are some assumptions referred to (Wooldridge, 2009) that we must establish in order to achieve unbiased estimators within the panel data:

Assumption 1: Independence

$\left(X_{i1,\ldots.}X_{iT,u_{i1},\ldots,u_{iT}}\right)$ are independent and identically distributed (i.i.d.) over

$i = 1, \ldots..m$ (i. i. d. over entities)

Assumption 2: Strict exogeneity

$E\left(u_{iT}|X_{i,}z_i, c_{i,}\right)$=0 (mean independent)

Assumption 3: Error Variance

a. $V\left(u_{iT}|X_{i,}z_i, c_{i,}\right) = \sigma_u^2 I, \sigma_u^2 > 0$ and finite or homoscedastic and no serial correlation.

b. $V\left(u_{iT}|X_{i,}z_i, c_{i,}\right) = \sigma_{u,it}^2 > 0$, finite and $\mathrm{Cov}\left(u_{iT}, u_{is}|X_{i,}z_i, c_{i,}\right) = 0\ \forall \neq T$ (no serial correlation)

In addition, in order to correct the problem of heteroscedasticity and autocorrelation, we applied the assumption of the robust standard error or cluster sandwich estimator using STATA (Hoechle, 2007). Endogeneity may be an issue in panel data if we suspect that there is a possibility of having simultaneous relationships in the model, or if one of the regressors is not purely exogeneous or has a correlation with the residual (omitted variables). Employing an instrumental variable (IV) using a 2-stage least square regression (2SLS) can be one of the solutions, or system or dynamic generalised method of moments (GMM). Instrument variables are variables that have a relationship with the endogenous variable but must be uncorrelated with the errors. Standard treatments of instrumental variables (IV) regression stress that for instruments to be valid they must be exogenous. It is also important, however, that the second condition for a valid instrument, instrument relevance, holds, for if the instruments are only marginally relevant, or "weak," then first-order asymptotic can be a poor guide to the actual sampling distributions of conventional IV regression statistics.

2.3.1.1 The Political Indicators in RDBs

This study stresses the impact of politics on RDBs' behaviour because its main objective is to prove whether political lending occurred near the election years. Regional elections in Indonesia are held every five years, like the national elections there. However, the date of the regional election is not the same across all regions. Some regions host their regional election at the beginning of the year, some in the middle of the year, and some at the end of the year. In order to gain a comprehensive understanding of the pattern of loans, we split the time into three different windows. The main independent variable in this study is the election years and referring to the unsynchronised election year among regions in Indonesia, we employ dummy variable to set the election year, 1 is for election years and 0 otherwise. We use cut-off point, June, to mark of the scheduled election years. If the scheduled election years occur in the time between January up to the cut-off point, then we set dummy 1 for the election year and the year before that, which we call this as an **on**-event. Following this method, we generate additional two windows using dummy variables: the first is the **pre**-event, or a year before the scheduled election year (**on**-event); and the second is the **post**-event, or a year after the election year. These windows help us to indicate the political lending pattern, as we suspect that the impact of politics should be more intensive near the election years, and it might gradually decrease thereafter. Another reason for the three divisions is that it prevents us from making the wrong conclusion. Micco and Panizza (2006) explain that it is possible that the political cycle and the business cycle operate in tandem.

To gain an in-depth understanding of the phenomenon under study, we employ other political indicators, as we suspect that these indicators might help us to elucidate the impact of politics in RDBs. Firstly, we use the variable align. This variable is used to detect whether the regional government allied with the national winning party. In this study, we choose the alignment based on the political background of the governor of each region. The variable align will help us to understand the misallocated credit due to the allied government; for instance, by channelling more loans during the election year in order to stay in power, as Solé-Ollé & Sorribas-Navarro (2006) and Brollo & Nannicini (2012) explain. Secondly, from another perspective, we use the variable first_TR, referring to a first term elected governor who is subsequently elected for a second term. This is because regents, mayors, governors, presidents, and vice-presidents are limited to serving two five-year terms. Regardless of the status of alignment with the national ruling party, examining the behaviour of the elected governor (incumbent) near to the time of the second election might provide a good understanding of how such behaviour is connected with political lending, about which Shleifer and Vishny (1994) and Halling et al. (2010) explain that public companies can be a source for an incumbent to maintain their political power. The final variable is Comm, used to observe whether the RDBs have politicians and bureaucrats on their boards. Unlike Infante and Piazza (2014), whose study only considered the existence of politicians on the board, we will include bureaucrats when studying the political connections of RDBs because they have similar rent-seeking roles (Khwaja and Mian, 2005; Arocena and Oliveros, 2012(Pasour, 1987).

As this study focuses on the political factors affecting the disbursement of RDBs loans, the first main dependent variables are loan per capita (loan).[14] Moreover, due to the assumption that the political motive more obvious close to the election price, we expect that this affects the price of the loans, or price. The variables loan and price are important variables as they will test the potential for rent-seeking through a political process (Pasour, 1987). In order to enhance our understanding of the phenomenon, we verify whether the RDBs increase their deposit rate near the election dates to attract more depositors as they need to finance their political loans. If so, we expect the third dependent, or pr_Deposit will be affected. To confirm the political lending, we set the interest spread as the fourth dependent variable, which enables us to test the consistency of the political pattern as the interest spread is the difference between the price of loans and the price of deposits.

We finalise the analysis by examining whether there is an external intervention from the central government through injecting a certain amount of funds and affect the RDBs' assets (asset) to finance the loans close to the election dates or whether distributing loans is a deliberate decision taken by RDBs which adjust their securities holdings (securities).[15]

Therefore, the following model has been set in order to empirically answer the hypotheses:

[14] Variable loans deflated using a regional GDP deflator, based on the year 2000.

[15] 'Variable securities' is the sum of the percentage of placing funds to the central bank, interbank placement, and securities investment.

$$\text{Loans}_{j,k,t} = \alpha_{j,t} + \gamma_1\text{Elect}_{k,t} + \gamma_2\text{Politics}_{k,t} + \gamma_3\text{Elect}_{k,t}\#\text{Politics}_{k,t} + \text{Control}_{k,t} + c_k + u_{j,k,t} \ldots\ldots \quad \text{Eq. 2- 2}$$

$$\text{Loan\_MSME}_{j,k,t} = \alpha_{j,t} + \gamma_1\text{Elect}_{k,t} + \gamma_2\text{Politics}_{k,t} + \gamma_3\text{Elect}_{k,t}\#\text{Politics}_{k,t} + \text{Control}_{k,t} + c_k + u_{j,k,t} \ldots\ldots \quad \text{Eq. 2- 3}$$

$$\text{Price}_{j,k,t} = \alpha_{j,t} + \gamma_1\text{Elect}_{k,t} + \gamma_2\text{Politics}_{k,t} + \gamma_3\text{Elect}_{k,t}\#\text{Politics}_{k,t} + \text{Control}_{k,t} + c_k + u_{j,k,t} \ldots\ldots \quad \text{Eq. 2- 4}$$

$$\text{Pr\_Deposit}_{j,k,t} = \alpha_{j,t} + \gamma_1\text{Elect}_{k,t} + \gamma_2\text{Politics}_{k,t} + \gamma_3\text{Elect}_{k,t}\#\text{Politics}_{k,t} + \text{Control}_{k,t} + c_k + u_{j,k,t} \ldots\ldots \quad \text{Eq. 2- 5}$$

$$\text{Asset}_{j,k,t} = \alpha_{j,t} + \gamma_1\text{Elect}_{k,t} + \gamma_2\text{Politics}_{k,t} + \gamma_3\text{Elect}_{k,t}\#\text{Politics}_{k,t} + \text{Control}_{k,t} + c_k + u_{j,k,t} \ldots\ldots \quad \text{Eq. 2- 6}$$

$$\text{Securities}_{j,k,t} = \alpha_{j,t} + \gamma_1\text{Elect}_{k,t} + \gamma_2\text{Securities}_{k,t} + \gamma_3\text{Elect}_{k,t}\#\text{Securities}_{k,t} + \text{Control}_{k,t} + u_{j,k,t} \ldots\ldots \quad \text{Eq. 2- 7}$$

Where:

$\text{loan}_{j,k,t}$ = Loans per capita of RDB j in province k at time t

$\text{price}_{j,k,t}$ = Price of loans[16] of RDB j in province k at time t

$\text{pr\_deposit}_{j,k,t}$ = Price of deposits of RDB j in province k at time t[17]

$\text{asset}_{j,k,t}$ = Total Assets per capita of RDB j in province k at time t

$\text{loan\_MSME}_{j,k,t_{j,k,t}}$ = Loans to Micro, Small and Medium Enterprises (MSMEs) (loans to MSMEs/Total loans) of RDB j in province k at time t

elect = Variable Elect consists of three types of variables; firstly, variable **On,** or a dummy variable for the scheduled election years (1 is for election year, 0 otherwise);[18] secondly, variable **Pre,** or a dummy variable for one year before the scheduled election year; and thirdly, variable **Post,** or a dummy variable for one year after the scheduled election year.

$\text{politics}_{k,t}$ = Political indicators are: firstly, variable align, or a dummy variable (if the regional government or the governor of province k was aligned[19] with the national winning party at time t, and 0 otherwise); secondly, variable first_TR, or a dummy variable (1 if the regional government k was led by the elected governor at time t who is going to be elected for a second term, 0 otherwise); thirdly, variable comm or the proportion of politicians as commissioners or the total politicians sitting as commissioners at RDB j divided by the total commissioners at RDB j.

$\text{elect}_{k,t}\#\text{politics}_{k,t}$ = Interaction variables between variables elect and politics.

$\text{control}_{k,t}$ = Control variables, such as Securities (Sum of funds placed at the central bank, other banks and securities of RDB j in province k at time t/ Total Assets);[20] branch (total branches of each RDB per province per year; log and lagged); rgdp (regional GDP per capita; log and lagged); electric (the percentage of the accessibility to electricity); rice (the price of the rice which has been deflated using the GDP deflator with the basis year 2000; log and lagged).[21]

c_k : is regional (or provincial) fixed effect (unobserved heterogeneity).

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[16] We use an implicit price: price= interest income/total loans.

[17] pr_deposit=interest expenses/total deposits

[18] As we employ yearly data, then we set a cut-off point, June, in order to determine the election year. For instance, if the election date occurs in June 2012, then the election year will be in year 2012 and year 2011.

[19] Alignment occurs when at least one of the supporting parties of the elected governor is a member of the national winning parties.

[20] We exclude variable securities as one of the control variables in Equation 2-7.

[21] The control variables are lagged one year, except for variable electric, as we assume that this variable is purely exogenous as improvement in infrastructure might affect the demand for loans, but higher loans does not mean that infrastructure is improved. This is because to invest the electricity in a particular area requires a lot of money, and there are time and bureaucratic constraints involved.

If political influence affects the lending of RDBs, then we expect a certain pattern of the political indicators (align, first_TR, comm) near to the election year, or it should have a significant impact during the pre- or/and on-event. If the lending has political motives, we expect an increasing in loans but not followed by the growth of the interest gained (price) run up to the election years. The RDBs might try to attract the depositors (pr_deposit) in order to finance their lending and it will reduce the spread of the interest.

We use the interaction model as this method enables us to interact the election times (**pre, on** and **post**) with the other political indicators' variables (align, first_TR, or comm). This is because we suspect that there is no single main model that affects the dependent variable, and variable elect (pre, on, post) may be moderated by these three variables, align, first_TR, or comm. We emphasise the interaction effect rather than the main effect because the main effect assesses the constant effect of an independent variable on a dependent variable, generalised across all levels of the moderator variable. If the interaction variable is statistically significant, this indicates that no such constant effect occurs, so the main effect is meaningless (Hays, 1983; Jaccard et al., 1990; Hayes, 2005).

According to the variable align, we need to check the political affiliation of every governor in every province from 1993 until 2016. Moreover, before a direct election, all governors are appointed by a provincial parliament, which means that all governors are chosen by a national winning party (Golkar, under Suharto's alliance). As Suharto was a former military officer, almost all governors from all provinces before 2004 (excluding Daerah Istimewa Yogyakarta) had held military positions. However, after the implementation of the direct election, there is a chance that a governor from a non-military sector may have been elected. There have been three presidential elections since 2004 (2004, 2009, and 2014). Susilo Bambang Yudhoyono (SBY) was elected as President in 2004 and 2009, and Joko Widodo was elected in 2014. The national winning party was the Democratic Party in years 2004 and 2009, of which SBY was the leader, and in 2014, it was the Indonesian Democratic Party of Struggle (PDI-P). Furthermore, the Democratic Party is affiliated[22] with other parties as well as the

[22] Under Suharto's regime, which was called 'Orde Baru' (New Era), Indonesia had only three main parties: Partai Golkar (Functional Group Party, or Golkar), Partai Demokrasi Indonesia (Indonesian Democracy Party), and Partai Persatuan Pembangunan (United Development Party, or PPP). Golkar won every election of those held in 1977, 1982, 1987, 1992, and 1997. Because of this, demonstrations occurred in 1997, demanding that Suharto resign as President of Indonesia. After having experienced several political changes, Indonesia has entered another era called The Reformasi Era. In the 1999 election, Indonesia had 48 parties, a dramatic increase compared to the previous election. However, after the new system of direct election was introduced in 2004, the number of parties declined to 24 (Tan, 2006). During the national elections in 2004 and 2009, the Partai Demokrat (Democratic Party) was the winner. Moreover, the Democrats made open coalitions with other parties; for example, Golkar, the Prosperous Justice Party (PKS), the United Development Party

PDI-P;[23] therefore, we must take this affiliation information into account in order to assess whether parties are aligned with the winning party or not.

Regarding the variable first_TR, this study considers the elected governors of every province who were re-elected for a second term. By obtaining this information, we can observe whether a political connection between the elected leaders exists as they have greater networking ability, and with the power that they have, it is possible to direct resources from RDBs to finance their political activities to get elected a second time. For the variable comm, we use the commissioners' names instead of the directors' names.[24] This is because we have observed that a regional government, in order to conform with supervisory and advisory rules, appoints its own representatives to sit on the commissioner's board. These representatives mostly consist of bureaucrats or political bureaucrats and politicians (these conditions have also been confirmed by Nam & Nam, 2004). We used several steps to classify political connections within RDBs. Firstly, we gathered the names of the bank commissioners from the banks' annual reports issued from 1995[25] until 2014. Secondly, we collected the biographies of each person. Thirdly, we used data from the Indonesian Banks Association's directory to determine whether any of the commissioners had political backgrounds. Finally, we manually retrieved data from various websites to check the information obtained in the first step and to complete information not found in the previous steps.

2.3.1.2 Control variables

The control variables used in this study cover the financial indicators of the RDBs as well as the geographical indicators. As this paper uses regional data, the possibility of having regional geographical variations is very likely to influence the results of the data. We therefore use three main indicators to control for geographical factors. Firstly, we use the regional GDP per capita or (rgdp) in order to capture the environment of the regions, as suggested by Green (2004) and Boulhol, De Serres and Molnar (2008). Secondly, we use the variable electric or the percentage of electricity access per

(PPP), the National Awakening Party (PKB), and the National Mandate Party (PAN). Therefore, this study accounts for coalition parties when deciding whether parties are aligned or not.

[23] The Great Indonesia Coalition (often abbreviated as KIH) is the coalition of political parties in Indonesia that supported Joko Widodo-Jusuf Kalla in the 2014 Presidential election. This coalition consisted of PDI-P, PKB, NasDem (National Democratic) Party, Hanura Party, and PKP Indonesia. The coalition was declared during the Jokowi-JK Declaration on 19 May 2014 at Djoeang Building, Jakarta. The political dynamics in Indonesia made the coalition stronger. In October 2014, the United Development Party joined. Finally, in September 2015, the National Mandate Party (PAN) formally joined and declared itself out of the Red and White Coalition, as it (Red and White Coalition) supported Joko Widodo's rival, Prabowo Subianto in the Presidential election.

[24] Indonesia has a dual board system whereby each bank has a board of commissioners and a board of directors. The board of commissioners performs the supervisory and advisory roles, while the board of directors performs the executive roles (Nam & Nam, 2004).

[25] The information on the commissioner's names is available from 1995.

province. This variable enables us to capture the disparity among regions due to infrastructural development. While variable rgdp might capture the welfare of each region, sometimes it is not necessarily offset by the existence of good infrastructure, such as electricity. Based on The National Medium-Term Development Plan 2015-2019 issued by the Ministry of National Development Planning / National Development Planning Agency of Indonesia, infrastructural development efforts are focused on disadvantaged areas in order to address inequality. Good infrastructure is important in every region as it stimulates economic activity and increases economic opportunities (Payne, 2010; Tusianti, Rosiana, Solihat, and Andre, 2017), while GDP per capita might not be able to fully capture the economic potential of the region as the denominator is the total population and some provinces are rich when combined, but since they have a large population, this becomes smaller after having divided it by the total population. In addition, this variable (electric) is purely exogenous as it may affect the demand for loans, but higher loans do not necessarily improve access to electricity, as the decision for investing in infrastructure depends on the government, either central government or cooperation between the regional government and the central government as a great deal of financing is required. Thirdly, we use the variable rice, or the price of the staple food of the Indonesian population. The price of rice is actually very important in managing economic stability, as this commodity is a staple food that Indonesians consume every day (Olken, Banerjee, Hanna, Kyle, & Sumarto, 2017). The price of rice demonstrates inflation in each region as it contributes to the fifth largest Indonesian inflation in 2017, or around 16% based on data from the Indonesian Central Bureau of Statistics. Understand the potential problem might occur by having the unstable price of rice, the Indonesian government has set some policies. The Indonesian government, through Bulog (Indonesian Agency for Logistic), tries to control the price by trying to buy as much as possible from the farmers directly, without going through agents or middlemen, and subsidise the rice for the low-income people (Sindo, 2018[26]; Tempo, 2016[27]). Another action is set a new program called Poverty Alleviation Program Delivery, which one of the programs is to provide rice for the poor, Bulog has distributed 15kg of rice per month to 17.5 million households, at the subsidised price (Cull, Haber, & Imai, 2011).

Moreover, in terms of the financial control variables, we use two indicators, first, securities, or the proportion of RDBs funds that is placed in the central bank, other banks and the securities. This variable has been chosen in order to observe the behaviour of the banks (as reported by the Central

[26] "Lindungi Petani dari Kartel Beras, Bulog Gandeng Polisi-TNI" [Protecting the Farmers from the Rice Cartel, Bulog Cooperates with the Police-TNI], *Sindo*, May 6, 2018

[27] "KPPU (Komisi Pengawas Persaingan Usaha) Mengaku Sedang Investigasi Praktik Kartel Harga Beras" [KPPU or Commission for the Supervision of Business Competition informs that they are investigating the practice of Rice Price Cartel], *Tempo*, March 1, 2016

Bank of Indonesia) that tend to put their money in places that may offer high-interest income, such as in government bonds or stocks, while variable branch is used to capture the impact of the size of the banks. The relationship between regional GDP and the lending distribution (loan) or price of loans (price), the price of deposits (pr_deposit), spread, and asset and securities can either be positive or negative. Following the idea of (Cull, Haber, & Imai, 2011), if the distribution of loans depends on business cycle, then increasing in Regional GDP has positive impact with total loans. Moreover, concerning the mandate that the RDBs have, as government-owned banks, we expect a negative relationship between rgdp and loan, but a positive relationship with the variable price (Gibson & Olivia, 2010) if the RDBs implement their mandate as a regional public banks. While price of deposit (pr_deposit) can either be positive or negative or insignificant, affected by rgdp. ‘Positive’ means that the banks grant higher interest rates for rich regions and reduce the deposit interest rates for poor regions. Meanwhile, ‘negative’ shows the opposite. ‘Insignificant’ means the level of the interest rate is already set, and this does not depend on the rgdp. It might be possible that the rate increases in line with the level of fund deposits in the banks, and the minimum interest rate is set by the central bank. However, variables rgdp and spread should be related to the pattern of the price of deposits and the price of loans. Regarding variable assets, we expect the rgdp and asset are positively related as it indicates that the development of the regions is tandem with the development of the RDBs’ assets.

The variable electric might have a positive relationship with the variable loan as it shows that development in the infrastructure should affect employment and income from rural nonfarming business (Hakenes & Schnabel, 2006), which might in turn affect the demand for money (as the economy starts to develop) and the demand for MSME loans. A developing region will be impacted by the price of the loans (price) as borrowers are promised high interest rates as they have more endowment, a promising business (Hakenes & Schnabel, 2006). However, the price of deposits (pr_deposit) can be either affected. The price of deposits might increase as more deposits are collected by the banks as an effect of economic development. Therefore, we also expect a positive relationship between the variables electric and asset.

The relationship between variable rice and loan is expected to be positive. A higher price of rice will impact the purchasing power of the people, which in the end will push them to borrow more money from the banks to cover their needs, as the increasing price is taking up their funds that they have budgeted for other purposes. The price of rice should affect the price of loans (price) and price of deposits (pr_deposit) in a positive way as it indicates inflation growth in the region, and the banks should adjust their interest rates to calm down the impact. This variable might influence the variable asset, the higher the price of rice might reduce the level of the deposits because people need to spend more and will automatically reduce the money they are saving, and total assets decrease. Alternatively, people will withdraw their money from the bank due to the increasing prices. However, the opposite might happen if the Central Bank increases interest rates in order to attract more depositors and reduce inflation. The placing funds to securities might be affected, as the price pushes the inflation, the banks might reduce their loans and shift it to the securities.

The variable securities has been chosen in order to observe the behaviour of the banks (as reported by the Central Bank of Indonesia) that tend to put their money in places that may offer high-interest income, such as in government bonds or stocks. Here, we expect that variable securities will have a negative relationship with the distribution of loans, but a positive relationship with the variable price. This is because when they increasingly place funds in securities, there is a lower amount of money that is left to be distributed to the people, but there is more interest generated from the investment, which might increase the spread of the bank. However, the action of shifting money in securities might or might not affect the price of deposits. If the banks assume that they can gain a profitable investment, they might increase the level of the interest rates to attract more depositors, and again, they will place more money in securities. This might happen as placing funds to securities is quite simple and not particularly costly compared to do lending as the banks need to analyse the potential borrowers and ensure that the borrowers are able to repay their loans on time, including the interest.

In terms of variable branch, we expect a positive relationship with the loan distribution, and this in line with interest income generated. The price of deposit should also increase in such circumstances indicates the scale of the economy, as the bigger the size of banks, the level of deposits amount increase and consequently, the banks need to pay more interest deposits. Automatically, the spread of the banks and the assets of the banks will be affected.

2.4.2 Data

2.4.2.1 Source of Data and Classifications

The data used in this research are of two main types, financial reports of RDBs and macroeconomic data for every province in Indonesia. The main source of the first type of data is the central bank of Indonesia (BI), the Financial Services Authority (OJK), and some official RDBs' websites. The Central Bureau of Statistics Indonesia (BPS) is the source for the second type of data.

As this study focuses on political factors affecting the disbursing of RDBs' loans, the data for the main political indicators such as elect, align, and first_TR for every province were collected from various resources, such as from General Election Commissions (KPU), the Ministry of Home Affair, and some official national and local newspapers. Moreover, the data for variable comm were obtained from the financial reports for each RDBs per year per province. The study makes use of unbalanced panel data of 26 RDBs and covering mostly the period 1993-2016. Table 2-1 shows the information about political situation around RDBs.

Table 2- 1. Political situation around RDBs after the implementation of direct election

No	Provinces	Election Year	Margin of Victory	Year of having alignment	Year of having Incumbent[28]
1	Nanggroe Aceh Darussalam (NAD)	2006; 2012; 2017	21.56% 26.6% 53.5%	1993-2006	-
2	Bali	2008; 2013	28.33% 0.04%	1993-2008; 2014-2016/	2013-2016
3	Bengkulu	2005; 2010; 2017	8.6% 7.70% 14.70%	1993-2016	2010-2015
4	DKI Jakarta	2007; 2012	15.74% 7.64%	1993-2012; 2015-2016	-
5	Papua	2006; 2013; 2017	1.88% 33.80% 32.20%	1993-2006/ 2014-2016	-
6	Jambi	2005; 2010; 2015	66.65% 14.91% 20.46%	1993-2016	2005-2010
7	Jawa Barat (West Java)	2008; 2013	5.95% 3.98%	1993-2008; 2010-2016	2013-2016
8	Jawa Tengah (Central Java)	2008; 2013	20.65% 18.26%	1993-2008; 2015-2016	-
9	Jawa Timur (East Java)	2008; 2013	0.04% 9.63%	1993-2008; 2014-2016	2014-2016
10	Kalimantan Barat (West Kalimantan)	2007; 2012	12.73% 27.00%	1993-2007; 2013-2016	2013-2016
11	Kalimantan Selatan (South Kalimantan)	2005; 2010; 2015	10.41% 24.20% 0.69%	1993-2005; 2011-2016	2010-2015
12	Kalimantan Tengah (Central Kalimantan)	2005; 2010; 2015	23.33% 4.61% 3.02%	1993-2005/ 2015-2016	2011-2014
13	Kalimantan Timur (East Kalimantan)	2008; 2012	2.00% 6.60%	1993-2016	-
14	Lampung	2008; 2014	22.60% 11.84%	1993-2008; 2014	-
15	Maluku	2008; 2013	35.80% 0.94%	1993-2016	2008-2013
16	Nusa Tenggara Barat (West Nusa Tenggara)	2008; 2013	12.45% 17.85%	1993-2016	-
17	Nusa Tenggara Timur (East Nusa Tenggara)	2008; 2013	2.95% 7.24%	1993-2008; 2014-2016	2013-2016
18	Riau	2008; 2013	36.00% 5.80%	1993-2013	-

[28] We only account the years of the incumbent's government after the implementation of the direct election. Variable first_TR is observing the behaviour of the incumbent in their first period of their administration and how their reaction toward their second election event.

Table 2-1. Political situation around RDBs after the implementation of direct election (con't)

No	Provinces	Election Year	Margin of Victory	Year of having alignment	Year of having Incumbent
19	Sulawesi Selatan (South Sulawesi)	2007; 2013	0.80% 10.80%	1993-2016	2013-2016
20	Sulawesi Tengah (Central Sulawesi)	2006; 2011, 2015	2.70% 38.03% 9.00%	1993-2016	-
21	Sulawesi Tenggara (Southeast Sulawesi)	2007; 2012	3.44% 21.50%	1993-2007; 2013-2016	2013-2016
22	Sulawesi Utara (North Sulawesi)	2005; 2010; 2015	17.99% 6.85% 20.00%	1993-2005; 2011-2016	-
23	Sumatera Barat (West Sumatera)	2005; 2010; 2015	17.92% 6.22% 17.14%	1993-2015	-
24	Sumatera Selatan (South Sumatera)	2008; 2013	2.80% 3.90%[29]	1993-2014	2013-2016
25	Sumatera Utara (North Sumatera)	2008; 2013	6.62% 4.78%	1993-2016	-
26	DI Yogyakarta	-	-	1993-2016	2003-2016

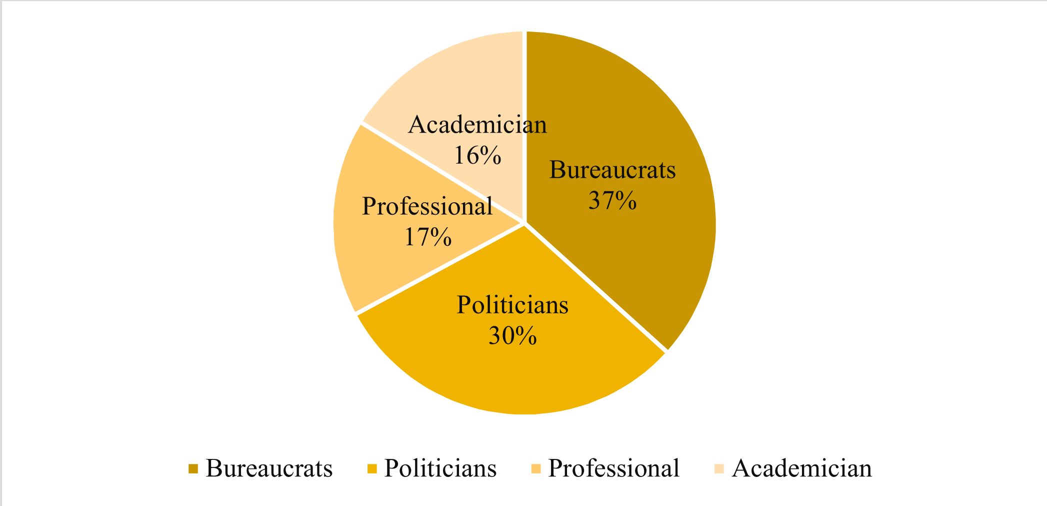
(Source : General Election Commissions (KPU), Ministry of Home Affair of Indonesia, and some official national and local newspapers)

Furthermore, during the observation period, the number of provinces has changed, from 26 provinces become 34 provinces [see the details about the new provinces at chapter one]. These new provinces are also running the direct election in their region; however, we only employ the impact of the politics in the original provinces by assuming that impact of the direct election in these established provinces is stronger than in the new provinces. Regarding variable comm, figure 2-1 reveals the proportion of bureaucrats, and politicians that sat on the RDBs' board from 1995 to 2016[30].

[29] The candidates were elected in the first round but was cancelled by Constitutional Court (*Mahkama Konstitusi or MK*) as it found the existence of structured, systematic, and massive planning in two districts, two cities and one sub-district that significantly affect the votes of each candidate pair (Beritasatu.com, 2013).

[30] There is unavailable data about the names of RDBs' commissioners before 1995.

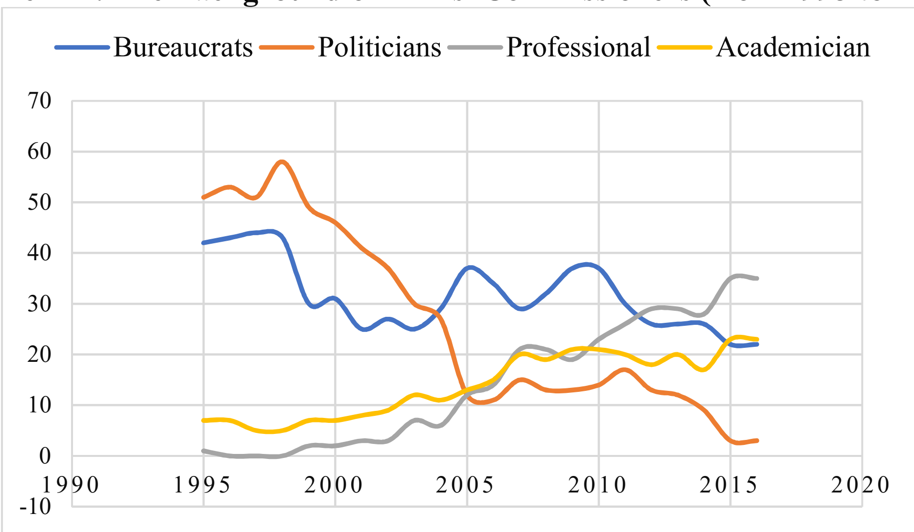
Figure 2- 1. The Background of RDBs' Commissioners



(Source: Author's compilation based on RDBs' financial reports, General Election Commissions (KPU), Ministry of Home Affairs (Indonesia), and some official national and local newspapers)

Based on the figure 2-1, the most common career background of commissioners was bureaucrats with 37%, followed by politicians (30%), professionals (17%), and academicians (16%). The proportion of the commissioners are different from year to year. Figure 2-2 shows the proportion of the commissioners from year 1995 up to 2016 based on their career background.

Figure 2- 2. The Background of RDBs' Commissioners (from 1995 to 2016)



(Source: The financial report of RDBs based on BI Report and OJK Report)

Referring to the figure 2-2, the backgrounds of the commissioners, as bureaucrats, politicians and professionals (mostly bankers with one commissioner being a Pastor) and academics, vary across regions. However, a pattern can be seen in this figure, which is that the proportion of bureaucrats and politicians has declined steadily, whereas the proportion of academics and professionals seems to have increased gradually. These changes may be occurring as a response to the suggestion made by

OJK (Financial Services Authority of Indonesia) to improve the management system of RDBs and to implement good corporate governance. One of the main principles of good corporate governance stressed by OJK is independence, which refers to the ability to manage the bank in a professional manner without any conflict of interest or influence/pressure from other parties.

Furthermore, interestingly, some RDBs have regional leaders that sit on their board, such as Governors, vice Governors, Majors, or District Heads. These individuals have been noted down as politicians in this paper and added to the list of other politicians, leading to the regional patterns shown in the previous tables. In order to get clear information about which RDB has a Governor, vice Governor, Major, or District Heads as commissioners on their board, table 2-2 can be consulted.

Table 2- 2. The Background of the Commissioners in RDBs

RDBs from	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nanggroe Aceh Darussalam	G	G	G	G	G	G	G	-	-	-		G	G	G	G	G	G	G	-	-	-	-
North Sumatera	G	G	G,VC	G,VC	G,VC	G,VC	G,VC	G	D	D	D	D	D	-	-	-	-	-	-	-	-	-
West Sumatera	G,VC	G,VC	G,VC	G,VC	-	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Riau	G,VC	G,VC	G,VC	G,VC	G,VC	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	-	-
Jambi	G,D	G,D	G,D	G,D	G,D	G,D	G,D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South Sumatera	G	G	G	G	VG	VG	G	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-
Bengkulu	G	G	G	G	G	-	-	-	G,VG,D	G,VG,D	-	-	-	-	-	-	-	-	-	-	-	-
Lampung	G,VG,M	G,VG,M	G	G,VG,M	VG,M,D	VG,M,D	M	M	M	M	D	D	D	D	D	D	D	-	-	-	-	-
DKI Jakarta	G,VG	G,VG	G,VG	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West Java	G,VG	G,VG	G,VG	G,VG	G	G	G		G	-	-	-	-	-	-	-	-	-	-	-	-	-
Central Java	G	G,VG	G,VG	G,VG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D.I. Yogyakarta	G,D	G,D	G	G	G,D	G,D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
East Java	G	G	G	G	G	G	G	-	G	G	G	G	G	-	-	-	-	-	-	-	-	-
Bali	G	G	G	G	G	G	G	-	G	G	-	-	-	-	-	-	-	-	-	-	-	-
West Nusa Tenggara	G,VG,D	G	G,VG,D	G,VG,D	G,D	G	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-
East Nusa Tenggara	G	G	G	G	G	G	-	-	G	G	-	-	-	-	-	-	-	-	-	-	-	-
West Kalimantan	G,VG	G,VG	G,VG,M	G,VG,M	G	G	-	-	D	D	D	D	D	D	D	D	D	D	D	-	-	-
Central Kalimantan	VG	VG	G	G	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	D	D	D	D	D	-	-	-
South Kalimantan	G	G	G	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
East Kalimantan	G,VC	G,M	G,M	G,M	G	G	G	G	G	G						G	G	G	G	G	-	-
North Sulawesi	G	G	G	G	G	G	G	G	-	-	-	M	M	M	M	M	M	M	M	M	-	-
Central Sulawesi	G,D	G	G	G	G	G,VG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South Sulawesi	G	G	G	G	G	G	G	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-
Southeast Sulawesi	G	G	G	G	G	G	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-
Maluku	G	G	G	G	G	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Papua	G	G	G	G	G	G	G	G	-	-	-	-	-	-	-	-	-	G	G	G	-	-

Source : Author's compilation based on RDBs' financial reports, General Election Commissions (KPU), Ministry of Home Affair, and the official RDBs' website and the local newspaper. G= Governor; VG = Vice governor; M= Major; D = District Head

Referring to the table 2-2, the proportion of regional leaders, such as Governors, vice Governors, Majors and District Heads, differ in each province. However, there is one thing that is similar across RDBs in all regions before 2004; there were many regional heads who sat as commissioners of their RDBs but this has slowly diminished since 2004. Comparing the situation on each island, since 2004, RDBs on the island of Java have no regional leaders who sit as commissioners, while some RDBs in Sumatra, Kalimantan, and Sulawesi still have regional leaders as a part of the commissioners' board.

2.4.2.2 Exploratory Data Analysis

To investigate political influences on RDBs' lending distribution, we will focus on four main political indicators, which are: $elect$[1], $align$, $first\_TR$ and $comm$. Together with the control variables, we expect to find significant evidence using the statistical model proposed. Moreover, with the aim of obtaining a prior understanding of the analysis, this session will show the descriptive statistics that demonstrate the structure of the data used in this study.

Table 2-3 shows the aggregate descriptive statistics while Table 2-4 shows the details of the aggregate number in each region. As is shown in Table 2-3, the number of observations differs for each variable, especially geographical variables, due to the unavailability of some data in certain years. The loans disbursed by RDBs vary from 0.007 per head (in million rupiah, or about Rp. 7,000 per head) up to 1.201 per people (or approximately Rp. 1,201,000 per head). Referring to Table 2-4, the RDB from East Kalimantan distributes the highest loans (per capita) with 0.455 followed by Bali, DKI Jakarta and West Sumatera, while the lowest loans are distributed by the RDB from Lampung with 0.060 and Central Sulawesi with 0.065 (per capita). The percentage of loans to MSME (over total loans) is distributed around 45%. The deviation in the proportion of MSME loans is quite high, as the smallest proportion is 1% (from the total loans) up to 100%. Regionally, Table 2-4 shows that RDBs from North Sumatera provide the highest proportion of loans to MSMEs in aggregate, at around 83%, while the lowest proportion is distributed by the RDB from North Sulawesi, at around 16%.

Regarding the price, the average interest gained is 27.7%, while the interest paid to the depositors is around 16.9%, or around 10.7% difference (interest spread). Thus, the following are Tables 2-3 and 2-4 respectively.

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[1] Variable $elect$ consists of variable on, pre, and $post$.

Table 2- 3. Descriptive Statistics for the main variables (Total) [2]

Variables	N		mean	min	max	sd	p25	p50	p75
The dependent variables									
loan	617	loan per capita	0.209	0.007	1.201	0.200	0.071	0.145	0.281
loan_MSME	400	percentage over total loans	0.450	0.001	1.000	0.341	0.156	0.333	0.806
price	617	interest income/total loans	0.277	0.026	3.009	0.184	0.185	0.229	0.314
pr_deposit	617	interest expenses/total deposit	0.169	0.008	1.439	0.075	0.132	0.159	0.194
spread	617	price of loans-price of deposit	0.107	-0.270	1.569	0.148	0.025	0.063	0.150
asset	617	totals asset per capita	0.421	0.025	7.381	0.497	0.151	0.274	0.557
The political indicators									
on	624	the election years	0.139	0	1	0.347	0	0	0
pre	624	a year before the election year	0.095	0	1	0.293	0	0	0
post	624	a year after the election year	0.090	0	1	0.286	0	0	0
align	624	status of alignment with the National Government	0.865	0	1	0.342	1	1	1
first_TR	624	first term of the incumbent	0.127	0	1	0.333	0	0	0
comm	568	total politicians/total board members	0.298	0	1	0.312	0	0.250	0.500
The control variables									
securities	617	Sum of total funds place in central banks, other banks and the securities/total asset	0.347	0.020	0.910	0.170	0.230	0.320	0.440
branch	614	total branches	14.998	2.000	62	10.871	7.000	12.000	20.000
rgdp	624	rgdp per capita	8.360	1.300	47.030	7.889	4.155	5.880	8.310
electricity	582	percentage of electricity access	0.728	0.159	1.000	0.210	0.584	0.757	0.921
rice[3]	567	price of rice (Rp/kg)	59,354	914	324,663	67,550	10,880	30,779	85,533

Source: Author's estimation

[2] Variable on, pre, post, align, first_TR, comm are dummy variables. N is total observations; Max: maximum amount; Min: minimum amount; Mean: average amount; SD: standard deviation; p25: 25th percentile; p50 : 50th percentile (same as median); p75 : 75th percentile. All the banking level data is in million Rupiah.

[3] In this section, the price of rice has not been deflated by the regional gdp deflator. We show the original number in order to show the fluctuate price of each region in rupiah every year.

Table 2- 4. Descriptive Statistics per region (per province)

Provinces	Stat.	on	pre	post	align	first_TR	comm	loan	loan_MSME	price	pr_deposit	spread	asset_cap	securities	branch	rgdp	electric	rice	population
Nanggroe Aceh Darussalam	mean	0.17	0.13	0.08	0.58	0	0.35	0.33	0.45	0.24	0.13	0.12	0.74	0.34	13.63	9.46	0.8	51526.68	4329167
	sd	0.38	0.34	0.28	0.5	0	0.26	0.23	0.36	0.11	0.04	0.13	0.48	0.23	5.75	2.09	0.2	52978.57	561426
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	21	22	24
Bali	mean	0.13	0.08	0.08	0.79	0.21	0.2	0.44	0.54	0.26	0.18	0.08	0.67	0.33	11.58	6.61	0.95	59342.85	3479167
	sd	0.34	0.28	0.28	0.41	0.41	0.27	0.26	0.18	0.18	0.07	0.13	0.32	0.24	1.38	1.45	0.06	68146.66	466233
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
Bengkulu	mean	0.13	0.08	0.08	1	0.21	0.21	0.18	0.38	0.23	0.18	0.06	0.28	0.25	5	4.04	0.73	58840.53	1866667
	sd	0.34	0.28	0.28	0	0.41	0.31	0.14	0.43	0.07	0.06	0.08	0.19	0.12	2.54	0.86	0.17	69135.69	1095710
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
Papua	mean	0.17	0.08	0.08	0.71	0	0.21	0.31	0.41	0.33	0.15	0.18	0.77	0.44	15.67	8.72	0.49	71963.76	2891667
	sd	0.38	0.28	0.28	0.46	0	0.2	0.27	0.27	0.13	0.05	0.11	0.41	0.17	8.97	1.48	0.14	71624.98	942668
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
DKI Jakarta Raya	mean	0.13	0.13	0.08	0.92	0	0.39	0.43	0.39	0.25	0.15	0.11	1.28	0.39	14.17	33.4	1	57862.63	9633333
	sd	0.34	0.34	0.28	0.28	0	0.46	0.29	0.4	0.2	0.07	0.2	1.63	0.22	7.23	7.76	0	63799.62	1591190
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	11	22	24
Jambi	mean	0.21	0.13	0.13	1	0.21	0.29	0.09	0.26	0.28	0.16	0.12	0.18	0.35	7.75	4.75	0.61	80920.28	2854167
	sd	0.41	0.34	0.34	0	0.41	0.31	0.05	0.36	0.12	0.05	0.1	0.08	0.14	2.17	1.12	0.18	99151.50	581586
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
West Java	mean	0.17	0.08	0.08	0.96	0.21	0.27	0.15	0.48	0.24	0.17	0.07	0.25	0.3	40.04	6.64	0.94	48852.18	48000000
	sd	0.38	0.28	0.28	0.2	0.41	0.32	0.09	0.34	0.08	0.03	0.06	0.15	0.1	13.01	1.5	0.06	56881.19	7451170
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
Central Java	mean	0.17	0.08	0.08	0.75	0	0.12	0.1	0.5	0.23	0.17	0.05	0.17	0.27	33.92	4.72	0.92	54906.03	32500000
	sd	0.38	0.28	0.28	0.44	0	0.19	0.06	0.33	0.08	0.05	0.06	0.07	0.1	1.32	1.15	0.12	59652.15	3488854
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
East Java	mean	0.08	0.08	0.08	0.79	0.21	0.15	0.09	0.64	0.25	0.15	0.1	0.18	0.35	35.29	7.59	0.91	49540.86	37100000
	sd	0.28	0.28	0.28	0.41	0.41	0.14	0.05	0.21	0.1	0.02	0.08	0.07	0.16	5	1.89	0.12	52721.31	4402733
	N	24	24	24	24	24	22	24	11	24	24	24	24	24	24	24	23	22	24
West Kalimantan	mean	0.08	0.08	0.08	0.79	0.21	0.23	0.23	0.66	0.26	0.15	0.1	0.4	0.35	15.17	5.94	0.63	56622.03	4158333
	sd	0.28	0.28	0.28	0.41	0.41	0.15	0.17	0.38	0.09	0.03	0.08	0.24	0.18	2.65	1.3	0.14	64957.43	456753
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24

Source: Author's estimation

Table 2-4. (continued)

Provinces	Stat.	on	pre	post	align	first_TR	comm	loan	loan_MSME	price	pr_deposit	spread	asset_cap	securities	branch	rgdp	electric	rice	population
South Kalimantan	mean	0.21	0.13	0.13	0.79	0.21	0.29	0.22	0.39	0.36	0.16	0.19	0.46	0.42	10.82	7.31	0.8	54103.83	3341667
	sd	0.41	0.34	0.34	0.41	0.41	0.38	0.2	0.25	0.25	0.07	0.19	0.33	0.15	3.55	1.63	0.14	63249.94	392225
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	22	24	23	22	24
Central Kalimantan	mean	0.21	0.13	0.13	0.63	0.21	0.56	0.19	0.3	0.36	0.15	0.21	0.41	0.42	8.38	7.54	0.59	68095.82	1991667
	sd	0.41	0.34	0.34	0.49	0.41	0.3	0.12	0.34	0.25	0.04	0.24	0.18	0.2	4.05	1.61	0.13	78703.41	309160
	N	24	24	24	24	24	22	24	15	24	24	24	24	24	24	24	23	22	24
East Kalimantan	mean	0.13	0.08	0.08	1	0	0.41	0.46	0.29	0.34	0.14	0.2	1.16	0.47	11	31.02	0.79	69681.7	3079167
	sd	0.34	0.28	0.28	0	0	0.37	0.35	0.12	0.22	0.05	0.2	0.66	0.23	3.5	2.14	0.08	75189.62	778504
	N	24	24	24	24	24	22	24	15	24	24	24	24	24	24	24	23	22	24
Lampung	mean	0.13	0.08	0.08	0.71	0	0.53	0.06	0.26	0.23	0.19	0.04	0.11	0.29	4.92	4.3	0.58	70528.48	7220833
	sd	0.34	0.28	0.28	0.46	0	0.31	0.03	0.33	0.08	0.06	0.08	0.05	0.11	0.97	1.14	0.25	87679.07	529133
	N	24	24	24	24	24	21	24	16	24	24	24	24	24	24	24	23	22	24
Maluku	mean	0.13	0.08	0.08	1	0.21	0.52	0.2	0.66	0.27	0.18	0.1	0.41	0.33	14.12	2.68	0.65	74060.99	2404167
	sd	0.34	0.28	0.28	0	0.41	0.31	0.1	0.38	0.09	0.04	0.09	0.17	0.1	2.91	0.39	0.13	103805	532001
	N	24	24	24	24	24	19	17	12	17	17	17	17	17	17	24	22	22	24
East Nusa Tenggara	mean	0.17	0.08	0.08	0.79	0.21	0.26	0.15	0.66	0.24	0.16	0.08	0.24	0.28	13.46	2.41	0.38	60605.83	4216667
	sd	0.38	0.28	0.28	0.41	0.41	0.3	0.13	0.4	0.1	0.04	0.09	0.17	0.09	7.52	0.51	0.14	70141.92	490489
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
West Nusa Tenggara	mean	0.13	0.08	0.08	1	0	0.37	0.13	0.68	0.23	0.21	0.02	0.19	0.25	7.29	3.41	0.78	50531.88	4316667
	sd	0.34	0.28	0.28	0	0	0.33	0.06	0.32	0.08	0.03	0.06	0.08	0.1	1.27	0.81	0.14	55893.44	641782
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
Riau	mean	0.08	0.13	0.08	0.88	0	0.47	0.19	0.37	0.37	0.15	0.22	0.53	0.51	14.78	20.08	0.6	75182.12	5983333
	sd	0.28	0.34	0.28	0.34	0	0.21	0.12	0.16	0.23	0.06	0.22	0.27	0.23	3.29	1.63	0.17	82088.55	1769467
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	23	24	23	22	24
South Sulawesi	mean	0.13	0.08	0.08	1	0.21	0.13	0.12	0.31	0.23	0.17	0.06	0.19	0.32	24.75	4.99	0.67	63715.72	8750000
	sd	0.34	0.28	0.28	0	0.41	0.17	0.08	0.21	0.08	0.05	0.07	0.11	0.17	7.04	1.47	0.13	65279.25	1230765
	N	24	24	24	24	24	22	24	12	24	24	24	24	24	24	24	22	17	24

Source: Author’s estimation

Table 2-4. (continued)

Provinces	Stat.	on	pre	post	align	first_TR	comm	loan	loan_MSME	price	pr_deposit	spread	asset_cap	securities	branch	rgdp	electric	rice	population
Central Sulawesi	mean	0.21	0.13	0.13	1	0	0.17	0.07	0.34	0.27	0.14	0.13	0.14	0.42	4.71	5.64	0.62	47874.74	2354167
	sd	0.41	0.34	0.34	0	0	0.19	0.07	0.24	0.16	0.06	0.16	0.11	0.16	3.09	2.01	0.15	53089.34	329663
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
Southeast Sulawesi	mean	0.08	0.08	0.08	0.79	0.21	0.17	0.11	0.2	0.29	0.2	0.09	0.22	0.35	5.5	4.31	0.58	58975.92	2037500
	sd	0.28	0.28	0.28	0.41	0.41	0.19	0.08	0.24	0.11	0.06	0.08	0.12	0.11	2.3	1.18	0.2	70744.14	428153
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
North Sulawesi	mean	0.13	0.13	0.13	0.79	0	0.34	0.24	0.16	0.31	0.23	0.08	0.38	0.31	11.04	5.14	0.87	53608.47	3158333
	sd	0.34	0.34	0.34	0.41	0	0.17	0.18	0.16	0.12	0.03	0.11	0.23	0.13	4.63	1.44	0.11	59412.66	557102
	N	24	24	24	24	24	22	24	15	24	24	24	24	24	24	24	23	22	24
West Sumatera	mean	0.21	0.13	0.13	0.96	0	0.23	0.41	0.7	0.23	0.21	0.02	0.62	0.28	26.08	6.55	0.76	59664	4758333
	sd	0.41	0.34	0.34	0.2	0	0.27	0.24	0.3	0.09	0.07	0.05	0.29	0.1	4.92	1.63	0.16	62368.04	669793
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
South Sumatera	mean	0.13	0.08	0.08	0.88	0.21	0.36	0.19	0.16	0.24	0.15	0.09	0.34	0.34	14.67	7.49	0.66	44059.9	8262500
	sd	0.34	0.28	0.28	0.34	0.41	0.44	0.15	0.06	0.12	0.04	0.09	0.23	0.15	5.04	1.65	0.18	44523.39	1066817
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
North Sumatera	mean	0.17	0.08	0.08	1	0	0.44	0.17	0.83	0.24	0.16	0.08	0.29	0.25	20.38	7.38	0.83	53405.05	12800000
	sd	0.38	0.28	0.28	0	0	0.45	0.11	0.16	0.07	0.02	0.07	0.15	0.12	7.51	1.72	0.13	54807.18	2035910
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24
DI Yogyakarta	mean	0	0	0	1	0.58	0.13	0.19	0.73	0.41	0.22	0.19	0.35	0.38	5.25	5.24	0.94	49735.28	3345833
	sd	0	0	0	0	0.5	0.21	0.12	0.24	0.59	0.26	0.33	0.19	0.13	0.53	0.96	0.08	53877.52	446220
	N	24	24	24	24	24	22	24	16	24	24	24	24	24	24	24	23	22	24

Source: Author's estimation

Regionally, the RDB from DI Yogyakarta gets the highest interest income from loans at 41%, followed by the RDBs from Riau (37%), South and Central Kalimantan (36%), and East Kalimantan (34%). However, the RDB from North Sulawesi pays the highest interest to depositors, followed by the RDBs from DI Yogya, West Sumatera and Southeast Sulawesi, while the lowest interest is identified in Aceh, East Kalimantan, Central Sulawesi and Riau. Hence, the RDB from Riau gets the highest spread at around 0.22, followed by the RDB from Central Kalimantan with 0.21, East Kalimantan with 0.20, South Kalimantan with 0.19 and DI Yogyakarta with 0.19.

The asset per capita also varies from 0.025 up to 7.381, this holds the highest standard deviation among other variables. Regionally, Table 2-4 shows that the RDB from DKI Jakarta, which is the capital city of Indonesia, has 1.28 assets per capita, while the smallest is from Lampung, at around 0.11, which is almost twelve times less than Jakarta.

The variables $on, pre, post, align$, and $first\_TR$ are dummy variables. The pattern of these variables is different for each region, while the variable $comm$ shows a big gap in the proportion of politicians sitting as commissioners. It shows that some regions do not have politicians as board members, but some do, even all the board member is full of the politicians. According to Table 5, it shows that most RDBs inside Java have few politicians sitting as commissioner members, while the RDBs outside Java, such as those from Central Kalimantan, Lampung, Maluku, Riau, and East Kalimantan have the highest proportion of politicians at around, 56%, 53%, 52%, 47% and 41% respectively.

Concerning the control variables, it shows that on average the proportion of investment (in central bank, other banks, and securities) is 35.3%, some of the RDBs invest very little at around 2%, but some put almost 100% of their funds. On average, the RDB from Riau places a higher proportion at around 51%, while RDBs from West Nusa Tenggara, North Sumatera, and Bengkulu only invest around 25% and RDB Riau invests half. With regard to the total number of branches, in average, RDBs have 15 branches in each region. The geographical indicators are also showing a disparity among regions. The RDBs from DI Yogya, Central Sulawesi, Lampung and Bengkulu have only 5 main branches, while the RDBs from West Java, Central Java and East Java have more than 34 branches in their regions.

Regarding the geographical indicators, the rgdp per capita is 8.360 on average; some of the provinces only have 1.30 per capita, while some of the provinces have 36 times higher than this. Most of the regions that have a low level of rgdp per capita are in East Indonesia, such as Maluku, East Nusa Tenggara, West Nusa Tenggara, and Papua with 2.68, 2.41, 3.41, and 4.04 respectively, although the highest is in DKI Jakarta, followed by East Kalimantan and Riau. The electricity access averages 73.8%. As this variable capture how widespread electricity access is in each region, the deviation between the minimum and the maximum values is very concerning. DKI Jakarta has 100% access to electricity, while East Nusa Tenggara only has 38% accessibility and Papua around 49%. Examining the prices of the main food, it shows that the price of rice is Rp. 59,354 on average. Moreover, when examining the regional data, the highest price of rice is in Jambi, Riau, Maluku, Papua, and Lampung. The price in those regions is around Rp. 70,000 up to Rp. 80,000 per kilogram, while the price of rice in South Sumatera, Central Sulawesi, and all regions in Java is only around half of that.

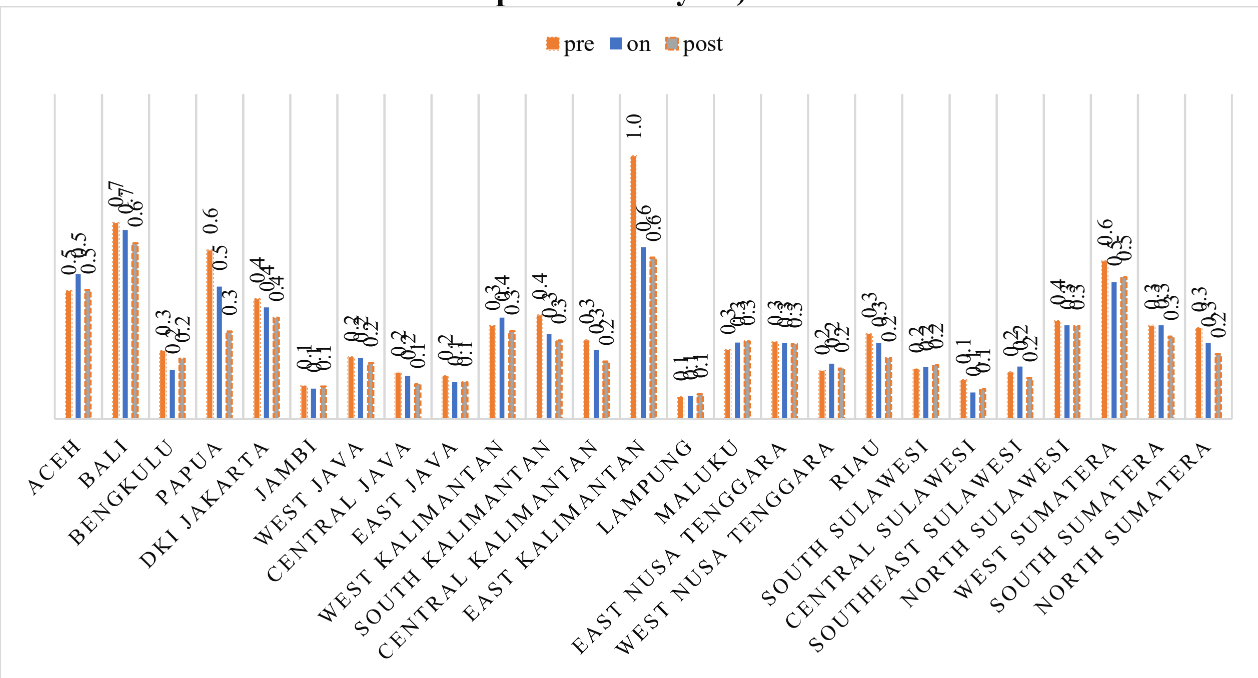
The level of the population is also important in to be observed, as two of the main dependent used in this study are based on per capita calculation, which is loans (per capita) and asset (per capita). Examining the population figure, it shows that the highest population regions are in Java island, started from West Java with 48 million people continued to East Java with 37.1 million and Central Java with 32.5 million. These might affect the regional GDP that we counted based on people, as it leads to having small rgdp, for instance: West Java has 6.64 rgdp (per capita) which even under rgdp of East and West Nusa Tenggara from Eastern Indonesia, which mostly known as a poor province. In contrast, compared with the infrastructure that they have, West Java, East and Central Java have almost 100% access for the electricity while East Nusa Tenggara has only 38% access in average and West Nusa Tenggara with 78%.

Connecting the behaviour of RDBs with the geographical indicators, it appears that the rich regions tend to provide more loans. For instance, DKI Jakarta is a capital city and is the centre of economics, culture and politics in Indonesia, it has the highest rgdp per capita and a developed infrastructure, and in line with this they also provide the highest loans (per capita) in their region, while the lowest loans are distributed by the RDBs from Lampung with 0.060 and Central Sulawesi with 0.065 (per capita). East Kalimantan, Bali, West Sumatera and Riau are categorised as rich regions with abundant mining resources, and they have the highest GDP figures in Indonesia (Hoechle, 2007). For instance, East Kalimantan has extensive coal resources, Bali is rich with natural resources, especially beaches and is very famous in the tourism sector, West Sumatera has coal, ironstone, galena stone, lead, zinc, manganese, gold, limestone (cement), oil palm, cocoa, gambier and fishing, while Riau has a very strong economy with large oil reserves. These patterns are reflected in variable price, as it shows that most of Riau and most of the regions in the Kalimantan islands obtain a higher interest income, but Riau and East and Central Kalimantan pay lower interest payments to the depositor, thus it affects their spread.

The lowest values of regional GDP belong to the regions of Maluku, East Nusa Tenggara, West Nusa Tenggara, and Papua, these regions are in East Indonesia and are most affected by a hot climate and low rainfall. A low infrastructure investment is also mostly found in these east Indonesian regions. However, we could not find a clear pattern in these poor regions in the distribution of loans and prices charged. This might relate to the RDBs' duty to promote their regions, as regional public banks, they need to encourage their local economies by providing more loans at an affordable price, compared to the prices that the private banks offer.

To improve our understanding of the topic, politically related lending at RDBs are shown in the following graph, which details the loans distributed during the election years. Figure 2-3 shows a comparison of loans in the pre-election year with the election year, and with the post-election year.

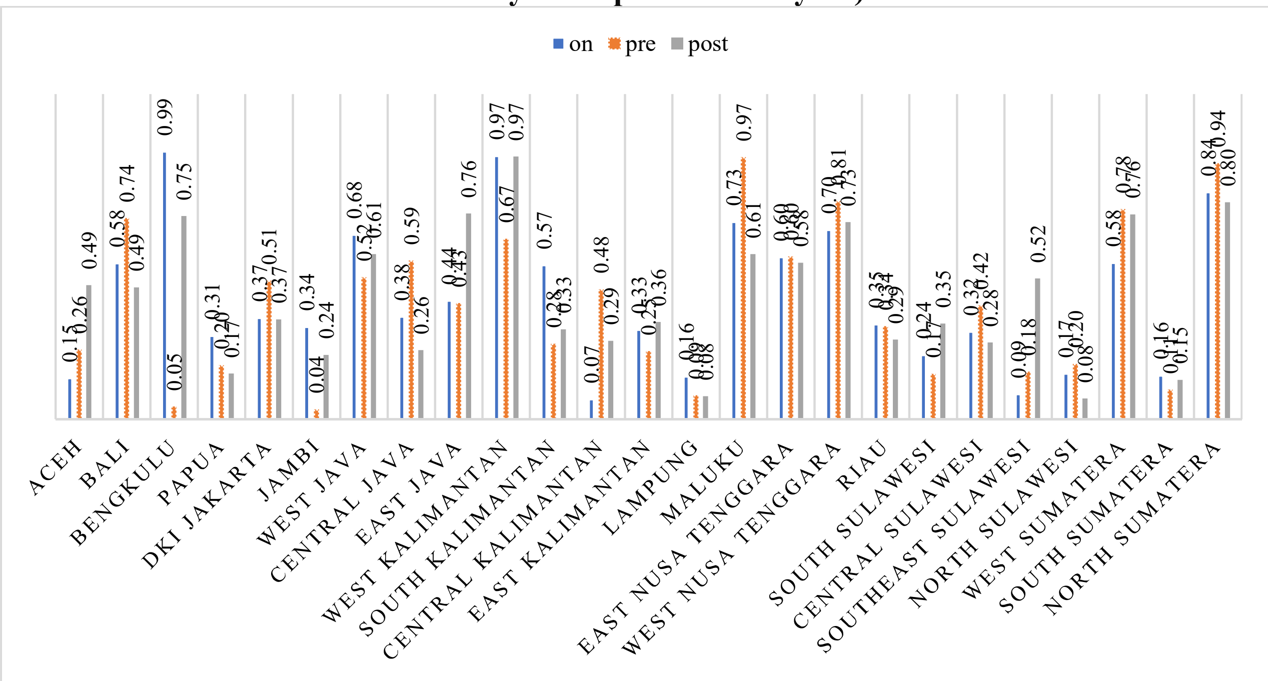
Figure 2- 3. The patterns of loans disbursed by RDBs (pre-election year vs election year vs post-election year)



(Source: Author's own, based on RDBs' financial reports)

Figure 2-3 shows that in general, loans distributions during pre-election periods and election periods across the regions seem to be higher than during the post-election periods. Using loan per capita, this figure shows that the RDB from East Kalimantan distributes the highest loan per capita in the pre-election year, which is around 1.00 (or Rp. 1,000,000 per person), and this gradually decreases in the election year and post-election year. A similar pattern can be observed in the RDBs of Bali, Papua, DKI Jakarta, South Kalimantan, Central Kalimantan, Riau, North Sulawesi, West Sumatera, and North Sumatera. RDBs from Aceh, West Kalimantan, Southeast Sulawesi, and South Sumatera seem to provide more loans in election years than in any other period, while the rest show quite similar results for the three types of election periods. However, only RDBs from Lampung and Jambi are showing indifference figures over those three-time periods. In observing the loans to MSMEs, the following graph shows the pattern for each province.

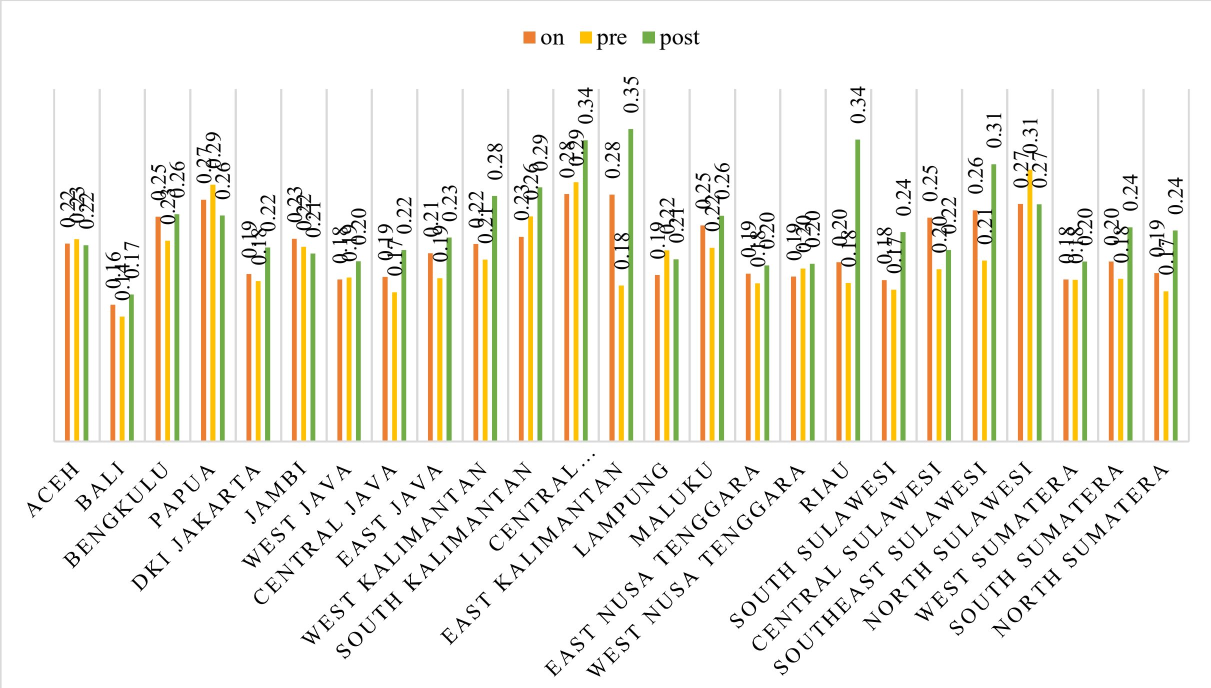
Figure 2- 4. The patterns of loans to MSMEs disbursed by the RDBs (pre-election year vs election year vs post-election year)



(Source: Author’s own, based on RDBs’ financial reports)

As in Figure 2-3, Figure 2-4 also shows that the distribution of MSME loans is mostly higher in pre-election and election years. However, the RDB from East Kalimantan, which provided more loans in the pre-election year, shows a different pattern of MSME loans in that the number of MSME loans distributed after the election is even higher than the periods leading up to the election years, even though this appears to be quite insignificant. A peculiar pattern is also found in East Java, South Sulawesi, and Southeast Sulawesi, as the MSME loans are even higher after the election takes place.

Figure 2- 5. The patterns of the RDBs' price of loans (pre-election year vs election year vs post-election year)

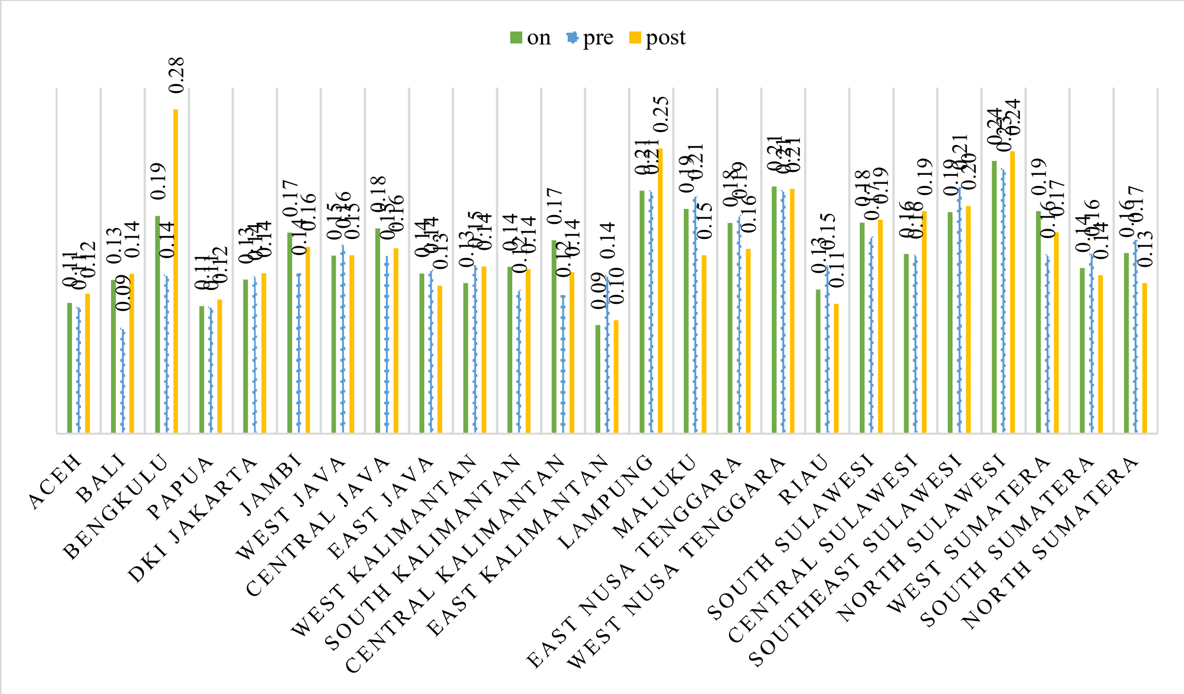


(Source: Author's own, based on RDBs' financial reports)

When looking at the price of loans, again it shows that the RDB from East Kalimantan distributed the highest loans close to the election years, it offered a lower price starting from the pre-election year with 0.28 and this was made even lower by around 35% and increased again after the event passed. Some significant differences were also seen in RDBs from Riau, West Kalimantan, Central Kalimantan, Southeast Sulawesi, South Sumatera and North Sumatera, as it can be seen that the price (pre and on) close to the election years is significantly lower when compared to post-election prices, while other RDBs also show similar patterns but not such extreme differences. However, the RDBs from Aceh, Papua and Jambi show a different pattern, as the price of loans is lowered after the election takes place.

About the price of deposits, it seems unclears, as we could not see a clear pattern that showing that the price is higher near to the election years. However, although some RDBs such as those from Jambi, Central Java, Central Kalimantan, West Sumatera, Maluku and North Sumatera seem to offer a higher interest rates to the depositors close to the election years, in general the rate is quite the same, even the RDB from Bengkulu gives a much lower price during the election year, around 50% lower than the period after the election takes place.

Figure 2- 6. The pattern of the RDBs' price of deposits (pre-election year vs election year vs post-election year)



(Source: Author's own, based on RDBs' financial reports)

The combination of the data in Figures 2-5 and 2-6 results in the pattern in Figure 2-7[1]. We do not show the names of the provinces' RDBs as this covered by the negative numbers (below zero). Again, with reference to the previous results, RDBs that offer lower prices for loans close to the election years experienced a low-interest spread, for instance, those from East Kalimantan (no.13), Bali, Riau etc. The RDBs from Bali, East Nusa Tenggara, Southeast Sulawesi and West Nusa Tenggara even experienced a negative spread. Although a peculiar pattern occurred in the RDB from Bengkulu (no.3) as the negative spread happened post-election with -0.02.

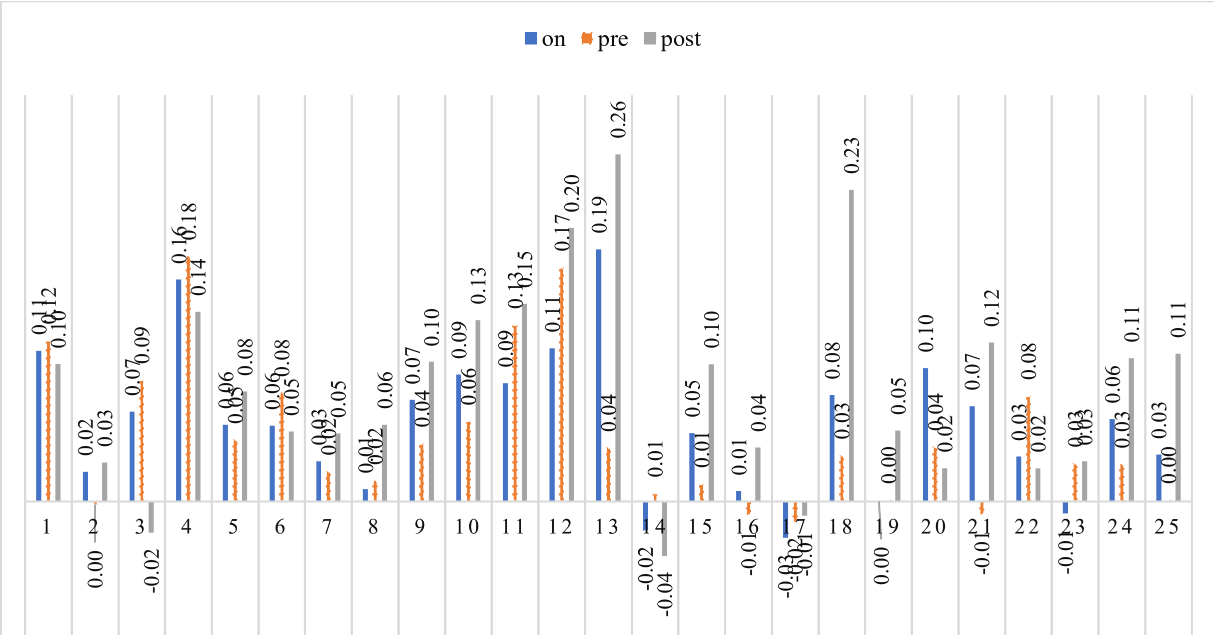
Regarding the data for variable assets [see figure 2-8], it does not show any specific pattern. We expect to see that assets might increase close to the election years, but the data shows that only a few RDBs experienced this trend, such as in West Java and West Kalimantan, although there seems to be quite an insignificant difference. While only the RDB from East Kalimantan reported that their assets (per capita) were quite high during the pre-election and the election years, at around 1.95 and 1.93 per capita, and they were reduced in the post-election year by around 20% less than pre-election.

The relationship between the election years and variable securities is also mixed. Close to the election years, some RDBs reduced their investments (in central bank, other banks, and securities), such as

[1] As we define spread = price of loans – price of deposits

those from Jambi, South Kalimantan and West Nusa Tenggara, while some RDBs seemed to lower the proportion of investments in the pre-election year, some in the election year, and some even after the election years [see figure 2-9].

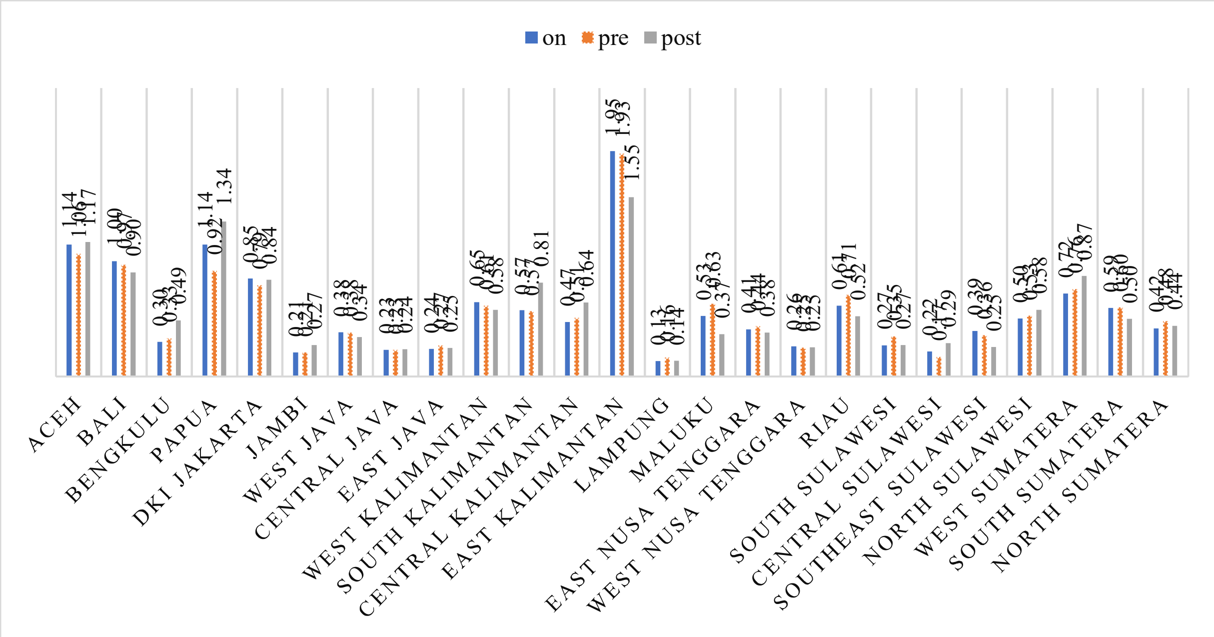
Figure 2- 7. The pattern of interest spread of the RDBs (pre-election year vs election year vs post-election year)[2]



(Source: Author's own, based on RDBs' financial reports)

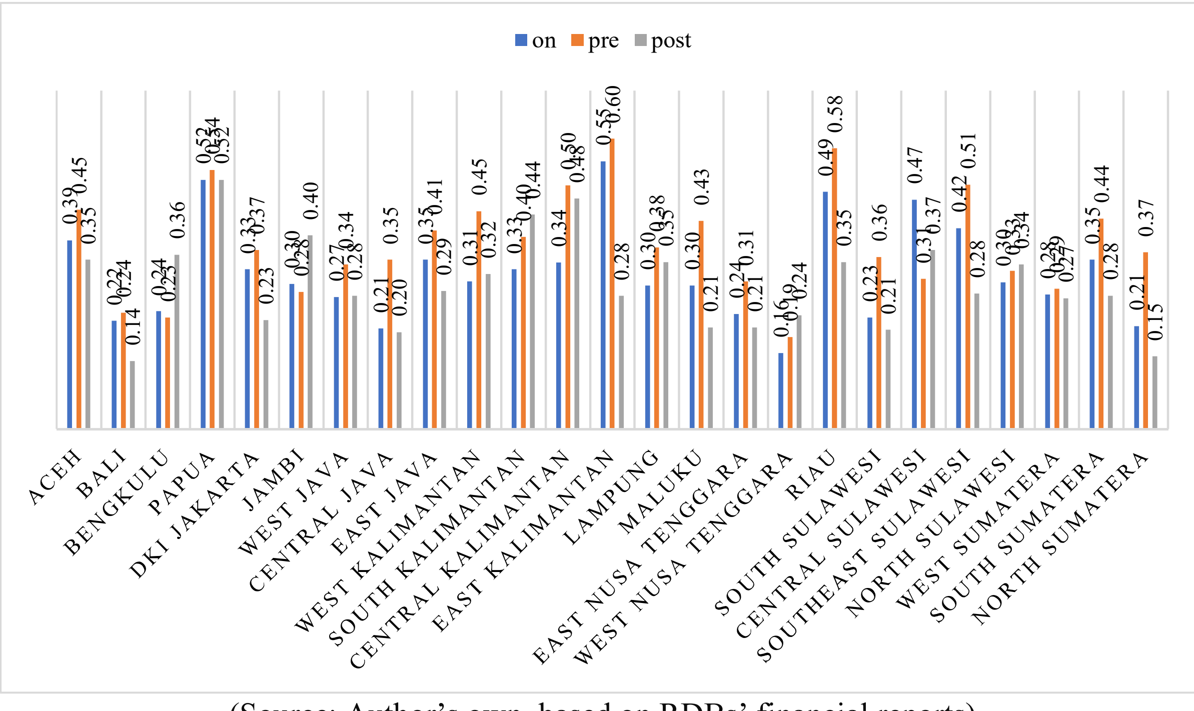
[2] The following are the names of the provinces. 1. Aceh, 2. Bali, 3. Bengkulu, 4. Papua, 5. DKI Jakarta, 6. Jambi, 7. West Java, 8. Central Java, 9. East Java, 10. West Kalimantan, 11. South Kalimantan,12. Central Kalimantan, 13. East Kalimantan, 14. Lampung, 15. Maluku, 16. East Nusa Tenggara, 17. West Nusa Tenggara, 18. Riau, 19. South Sulawesi, 20. Central Sulawesi, 21. Southeast Sulawesi, 22. North Sulawesi, 23. West Sumatera, 24. South Sumatera, 25. North Sumatera. We do not put the figures for the RDB from DI Yogyakarta as this province does not take part in the regional election.

Figure 2- 8. The patterns of the assets (per capita) of the RDBs (pre-election year vs election year vs post-election year)



(Source: Author's own, based on RDBs' financial reports)

Figure 2- 9. The patterns of the securities (per total assets) of the RDBs (pre-election year vs election year vs post-election year)



(Source: Author's own, based on RDBs' financial reports)

Table 2-5 shows the Pearson correlation coefficients for the covariates. The first five columns show the correlation between the independent variables and the dependent variables, which indicates that most of the variables have a strong relationship with the dependent variables. However, to examine the potential for multicollinearity, we check the coefficients from row six (6) to row sixteen (16), which varies from 0.033 to 0.475. The correlations suggest that multicollinearity will not be a problem in the regressions to follow.

Table 2- 5. Correlation Table

	Variables	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
[1]	loan	1,000															
[2]	loan_SME	-0,086	1,000														
[3]	price	-0,325***	0,090	1,000													
[4]	pr_deposit	-0,147***	-0,055	0,637***	1,000												
[5]	asset	0,439***	-0,129**	-0,239***	-0,200***	1,000											
[6]	on	0,191***	-0,017	-0,125**	-0,036	0,154***	1,000										
[7]	pre	0,119**	-0,017	-0,050	-0,029	0,081*	-0,130**	1,000									
[8]	post	0,197***	-0,049	-0,114**	-0,050	0,148***	-0,126**	-0,101*	1,000								
[9]	align	-0,261***	0,159**	0,135***	0,065	-0,172***	-0,112**	-0,097*	-0,205***	1,000							
[10]	first_TR	0,146***	0,071	-0,114**	-0,035	0,088*	0,125**	0,091*	0,066	-0,358***	1,000						
[11]	comm	-0,318***	0,101*	0,399***	0,126**	-0,323***	-0,227***	-0,122**	-0,187***	0,224***	-0,260***	1,000					
[12]	securities	-0,192***	0,002	0,259***	-0,240***	-0,120**	-0,059	0,080*	-0,071	0,017	-0,043	0,088*	1,000				
[13]	branch	0,215***	0,035	-0,207***	-0,068	0,672***	0,123**	0,066	0,098*	-0,129**	0,056	-0,310***	-0,144***	1,000			
[14]	rgdp	0,402***	-0,137**	0,023	-0,167***	0,325***	0,033	0,050	0,048	-0,011	-0,099*	0,017	0,186***	0,048	1,000		
[15]	electric	0,420***	-0,060	-0,128**	0,016	0,470***	0,167***	0,104*	0,158***	-0,175***	0,139***	-0,431***	-0,076	0,438***	0,215***	1,000	
[16]	rice	0,591***	-0,290***	-0,424***	-0,216***	0,542***	0,251***	0,133**	0,274***	-0,359***	0,155***	-0,525***	-0,153***	0,328***	0,178***	0,475***	1,000

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.5 Results

Referring to the hypothesis, this section presents the empirical results using statistical methods in objective to test the hypothesis.

2.5.1 Main Findings

This section presents the main results from the regression analysis based on the specification in equations 2-2, 2-3, 2-4 and 2-5, 2-6, and 2-7. The reported standard errors are robust within the region with respect to the heteroscedasticity problem detected using the Breusch-Pagan test, as this the robust model helps to solve the inconsistent of variance (Micco & Panizza, 2006). This related to the condition that there might be clustered errors as we employ a panel data set based on twenty-six regions for twenty-four years. We include time trend as it means fitting and subtracting a linear trend. For clarity purposes, the discussion will be presented after the presentation of the empirical results.

2.5.1.1 The politics affect the RDBs behaviour

To study whether RDBs behave differently under different political condition, several political indicators are employed in this study. We observed the RDBs' behaviour near the election years by interacting with the three-political indicators that we assume provide a strong reason for their lending, i.e. the status of being allied with the central government (align), the attitude of the elected government (first_TR) when facing election for a second time, and the influence of politicians as commissioners on the RDBs' boards. By employing these three 'political variables', we examined the pattern of the RDBs in three periods around the election years (elect): pre was used to capture the conditions of the RDBs a year before the election year, on was used to capture the conditions of the RDBs during the election year, and post was used to capture the condition of the RDBs one year after the election took place.

We divided the empirical results into two different sections. The first section was used to study the behaviour of RDBs in Indonesia near election years, and the second section was used to examine whether there was an intervention from the central government or whether the political support was a deliberate action by the RDBs. Table 2-6 shows the results when the dependent variable was loan, Table 2-7 shows the results for MSME loans as the dependent variable, and Tables 2-8 and 2-9 show the results when the dependent variables are price of loans and price of deposit respectively. Each table has three models: models 1, 2, and 3 show the results if the align indicator was employed; models 4, 5, and 6 show the impact on the first-term elected governor (first_TR); and models 7, 8, and 9 show the influence of politicians sitting as commissioners in RDBs (comm).

Table 2- 6. The Impact of Politics on RDBs' Lending

loan	1	2	3	4	5	6	7	8	9
on	0.097**			0.002			-0.008		
	[0.039]			[0.010]			[0.013]		
pre		0.022*			-0.009			-0.012	
		[0.012]			[0.011]			[0.021]	
post			-0.063***			0.037**			0.008
			[0.017]			[0.015]			[0.010]
align	-0.013	-0.033	-0.062*						
	[0.034]	[0.030]	[0.031]						
first_TR				0.039*	0.040**	0.056***			
				[0.020]	[0.019]	[0.020]			
comm							-0.027	-0.021	-0.017
							[0.041]	[0.044]	[0.040]
on#align	-0.111**								
	[0.049]								
pre#align		-0.028*							
		[0.015]							
post#align			0.125***						
			[0.033]						
on#first_TR				0.025					
				[0.020]					
pre#first_TR					0.034**				
					[0.015]				
post#first_TR						-0.068**			
						[0.026]			
on#comm							0.114*		
							[0.066]		
pre#comm								0.078	
								[0.081]	
post#comm									0.093
									[0.064]
Constant	0.035	0.055	0.087**	0.020	0.020	0.022	0.015	0.011	0.010
	[0.047]	[0.042]	[0.041]	[0.025]	[0.025]	[0.024]	[0.051]	[0.052]	[0.051]
Obs.	617	617	617	617	617	617	563	563	563
R^2	0.494	0.485	0.495	0.487	0.487	0.490	0.474	0.472	0.473
No.of regions	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model, with the time trend added. The dependent variable is loan or loans per capita. Model 1,2,3 shows the impact of variable align in its interaction with the variable elect, model 4,5,6 shows the impact of variable first_TR in its interaction with the variable elect, model 7,8,9 shows the impact of variable comm in its interacted with variable elect. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 7. The Impact of Politics on RDBs' Loans to MSME

loan_MSME	1	2	3	4	5	6	7	8	9
on	-0.086			0.037			0.032		
	[0.052]			[0.049]			[0.044]		
pre		-0.078*			0.003			0.018	
		[0.041]			[0.037]			[0.045]	
post			0.086			0.026			0.029
			[0.070]			[0.033]			[0.040]
align	-0.000	0.018	0.052						
	[0.065]	[0.060]	[0.066]						
first_TR				0.046	0.040	0.026			
				[0.101]	[0.093]	[0.106]			
comm							0.028	0.031	0.019
							[0.083]	[0.095]	[0.083]
on#align	0.154**								
	[0.072]								
pre#align		0.111**							
		[0.050]							
post#align			-0.056						
			[0.094]						
on#first_TR				-0.035					
				[0.090]					
pre#first_TR					0.0001				
					[0.079]				
post#first_TR						0.092			
						[0.146]			
on#comm							0.012		
							[0.177]		
pre#comm								-0.045	
								[0.115]	
post#comm									0.132
									[0.136]
Constant	0.782***	0.767***	0.739***	0.787***	0.789***	0.790***	0.776***	0.775***	0.787***
	[0.101]	[0.094]	[0.094]	[0.084]	[0.085]	[0.085]	[0.107]	[0.115]	[0.110]
Obs.	400	400	400	400	400	400	399	399	399
R^2	0.137	0.130	0.130	0.129	0.127	0.131	0.126	0.125	0.128
No.of regions	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model, with the time trend added. The dependent variable is loan_MSME or loans distributed to MSME. Model 1,2,3 shows the impact of variable align in its interaction with the variable elect, model 4,5,6 shows the impact of variable first_TR in its interaction with the variable elect, model 7,8,9 shows the impact of variable comm in its interaction with variable elect. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 8. The Impact of Politics on RDBs' Price of Loan

price	1	2	3	4	5	6	7	8	9
on	-0.032**			-0.017**			0.003		
	[0.015]			[0.006]			[0.008]		
pre		-0.007			0.005			0.020	
		[0.011]			[0.007]			[0.014]	
post			0.036**			-0.032***			-0.001
			[0.014]			[0.010]			[0.008]
align	0.018	0.021	0.038*						
	[0.020]	[0.018]	[0.020]						
first_TR				-0.065	-0.062	-0.070*			
				[0.044]	[0.039]	[0.037]			
comm							0.101**	0.100**	0.093**
							[0.041]	[0.042]	[0.039]
on#align	0.025								
	[0.021]								
pre#align		0.019							
		[0.015]							
post#align			-0.069***						
			[0.024]						
on#first_TR				0.041					
				[0.042]					
pre#first_TR					0.033				
					[0.036]				
post#first_TR						0.095**			
						[0.038]			
on#comm							-0.090**		
							[0.038]		
pre#comm								-0.084	
								[0.054]	
post#comm									-0.067
									[0.058]
Constant	0.352***	0.349***	0.331***	0.372***	0.372***	0.370***	0.348***	0.349***	0.352***
	[0.036]	[0.034]	[0.037]	[0.018]	[0.017]	[0.017]	[0.028]	[0.030]	[0.028]
Obs.	617	617	617	617	617	617	563	563	563
R^2	0.106	0.105	0.108	0.113	0.113	0.116	0.250	0.249	0.248
No.of regions	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is price or price of loans. Model 1,2,3 shows the impact of variable align in its interaction with the variable elect, model 4,5,6 shows the impact of variable first_TR in its interaction with the variable elect, model 7,8,9 shows the impact of variable comm in its interaction with variable elect. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 9. The Impact of Politics on RDBs' Price of Deposits

pr_deposit	1	2	3	4	5	6	7	8	9
on	0.005			0.002			0.006		
	[0.010]			[0.004]			[0.004]		
pre		0.003			-0.002			0.007	
		[0.007]			[0.006]			[0.008]	
post			-0.005			-0.005			-0.004
			[0.007]			[0.005]			[0.005]
align	-0.005	-0.004	-0.006						
	[0.010]	[0.009]	[0.011]						
first_TR				-0.016	-0.015	-0.014			
				[0.023]	[0.020]	[0.020]			
comm							0.003	0.004	-0.000
							[0.016]	[0.016]	[0.014]
on#align	0.002								
	[0.013]								
pre#align		0.0009							
		[0.011]							
post#align			0.007						
			[0.013]						
on#first_TR				0.022					
				[0.023]					
pre#first_TR					0.029				
					[0.023]				
post#first_TR						0.025			
						[0.020]			
on#comm							-0.016		
							[0.017]		
pre#comm								-0.035	
								[0.022]	
post#comm									0.016
									[0.018]
Constant	0.193***	0.192***	0.194***	0.188***	0.188***	0.187***	0.193***	0.193***	0.195***
	[0.018]	[0.017]	[0.019]	[0.009]	[0.009]	[0.009]	[0.012]	[0.012]	[0.011]
Obs.	617	617	617	617	617	617	563	563	563
R^2	0.026	0.025	0.025	0.029	0.029	0.028	0.073	0.075	0.072
No.of regions	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is pr_deposit or price of deposit. Model 1,2,3 shows the impact of variable align in its interaction with the variable elect, model 4,5,6 shows the impact of variable first_TR in its interaction with the variable elect, model 7,8,9 shows the impact of variable comm in its interaction with variable elect. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

To comprehensively study the lending pattern near election years, we not only observed the volume of loans, but also the price of loans as well as price of deposits. Using several dependent variables enabled us to confirm that political lending exists in RDBs. In addition, we examine the RDBs' assets if they have a political injection during the election event. This provides insight into how the central government is engaged in the regional arena to retain the power it holds. We then considered another possibility that the political lending might not involve the central government, but instead might be the RDBs' choice to cooperate with the regional governments or regional politicians.

Using the case of Indonesia, we study the impact of political interests on loans distribution in the regional government-owned banks, especially after the direct election that followed the decentralisation policy in 2004. RDBs are regional government banks that are built with the expectation of accelerating economic growth by providing credit to their region. According to a report by OJK (2016), however, the contribution of the loans was lower than expected and the ICW found a suspicious flow of funds from RDBs to the regional leaders[1].

By observing the relationship between RDBs and the local government, it is possible to suggest that low credit distribution is related to political issues. Similar to the previous literature, we use the variable 'regional election' (elect)[2] as the main variable in this study. Furthermore, instead of using a national election as many scholars do, we chose regional elections to detect peculiar patterns during these political events. Studying the size of loans during elections alone is not enough to make a conclusion about politically related loans as this factor could be influenced by economic conditions (Micco & Panizza, 2006). Therefore, we added other variables (such as MSME loans, price of loans, price of deposit, assets, and securities) that we suspected would provide clarity regarding how political issues can be involved in RDB decisions.

In general, we detected political issues in RDBs' lending. Although the results show different patterns for different political indicators, such as align, first_TR, and comm, they confirm that run-up to the election years, the behaviour of RDBs changed. For example, Table 2-6 shows that during the election, loans per capita increased significantly and then reduced after the election (see columns 1, 2, and 3). Moreover, the results are not consistently significant for all models and the direction of the coefficient changes.

[1] This issue is written about in an article by The Regional Representatives Council Republic of Indonesia (DPD RI) (DPD, 2010) and in a famous magazine in Indonesia, Tempo (2007).
[2] Variable $elect$ is observed in the pre-election years, on the election years, and in the $post$-election years.

As we used an interaction model in this study, the impact of the variable Elect (on, pre, post) may depend on or be moderated by another variable. Some statisticians (e.g. Hayes, 2005; Hays, 1983; Jaccard et al., 1990) have stated that it is inappropriate to interpret main effects in the presence of a significant interaction effect. According to this perspective, a main effect assesses a constant effect of an independent variable on a dependent variable that is generalised across all levels of the moderator variable. A significant interaction effect indicates that no such constant effect occurs (i.e. the effect of the independent variable on the dependent variable is conditional according to the value of the moderator variable), hence the main effect is meaningless.

The interaction variables on#align and pre#align show a significantly negative affect on loan, while after elections, allied RDBs show an increase in loans, both of which are the opposite to what was stated in the hypothesis, which we expect that allied RDBs are superior in providing loans run up to the election years. The significantly negative relationship between align and elect (on and pre) show that empirically, non-allied RDBs provide more loans near election years compared to the allied RDBs. It is possible that the allied government is connected with RDBs, but it does not mean that non-allied politicians (i.e. the government) does not have access to RDBs. Concerning the relationship based on regulation no.58, which was issued by the Ministry of Home Affairs of Indonesia in 1999, the regional (provincial) leader had a connection to the RDBs.

The results differ for variable first_TR. Generally, the loans distributed by elected governors that are going to run for the second time tend to be bigger compared to the non-elected governors (4% to 5.6% higher). Moreover, the positive coefficients of the pre and during election years suggest that the elected governor tended to increase the distribution of loans during pre-election years. Although the effect of loan volume on the election year is non-significant, it shows a positive coefficient. Also, its effect on the variable post#first_TR is significantly negative. This means that the distribution of loans reduced once the elections are over. The variable comm is used to capture the explicit political influence on RDBs and indicated that RDBs that have more politicians on their boards tend to distribute 11.4% more loans compared to their counterparts during election years. We found no impact on the pre- and post-election years.

Table 2-7 shows another story regarding the lending distribution of allied RDBs for micro, small- and medium-sized enterprises (MSMEs). In Table 2-6, we expected a positive coefficient for allied RDBs near to the election years, but on aggregate, the opposite result is found. Furthermore, Table 2-7 shows that during election years, allied RDBs increased their loan to MSMEs by 15.4% and increased them by 11.1% near the year years. After the election, however, these loans reduced by 5.6%. The significantly positive coefficients in table 2-7 suggest that allied RDBs may focus on attracting the attention of lower middle-class society by lending more to MSMEs in the run-up to elections. By having relationships with the ruling party, the allied government might not spend too much funds in order to get attention or popularity from their people as they must have been popular or famous (this might the reason unallied politicians showed a dominant effort in distributing loans near election years), therefore, they may try to increase their vote by embracing middle to lower-class people. Targeting funds for specific sectors, such as agricultural sectors, small businesses, or low-income society can be a good strategy for building trust prior to an election (Khwaja & Mian, 2005). Regarding the variables first_TR and comm, table 2-7 does not show any significant pattern for MSME lending near election years. This indicates that RDBs may focus on aggregate loans without changing the proportion of the MSME loans as MSME lending is required by the government and must be reported every period.

According to the idea of rent seeking suggested by Micco et al. (2007) and Pasour (1987), we expected a negative coefficient for the variable price near election years. Table 2-8 shows that it is rarely found a significant coefficient near the election years for the variables align and first_TR. Instead, we found a negative coefficient after the election year for allied RDBs, which is interesting. Although we suspect that the intensity of political lending is rising run up to the of the elections as it may be one of the best political momentum that determines the future of a politician, but with the status of a coalition government may make them more confident that they can retain their power so that it is reflected in this data. However, the intensity of political issues in RDBs may arise after the elections are over.

The variable align refers to when a minimum of one of the supporting parties of the elected governor is part of the national winning parties. There is the possibility of this status changing every five years with the political background of the new governor. Being aligned in this period does not mean that they will be aligned during the next period. The loans distributed after election years show that allied RDBs, regardless of their status before the election (i.e. aligned or not), provide cheap loans after the elections are over. Providing lower priced loans after being aligned indicates that they may operate under a clientelism system where they have an obligation to return favours in exchange for the support they need to win the election. There are two possible explanations for this. first, the non-allied politicians (government) who become allied government (after the election) might make this agreement, which relates to the pattern shown in Table 2-6 (columns 1, 2, and 3). A non-allied government might put more effort into using RDBs to provide loans near election years, meaning that the interaction coefficient becomes negative before election years, whereas after they win the election and become an allied government, they have to fulfil their promise to their 'client' by providing loans with a cheaper price, which is empirically confirmed by a positive coefficient. Second, for an allied government that continues to be aligned (after elections), the source of funds to finance their political expenses can come from anywhere as they must have more networks as an aligned government. The allied RDBs may have another source of funds and may choose those sources instead of using RDBs. This would show as a significantly negative coefficient for the interaction between the variables align and loan near election years.

While we could not find any proof about the potential of increasing interest charged for the depositors during the election period, price of loans (price) for RDBs that under elected governor that is going to run for the second election (first_TR), also not showing any negative coefficient close to the election years but there is a contrast figure if we compare price of loans during the election periods and after the election periods. We try to link with the assumption of a clientelism activity as we found in allied RDBs, however, it shows the unclear pattern as the volume of loans does not increase a year after the election.

Insignificant interaction model (on#first_TR and pre#first_TR) in affecting the price during the election years might relate to the fact that we define variable first_TR as an elected government which going to be elected for the second time, it might suggest that the results might relate to the type of the sample. Being elected relates to the previous performance or the record of accomplishment. Albeit, not all elected governor are associated with a good performance, but they might be chosen for the second time, either because of good performance or because of applying some political strategy to gain votes. Imai (2009) argued that potential looting will occur when the incumbents are electorally vulnerable, which is indicated by having a small margin of victory. Table 2-1 shows that the margin of victory of the elected governors varies from 0.04% in the Bali region to 33% in the Maluku region. In addition, one direct election in South Sumatera had to be repeated in 2013 due to electoral violations committed by the winner, who was the incumbent. We therefore suspect that there is a mixed result in this model that means the results are rarely significant near election years. We do find that loans tend to increase in the year before elections, however.

When looking at the variable comm, the results are consistent with those of Tables 2-6 and 2-8. Although no increase in interest rate for depositors near election years was found (see Table 2-9), the empirical model shows that RDBs that have politicians on their boards increase their loans significantly during the election year (11.4%) and also lower the price of their loans by around 9%. These results show that commissioners who have dual interests will not focus on achieving the original goal of government-owned banks, instead, they insert their interests into every strategic decision that the bank makes.

2.5.1.2 The political intervention run-up the election years

After indicating the political influence on the lending of RDBs before, during, and after elections, this section discusses whether there were interventions by the central government to financially support the local politicians through RDBs. The existence of interventions is indicated by increases in RDBs' assets near elections or the fund might be deliberately distributed by the RDBs by adjusting the proportion of their securities near the election years. Table 2-10 shows the results when the dependent variable is assets and Table 2-11 shows the results when the dependent variable is securities.

Table 2- 10. The Impact of Politics on RDBs' Assets

asset	1	2	3	4	5	6	7	8	9
on	0.074			0.031			0.017		
	[0.052]			[0.035]			[0.025]		
pre		0.043			0.038			0.031	
		[0.037]			[0.045]			[0.024]	
post			-0.060			0.016			0.003
			[0.037]			[0.020]			[0.023]
align	-0.048	-0.059	-0.080						
	[0.050]	[0.048]	[0.048]						
first_TR				0.099***	0.088***	0.098***			
				[0.027]	[0.028]	[0.033]			
comm							0.080	0.086	0.089
							[0.181]	[0.171]	[0.170]
on#align	-0.056								
	[0.075]								
pre#align		0.001							
		[0.076]							
post#align			0.093*						
			[0.046]						
on#first_TR				-0.037					
				[0.046]					
pre#first_TR					0.006				
					[0.046]				
post#first_TR						-0.040			
						[0.029]			
on#comm							0.140		
							[0.141]		
pre#comm								0.105	
								[0.095]	
post#comm									0.078
									[0.151]
Constant	0.210***	0.221***	0.243***	0.159***	0.158***	0.159***	0.110	0.105	0.104
	[0.066]	[0.066]	[0.074]	[0.050]	[0.050]	[0.050]	[0.074]	[0.071]	[0.069]
Obs.	617	617	617	617	617	617	563	563	563
R^2	0.157	0.157	0.157	0.159	0.160	0.159	0.125	0.125	0.124
No.of regions	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is asset or total asset per capita. Model 1,2,3 shows the impact of variable align in its interaction with the variable elect, model 4,5,6 shows the impact of variable first_TR in its interaction with the variable elect, model 7,8,9 shows the impact of variable comm in its interaction with variable elect. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 11. The Impact of Politics on RDBs' Securities

securities	1	2	3	4	5	6	7	8	9
on	-0.076**			0.007			-0.018		
	[0.035]			[0.014]			[0.018]		
pre		0.019			0.072***			0.033	
		[0.016]			[0.020]			[0.022]	
post			0.032			-0.044**			-0.028
			[0.033]			[0.019]			[0.020]
align	-0.019	-0.007	0.016						
	[0.032]	[0.024]	[0.027]						
first_TR				0.015	-0.001	-0.021			
				[0.027]	[0.018]	[0.021]			
comm							-0.008	-0.007	-0.002
							[0.063]	[0.062]	[0.059]
on#align	0.082*								
	[0.046]								
pre#align		0.048*							
		[0.026]							
post#align			-0.090*						
			[0.044]						
on#first_TR				-0.089**					
				[0.043]					
pre#first_TR					-0.073**				
					[0.029]				
post#first_TR						0.084			
						[0.054]			
on#comm							0.047		
							[0.063]		
pre#comm								0.112*	
								[0.065]	
post#comm									0.013
									[0.105]
Constant	0.396***	0.384***	0.359***	0.377***	0.377***	0.375***	0.378***	0.377***	0.373***
	[0.032]	[0.026]	[0.031]	[0.013]	[0.013]	[0.013]	[0.046]	[0.046]	[0.043]
Obs.	617	617	617	617	617	617	563	563	563
R^2	0.019	0.026	0.021	0.020	0.028	0.019	0.011	0.024	0.012
No.of regions	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is securities or the proportion the securities (sum of placing fund to central banks, interbank placement and securities) over total assets. Model 1,2,3 shows the impact of variable align in its interaction with the variable elect, model 4,5,6 shows the impact of variable first_TR in its interaction with the variable elect, model 7,8,9 shows the impact of variable comm in its interaction with variable elect. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2-10 highlights that significant increases in assets near election years are rare. Regarding the proportion of the securities held, Table 2-11 shows that the variables on#align and pre#align are significantly positive. This means that non-allied RDBs reduced the proportion of their securities investment during pre-election and election years and confirms the previous finding that non-allied governments tend to be more aggressive near election years. These governments use their RDBs to provide cheaper loans near election years and the RDBs can lend more as they reduce their investment proportion during the election.

A similar pattern is also found in the interaction between variables elect (on and pre) with variable first_TR. This pattern shows that near election years, RDBs under the elected governor reduced their investment in securities by between 7% and 9%, whereas related with variable comm shows a contrasting pattern as the security proportion increases before elections (on#comm). If connecting with the previous findings, this pattern is unclear whether the increase of the investment associated with the political issues or might not relate with the issue as we have indicated that most of the patterns either increasing volume of loans and lower price of loans appear during the election years (**on)** and not on a year before the election (**pre**).

2.5.2 The empirical results with control variables

To check the clarity of the previous empirical results, we examine the results of the regression analysis with control variables. Although this paper studied one country only, we believe that the regional conditions contribute to the RDBs' behaviour.

2.5.2.1 Politics affect RDB behaviour (with control variables)

In general, adding control variables at a regional level do not change the signs of the coefficients of the previous findings. Table 2-12 shows that loans during election years (on) and one year before the election year (pre) increased. These results are not consistent if we compare them to tables 2-13 and 2-14, however. As explained previously, introducing the interaction model may cause this inconsistency as once the interaction effect is statistically significant, the main effect will be pointless because it indicates that there is no main effect (constant effect) in these models (Hays, 1983; Jaccard et al., 1990; Hayes, 2005).

Furthermore, observing the interaction model in tables 2-12, 2-13, and 2-14 shows similar results to those in table 2-6. Although models 4 and 5 in table 2-12 show non-significant results after the variables electric and rice are added as control variables, the negative coefficient during the election period and the significantly positive coefficient after the election confirm the potential existence of 'clientelism' in RDBs. Especially considering the lower price offered by allied RDBs after elections (see table 2-18). Therefore, regardless of their status before the election (being aligned or not), once the governors win and become allied with the ruling party, there is the potential for them to use RDBs to return favours to their political supporters.

In relation to tables 2-15, 2-16, and 2-17, we found similar results as before. The significantly positive coefficients of the variables on#align and pre#align and the non-significant results of the effect of variable post#align on MSME loans in all models show that the allied RDBs tend to attract the attention of different circles near election years, i.e. middle and lower-class society. We could not find any political lending to MSMEs using the other two variables, first_TR and comm, which is similar to the previous results.

Table 2-13 shows similar results to table 2-6 (models 4, 5, and 6). Generally, the elected governors lend more compared to their counterpart (variable first_TR mostly shows significantly positive coefficients for all models). Furthermore, interacted with variable elect (pre-election), they seem to increase their loans by between 2% and 3% as the interaction model shows significant. The pattern seems to continue to the election years, but we found insignificant signs albeit the coefficient is still positive. In contrast, after election years, the volume of loans reduced, as shown by the significantly negative coefficient for variable post#first_TR.

Regarding the price of loans offered by elected governors (first_TR), this shows a significantly negative result for most models in Table 2-19. This suggests that the elected governor tended to give a lower price compared to their counterpart. Moreover, interacted with variable elect (pre and on) near the election years, we found none of the models show significant results as it has found in the Table 2-6. The significantly positive interaction seen after the election (post#first_TR) is the opposite to what we observed in variable post#align. Prior, we have explained that unclear pattern is showing in this case, as we suggest that the clientelism should relate to giving a lending with the compromised price. Moreover, RDBs under the elected governors seem to lend less but gain more income after the election overs, which is peculiar. Although the governors seem to exploit RDBs to provide lending before elections, we found no proof of any activities related to clientelism. The mixed background of variable first_TR might be the reason for these unclear results. In addition, exploring the post-election means the elected governor has been won for the second time and in this time, they served for the second time, or we can say the last time as a governor since the term limits for governors is two 5-year terms. Knowing that they might not be able to apply for a second time might affect their attitude when performing their tasks as governor, e.g. they might not be as aggressive in terms of lending and might not maintain the affordable prices of the previous period.

Moreover, adding control variables do not change the pattern found in RDBs that have more politicians on their boards (comm). The volume of loans is higher, but cheaper (see table 2-20) during election years, which lead to a negative coefficient for the variable spread during this time. The lower price of loans during elections suggests that price negotiations might occur, which are related to the rent-seeking theory. This result is similar to what Infante and Piazza (2014) found, i.e. that lower interest rates are offered to the politically connected firms by the politically influenced banks. Similarly, it has been found that governments use their banks not to channel funds for socially efficient use, but for their own benefit, especially when handling crony transactions and for their political relationships (La Porta, Lopez-de-silanes, & Shleifer, 2002; Solé-Ollé & Sorribas-Navarro, 2006; Faccio 2006; (Hakenes & Schnabel, 2006)).

The control variable securities had a significantly negative impact on loan (see tables 2-12, 2-13, and 2-14), including loans to MSMEs (see Tables 2-15, 2-16, and 2-17). This means that the loan proportion reduced when the bank invested more in securities. Although securities did not have any effect on the price of lending for all models, it does affect the deposit interest. All the models in table

2-21, 2-22 and 2-23 show that the variable securities significantly affected the price of deposits negatively. The RDBs seemed to increase their deposit interest when they invested less in securities and vice versa. The RDBs might try to attract more depositors by increase the interest payment in order to invest more, as it might associate with generating revenues for the RDBs.

The variable branch, which reflects the size of the bank, shows a positive coefficient when regressed with the variable loans. Although the coefficients are positive, not all are significant. This could be because it takes time to open more bank branches. In contrast, the variable branch has a significantly negative effect on MSME loans (see table 2-15, table tables 2-16, and tables 2-17). This suggests that the smaller the size of the RDB, the more the MSME loans are distributed. As the bigger RDBs tend to be located in big cities where many loans are offered by other banks, these RDBs might lend smaller amounts in proportion to their size. In contrast, in remote regions, RDBs might be the main way to get loans as options are limited, therefore, the MSME loans these RDBs offer may be larger [see the proportion of the RDBs' lending compared to the total loans of the commercial banks in each region at Chapter Four (4), figure 4-9]. In relation to this, small banks tend to have higher loan prices compared to larger banks, as shown in tables 2-18, tables 2-19, and tables 2-20, where the variable branch has a negative impact on the variable price. In addition, most of the small banks are in underdeveloped area, which is theoretically quite risky, and therefore they need to compensate with higher interest rates.

Concerning the price of deposits, small banks tend to pay low-interest deposits compared to bigger banks. If we relate to the previous explanation, in the bigger economy, the upper-middle-income group tend to grow, and it leads to having more funds deposited in the bigger banks, as a result, the banks pay more deposit interests when their size grows.

The geographical indicators show that the coefficient of the variable rgdp is significantly negative regarding its effect on loans (see tables 2-12, tables 2-13, and tables 2-14), whereas we found non-significant results regarding its effect on lending to MSMEs (see tables 2-15, tables 2-16, and tables 2-17). This might relate to the mandate of RDBs as their existence is meant to encourage the regional economy and improve the disparity gap. The negative coefficient for rgdp proves that RDBs provide more lending to poor regions than to rich regions. The non-significant result for the relationship between rgdp and MSME loans might relate to the fact that distributing lending to this sector is a must. All commercial banks, including RDBs, are required to lend a certain percentage to this sector, therefore, the decision to lend to MSMEs is not dependent on rgdp as the banks need to follow the instructions of the central government. The rgdp does not have a significant impact in the variable price, but it does have a significantly positive effect on variable pr_deposit. There are some non-significant results, however, which may be related to the regional mandate that the RDBs have. If they are sticking to their mandate, however, we would expect a positive coefficient as they would be charging less to poor regions and vice versa. In contrast, the non-significant value suggests that the results are mixed as RDBs in unfavourable regions might charge more for loans to reflect the risk they carry (Payne, 2010).

The positive relationship between the variables rgdp and pr_deposit is similar to the impact of branch on pr_deposit. Higher rgdp reflects higher economic wealth, which is in line with having more high-income depositors. Consequently, the interest payments for depositors' increase, while in the low-income regions (as it reflects in their rgdp), the level of deposits amount should be less than in the rich-income regions, and therefore the interest payment must be smaller.

The impact of variable electric on the dependent variables is similar to that of the variable rgdp. This shows that the loans are more distributed for the underdeveloped areas (in terms of electricity access). Non-significant results are also found when this variable is regressed with MSME loans, which might connect with the RDBs mandate as we have stated before. However, the impact of the variable electric on the variable price is significantly positive (see tables 2-18, 2-19, and 2-20), while we do not find any significant results when regress it with rgdp. This may confirm the implementation of the regional mandate by the RDBs as they seem to provide cheaper loans for underdeveloped regions. In addition, it might relate to the scale of the economy, as if electricity accessibility is in line with the economic development of the city (Aji, 2015), it might push the demand for loans and increase the interest gained. Furthermore, the different impact of the variables rgdp and electric on the variable price might be related to the methodology we used. The non-significant results found for variable rgdp may be connected to the fact that not all regions that have low rgdp have unfavourable economic conditions. As this regional GDP is counted based on the population for each region, it might not fully capture the real economy of the regions. Some regions may be rich, which attracts people to move there and causes polarisation. When we divide by total population, however, the rgdp per capita looks small even though it (the level of the economy) might not actually be that small (in aggregate). For instance, the West Java region has a rgdp (per capita) of 6.64, which is even lower than that of Papua, one of the poorest regions in Indonesia. The smaller figure of rgdp is because West Java has the biggest population in Indonesia. When comparing access to electricity, 94% of West Java has access compared to 50% of Papua. Hence, these mixed conditions lead to insignificant results. Alternatively, this variable might be suffered with the endogeneity problem, which we will address the issue using the two stages least square method (2SLS).

Similar to the variable rgdp, the variable electric shows a significantly positive affect on the variable pr_deposit. This indicates the same conditions as observed for the variable grdp that lead to a significantly positive spread as it sums up all responses towards the price of loans and the price of deposits. The RDBs located in underdeveloped regions have a higher spread than their counterparts. Studying the impact of the fluctuation of the price of rice we find no impact on the dependent variables (loan, loan_MSME, price, pr_deposit, and spread). Although it has a negative coefficient for almost all the dependent variables, these results are non-significant. This might show the impact of the programmes that the Indonesian government has implemented. By cutting the bureaucratic problems, buying as much as possible from the farmers, and subsidising low-income people, the impact of rice price fluctuation can be ameliorated.

However, followings show the impact of the political indicators including the control variables on the dependent variables.

Table 2- 12. The Impact of Politics (in relation to variable align) on RDBs' Lending

loan	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.091**	0.082**	0.077**	0.067*	0.065*										
	[0.037]	[0.032]	[0.033]	[0.033]	[0.033]										
pre						0.026**	0.024*	0.024*	0.014	0.015					
						[0.012]	[0.014]	[0.014]	[0.011]	[0.011]					
post											-0.062***	-0.057***	-0.053***	-0.047***	-0.046***
											[0.015]	[0.015]	[0.015]	[0.013]	[0.013]
align	-0.017	-0.017	-0.005	-0.002	0.001	-0.036	-0.033	-0.020	-0.016	-0.013	-0.063**	-0.059*	-0.045*	-0.037	-0.033
	[0.032]	[0.032]	[0.029]	[0.026]	[0.026]	[0.029]	[0.029]	[0.025]	[0.021]	[0.021]	[0.030]	[0.031]	[0.026]	[0.022]	[0.021]
on#align	-0.097**	-0.085**	-0.079*	-0.068	-0.066										
	[0.046]	[0.040]	[0.041]	[0.040]	[0.039]										
pre#align						-0.019	-0.019	-0.016	-0.007	-0.006					
						[0.014]	[0.016]	[0.016]	[0.012]	[0.012]					
post#align											0.115***	0.105***	0.106***	0.092***	0.089***
											[0.031]	[0.027]	[0.027]	[0.024]	[0.024]
securities	-0.159***	-0.144**	-0.171***	-0.096***	-0.092***	-0.165***	-0.149**	-0.176***	-0.100***	-0.097***	-0.159***	-0.145**	-0.172***	-0.097***	-0.092***
	[0.056]	[0.055]	[0.053]	[0.021]	[0.020]	[0.055]	[0.054]	[0.052]	[0.022]	[0.021]	[0.056]	[0.055]	[0.053]	[0.022]	[0.020]
branch		0.098	0.096*	0.085	0.084		0.102	0.100*	0.088	0.088		0.097	0.095*	0.084	0.084
		[0.061]	[0.054]	[0.056]	[0.057]		[0.064]	[0.056]	[0.057]	[0.059]		[0.062]	[0.055]	[0.056]	[0.057]
rgdp			-0.208**	-0.202**	-0.212**			-0.211**	-0.205***	-0.216**			-0.213**	-0.206***	-0.218**
			[0.083]	[0.073]	[0.082]			[0.082]	[0.072]	[0.082]			[0.084]	[0.074]	[0.083]
electric				-0.451***	-0.416**				-0.456***	-0.421**				-0.454***	-0.422**
				[0.148]	[0.162]				[0.148]	[0.161]				[0.146]	[0.159]
rice					-0.036					-0.040					-0.043
					[0.060]					[0.061]					[0.060]
Constant	0.090	-0.106	0.213	0.413**	0.521	0.110**	-0.097	0.227	0.429**	0.554	0.139**	-0.060	0.266*	0.460**	0.599*
	[0.058]	[0.148]	[0.153]	[0.181]	[0.349]	[0.053]	[0.148]	[0.153]	[0.178]	[0.349]	[0.054]	[0.145]	[0.154]	[0.181]	[0.347]
Obs.	590	587	587	547	495	590	587	587	547	495	590	587	587	547	495
R^2	0.512	0.525	0.549	0.677	0.667	0.505	0.519	0.544	0.672	0.663	0.513	0.526	0.551	0.679	0.669
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is the loan or total loans per capita. The model is, $loan_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 align_{k,t} + \gamma_3 elect_{k,t}\#align_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 13. The Impact of Politics (in relation to variable $first\_TR$) on RDBs' Lending

loan	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.011	0.012	0.011	0.009	0.010										
	[0.010]	[0.009]	[0.009]	[0.010]	[0.010]										
pre						0.003	0.002	0.003	0.001	0.002					
						[0.009]	[0.009]	[0.008]	[0.008]	[0.007]					
post											0.030**	0.029*	0.034*	0.028*	0.026
											[0.014]	[0.014]	[0.017]	[0.016]	[0.017]
first_TR	0.046**	0.051***	0.053***	0.028	0.034*	0.044**	0.048**	0.051***	0.029	0.034*	0.057***	0.061***	0.067***	0.043**	0.048**
	[0.019]	[0.018]	[0.017]	[0.017]	[0.017]	[0.018]	[0.018]	[0.017]	[0.017]	[0.017]	[0.019]	[0.019]	[0.018]	[0.018]	[0.017]
on#first_TR	0.006	-0.003	0.004	0.018	0.013										
	[0.018]	[0.019]	[0.019]	[0.021]	[0.021]										
pre#first_TR						0.025*	0.021	0.024*	0.027*	0.026*					
						[0.012]	[0.013]	[0.012]	[0.013]	[0.013]					
post#first_TR											-0.057**	-0.060**	-0.070**	-0.058**	-0.056**
											[0.023]	[0.024]	[0.027]	[0.025]	[0.026]
securities	-0.163***	-0.146**	-0.176***	-0.101***	-0.098***	-0.162***	-0.145**	-0.176***	-0.101***	-0.098***	-0.159***	-0.141**	-0.172***	-0.098***	-0.095***
	[0.055]	[0.055]	[0.052]	[0.023]	[0.022]	[0.055]	[0.054]	[0.051]	[0.021]	[0.020]	[0.055]	[0.055]	[0.052]	[0.022]	[0.020]
branch		0.109	0.105*	0.090	0.088		0.108	0.105*	0.091	0.089		0.109*	0.106*	0.092	0.091
		[0.064]	[0.056]	[0.057]	[0.058]		[0.064]	[0.056]	[0.057]	[0.058]		[0.064]	[0.056]	[0.057]	[0.059]
rgdp			-0.225***	-0.215***	-0.225***			-0.226***	-0.214***	-0.225***			-0.229***	-0.217***	-0.228**
			[0.079]	[0.071]	[0.080]			[0.079]	[0.071]	[0.080]			[0.081]	[0.073]	[0.082]
electric				-0.431***	-0.385**				-0.431***	-0.385**				-0.426***	-0.383**
				[0.151]	[0.165]				[0.150]	[0.164]				[0.149]	[0.163]
rice					-0.048					-0.048					-0.047
					[0.062]					[0.061]					[0.061]
t	0.016***	0.012***	0.018***	0.027***	0.029***	0.016***	0.012***	0.018***	0.027***	0.030***	0.016***	0.011***	0.017***	0.026***	0.029***
	[0.002]	[0.003]	[0.004]	[0.005]	[0.007]	[0.002]	[0.003]	[0.004]	[0.005]	[0.007]	[0.002]	[0.003]	[0.003]	[0.005]	[0.007]
Constant	0.071*	-0.147	0.216	0.411**	0.561	0.070*	-0.147	0.216	0.407**	0.559	0.071*	-0.148	0.220	0.407**	0.556
	[0.039]	[0.134]	[0.148]	[0.175]	[0.350]	[0.039]	[0.135]	[0.148]	[0.176]	[0.352]	[0.038]	[0.135]	[0.151]	[0.179]	[0.353]
Obs.	590	587	587	547	495	590	587	587	547	495	590	587	587	547	495
R^2	0.508	0.524	0.552	0.676	0.668	0.508	0.524	0.552	0.676	0.668	0.510	0.526	0.555	0.678	0.670
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is the $loan$ or total loans per capita. The model is, $loan_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 first\_TR_{k,t} + \gamma_3 elect_{k,t} \# first\_TR_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 14. The Impact of Politics (in relation to variable $comm$) on RDBs' Lending

loan	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	-0.007	-0.006	-0.005	0.003	0.004										
	[0.012]	[0.012]	[0.013]	[0.011]	[0.011]										
pre						-0.007	-0.011	-0.006	-0.001	0.001					
						[0.019]	[0.019]	[0.017]	[0.012]	[0.012]					
post											0.003	0.001	0.007	0.010	0.009
											[0.010]	[0.010]	[0.012]	[0.013]	[0.013]
comm	-0.039	-0.036	-0.047	-0.013	-0.010	-0.032	-0.031	-0.041	-0.007	-0.004	-0.027	-0.025	-0.035	-0.003	-0.0001
	[0.039]	[0.039]	[0.041]	[0.034]	[0.034]	[0.042]	[0.041]	[0.042]	[0.035]	[0.035]	[0.038]	[0.038]	[0.039]	[0.034]	[0.034]
on#comm	0.144**	0.138**	0.131**	0.085*	0.081*										
	[0.070]	[0.067]	[0.062]	[0.047]	[0.044]										
pre#comm						0.104	0.115	0.097	0.052	0.052					
						[0.078]	[0.077]	[0.068]	[0.049]	[0.048]					
post#comm											0.113*	0.116*	0.091	0.049	0.049
											[0.065]	[0.065]	[0.057]	[0.050]	[0.049]
securities	-0.167***	-0.151**	-0.183***	-0.102***	-0.101***	-0.164***	-0.148**	-0.180***	-0.098***	-0.098***	-0.158**	-0.142**	-0.174***	-0.094***	-0.093***
	[0.058]	[0.058]	[0.056]	[0.021]	[0.021]	[0.058]	[0.057]	[0.055]	[0.020]	[0.019]	[0.058]	[0.057]	[0.056]	[0.020]	[0.020]
branch		0.099	0.097*	0.091	0.089		0.102	0.099*	0.094	0.091		0.101	0.098*	0.093	0.091
		[0.065]	[0.056]	[0.058]	[0.059]		[0.066]	[0.057]	[0.059]	[0.060]		[0.065]	[0.057]	[0.059]	[0.059]
rgdp			-0.230***	-0.220***	-0.223***			-0.230***	-0.220***	-0.222***			-0.231***	-0.221***	-0.223***
			[0.079]	[0.069]	[0.075]			[0.078]	[0.069]	[0.075]			[0.081]	[0.071]	[0.077]
electric				-0.499***	-0.467**				-0.501***	-0.468**				-0.502***	-0.471**
				[0.165]	[0.175]				[0.165]	[0.174]				[0.166]	[0.176]
rice					-0.036					-0.039					-0.037
					[0.061]					[0.062]					[0.062]
Constant	0.086	-0.113	0.266	0.458**	0.567	0.080	-0.124	0.254	0.448**	0.567	0.076	-0.126	0.255	0.448**	0.561
	[0.062]	[0.150]	[0.172]	[0.179]	[0.341]	[0.063]	[0.152]	[0.172]	[0.181]	[0.347]	[0.062]	[0.151]	[0.174]	[0.183]	[0.349]
Obs.	563	560	560	521	493	563	560	560	521	493	563	560	560	521	493
R^2	0.500	0.513	0.541	0.674	0.669	0.496	0.511	0.538	0.671	0.667	0.496	0.510	0.538	0.672	0.667
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is the loan or total loans per capita. The model is, $loan_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 comm_{k,t} + \gamma_3 elect_{k,t}\#comm_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 15. The Impact of Politics (in relation to variable $align$) on RDBs' loans to MSMEs

loan_MSME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	-0.088	-0.072	-0.070	-0.065	-0.066										
	[0.052]	[0.049]	[0.050]	[0.048]	[0.048]										
pre						-0.071*	-0.068*	-0.068*	-0.068*	-0.069*					
						[0.039]	[0.037]	[0.038]	[0.037]	[0.040]					
post											0.083	0.072	0.069	0.068	0.070
											[0.068]	[0.069]	[0.070]	[0.069]	[0.071]
align	-0.005	-0.004	-0.012	-0.012	-0.013	0.015	0.009	0.002	0.002	0.003	0.049	0.040	0.032	0.031	0.033
	[0.066]	[0.065]	[0.062]	[0.061]	[0.060]	[0.060]	[0.059]	[0.058]	[0.057]	[0.055]	[0.067]	[0.068]	[0.067]	[0.065]	[0.063]
on#align	0.164**	0.134*	0.134*	0.137*	0.139*										
	[0.071]	[0.073]	[0.074]	[0.072]	[0.073]										
pre#align						0.112**	0.115**	0.114**	0.108*	0.109*					
						[0.051]	[0.052]	[0.052]	[0.054]	[0.057]					
post#align											-0.056	-0.040	-0.039	-0.035	-0.037
											[0.092]	[0.092]	[0.093]	[0.091]	[0.094]
securities	-0.277	-0.320*	-0.335*	-0.358*	-0.359*	-0.257	-0.308*	-0.322*	-0.333*	-0.333*	-0.247	-0.294*	-0.308*	-0.318*	-0.317*
	[0.179]	[0.173]	[0.176]	[0.179]	[0.180]	[0.176]	[0.170]	[0.173]	[0.180]	[0.181]	[0.174]	[0.168]	[0.171]	[0.177]	[0.177]
branch		-0.229***	-0.230***	-0.256***	-0.257***		-0.241***	-0.241***	-0.258***	-0.257***		-0.236***	-0.237***	-0.253***	-0.251***
		[0.075]	[0.075]	[0.081]	[0.081]		[0.078]	[0.077]	[0.085]	[0.086]		[0.076]	[0.076]	[0.083]	[0.083]
rgdp			0.156	0.124	0.124			0.151	0.128	0.128			0.147	0.119	0.119
			[0.188]	[0.169]	[0.170]			[0.191]	[0.173]	[0.174]			[0.192]	[0.172]	[0.173]
electric				-0.112	-0.110				-0.115	-0.118				-0.120	-0.122
				[0.491]	[0.493]				[0.506]	[0.510]				[0.501]	[0.505]
rice					-0.074					0.065					0.065
					[0.336]					[0.336]					[0.340]
Constant	0.965***	1.395***	1.183***	1.350***	1.624	0.933***	1.393***	1.187***	1.319***	1.081	0.901***	1.354***	1.155***	1.295***	1.056
	[0.157]	[0.212]	[0.319]	[0.401]	[1.234]	[0.149]	[0.214]	[0.317]	[0.394]	[1.178]	[0.140]	[0.202]	[0.306]	[0.383]	[1.190]
Obs.	400	397	397	367	367	400	397	397	367	367	400	397	397	367	367
R^2	0.148	0.169	0.172	0.181	0.181	0.139	0.165	0.168	0.175	0.175	0.139	0.164	0.167	0.175	0.175
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is $loan\_MSME$ or percentage of loans to MSME. The model is, $loan\_MSME_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 align_{k,t} + \gamma_3 elect_{k,t}\#align_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 16. The Impact of Politics (in relation to variable $first\_TR$) on RDBs' loans to MSMEs

loan_MSME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.045	0.035	0.038	0.057	0.058										
	[0.052]	[0.049]	[0.048]	[0.042]	[0.042]										
pre						0.011	0.016	0.016	0.010	0.010					
						[0.037]	[0.037]	[0.038]	[0.042]	[0.042]					
post											0.023	0.021	0.019	0.020	0.020
											[0.033]	[0.033]	[0.034]	[0.034]	[0.034]
first_TR	0.049	0.048	0.048	0.064	0.065	0.039	0.040	0.039	0.038	0.038	0.025	0.026	0.024	0.023	0.022
	[0.102]	[0.100]	[0.101]	[0.095]	[0.095]	[0.093]	[0.091]	[0.092]	[0.082]	[0.082]	[0.105]	[0.102]	[0.103]	[0.095]	[0.096]
on#first_TR	-0.047	-0.036	-0.042	-0.105	-0.106										
	[0.091]	[0.083]	[0.082]	[0.077]	[0.076]										
pre#first_TR						0.001	0.001	0.0001	0.007	0.007					
						[0.075]	[0.077]	[0.077]	[0.079]	[0.081]					
post#first_TR											0.094	0.102	0.110	0.112	0.112
											[0.143]	[0.136]	[0.135]	[0.131]	[0.134]
securities	-0.269	-0.315*	-0.331*	-0.365**	-0.366**	-0.258	-0.308*	-0.322*	-0.336*	-0.336*	-0.252	-0.302*	-0.316*	-0.329*	-0.329*
	[0.180]	[0.174]	[0.176]	[0.177]	[0.178]	[0.176]	[0.171]	[0.174]	[0.179]	[0.180]	[0.173]	[0.169]	[0.173]	[0.177]	[0.178]
branch		-0.240***	-0.240***	-0.267***	-0.269***		-0.242***	-0.242***	-0.260***	-0.260***		-0.241***	-0.242***	-0.259***	-0.259***
		[0.077]	[0.075]	[0.084]	[0.083]		[0.077]	[0.076]	[0.084]	[0.084]		[0.077]	[0.076]	[0.083]	[0.083]
rgdp			0.169	0.145	0.145			0.160	0.133	0.133			0.167	0.140	0.140
			[0.202]	[0.181]	[0.180]			[0.201]	[0.178]	[0.178]			[0.199]	[0.177]	[0.177]
electric				-0.029	-0.026				-0.074	-0.073				-0.087	-0.088
				[0.499]	[0.502]				[0.505]	[0.508]				[0.505]	[0.509]
rice					-0.073					-0.012					0.025
					[0.349]					[0.353]					[0.362]
Constant	0.958***	1.408***	1.166***	1.280***	1.548	0.953***	1.407***	1.178***	1.297***	1.342	0.952***	1.405***	1.166***	1.289***	1.197
	[0.150]	[0.206]	[0.318]	[0.401]	[1.271]	[0.147]	[0.205]	[0.320]	[0.395]	[1.266]	[0.146]	[0.205]	[0.316]	[0.388]	[1.279]
Obs.	400	397	397	367	367	400	397	397	367	367	400	397	397	367	367
R^2	0.140	0.164	0.168	0.179	0.179	0.137	0.163	0.166	0.173	0.173	0.141	0.167	0.171	0.179	0.179
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is loan_MSME or percentage of loans to MSME. The model is $loan\_MSME_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 first\_TR_{k,t} + \gamma_3 elect_{k,t}\#first\_TR_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 17. The Impact of Politics (in relation to variable $comm$) on RDBs' loans to MSMEs

loan_MSME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.034	0.023	0.025	0.023	0.023										
	[0.044]	[0.042]	[0.042]	[0.034]	[0.035]										
pre						0.021	0.035	0.032	0.030	0.030					
						[0.046]	[0.045]	[0.045]	[0.049]	[0.049]					
post											0.026	0.027	0.025	0.032	0.032
											[0.041]	[0.040]	[0.040]	[0.037]	[0.037]
comm	0.018	0.017	0.019	0.003	0.003	0.023	0.033	0.033	0.032	0.033	0.012	0.017	0.019	0.018	0.018
	[0.083]	[0.084]	[0.084]	[0.107]	[0.107]	[0.094]	[0.096]	[0.096]	[0.122]	[0.123]	[0.082]	[0.083]	[0.084]	[0.104]	[0.105]
on#comm	0.038	0.057	0.061	0.087	0.088										
	[0.188]	[0.200]	[0.201]	[0.185]	[0.187]										
pre#comm						-0.026	-0.066	-0.052	-0.068	-0.070					
						[0.115]	[0.112]	[0.110]	[0.129]	[0.128]					
post#comm											0.139	0.122	0.137	0.090	0.089
											[0.131]	[0.127]	[0.122]	[0.114]	[0.115]
securities	-0.263	-0.309	-0.324*	-0.344*	-0.344*	-0.252	-0.298*	-0.312*	-0.320*	-0.319*	-0.247	-0.292*	-0.307*	-0.315*	-0.315*
	[0.193]	[0.184]	[0.187]	[0.191]	[0.192]	[0.177]	[0.169]	[0.172]	[0.176]	[0.177]	[0.176]	[0.169]	[0.173]	[0.174]	[0.175]
branch		-0.241***	-0.241***	-0.264***	-0.263***		-0.244***	-0.244***	-0.261***	-0.260***		-0.240***	-0.240***	-0.255***	-0.254***
		[0.075]	[0.074]	[0.081]	[0.081]		[0.078]	[0.077]	[0.084]	[0.084]		[0.075]	[0.074]	[0.081]	[0.081]
rgdp			0.171	0.141	0.141			0.162	0.134	0.134			0.169	0.138	0.138
			[0.198]	[0.177]	[0.177]			[0.197]	[0.177]	[0.178]			[0.196]	[0.174]	[0.175]
electric				-0.085	-0.086				-0.095	-0.096				-0.099	-0.100
				[0.499]	[0.502]				[0.503]	[0.506]				[0.507]	[0.510]
rice					0.030					0.065					0.052
					[0.367]					[0.350]					[0.360]
Constant	0.950***	1.403***	1.157***	1.308***	1.196	0.940***	1.391***	1.159***	1.286***	1.045	0.949***	1.395***	1.152***	1.283***	1.093
	[0.166]	[0.205]	[0.313]	[0.389]	[1.324]	[0.162]	[0.203]	[0.318]	[0.388]	[1.251]	[0.158]	[0.203]	[0.313]	[0.386]	[1.286]
Obs.	399	396	396	366	366	399	396	396	366	366	399	396	396	366	366
R^2	0.136	0.162	0.166	0.174	0.174	0.134	0.161	0.164	0.171	0.171	0.137	0.163	0.166	0.173	0.173
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed affect model with time trend added. The dependent variable is loan_MSME or percentage of loans to MSME. The model is, $loan\_MSME_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 comm_{k,t} + \gamma_3 elect_{k,t}\#comm_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 18. The Impact of Politics (in relation to variable $align$) on RDBs' Lending Price

price	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	-0.034**	-0.030**	-0.029**	-0.020	-0.020										
	[0.015]	[0.013]	[0.013]	[0.013]	[0.014]										
pre						-0.009	-0.009	-0.009	-0.003	-0.004					
						[0.010]	[0.008]	[0.008]	[0.009]	[0.008]					
post											0.034**	0.027**	0.026*	0.024*	0.022*
											[0.014]	[0.013]	[0.013]	[0.012]	[0.012]
align	0.023	0.020	0.017	0.019	0.011	0.025**	0.022*	0.018	0.021**	0.015	0.042***	0.036***	0.033**	0.034***	0.026**
	[0.014]	[0.014]	[0.014]	[0.012]	[0.012]	[0.011]	[0.012]	[0.013]	[0.010]	[0.010]	[0.013]	[0.013]	[0.013]	[0.011]	[0.012]
on#align	0.021	0.017	0.016	0.018	0.021										
	[0.020]	[0.019]	[0.019]	[0.021]	[0.021]										
pre#align						0.016	0.017	0.016	0.013	0.010					
						[0.015]	[0.012]	[0.013]	[0.014]	[0.013]					
post#align											-0.072***	-0.062***	-0.062***	-0.057***	-0.047***
											[0.017]	[0.015]	[0.015]	[0.014]	[0.012]
securities	-0.001	-0.015	-0.008	-0.073	-0.059	-0.004	-0.017	-0.011	-0.075	-0.060	-0.005	-0.018	-0.011	-0.074	-0.060
	[0.063]	[0.060]	[0.057]	[0.058]	[0.057]	[0.063]	[0.060]	[0.057]	[0.058]	[0.057]	[0.061]	[0.058]	[0.056]	[0.057]	[0.056]
branch		-0.077**	-0.077**	-0.084**	-0.064*		-0.079**	-0.078**	-0.085**	-0.065*		-0.075**	-0.075**	-0.082**	-0.063*
		[0.036]	[0.035]	[0.032]	[0.036]		[0.036]	[0.035]	[0.032]	[0.036]		[0.035]	[0.035]	[0.031]	[0.035]
rgdp			0.052	0.062	0.067			0.052	0.062	0.068			0.054	0.064	0.070
			[0.084]	[0.074]	[0.092]			[0.083]	[0.073]	[0.090]			[0.084]	[0.074]	[0.091]
electric				0.615***	0.438***				0.617***	0.441***				0.614***	0.440***
				[0.129]	[0.133]				[0.129]	[0.132]				[0.129]	[0.132]
rice					-0.033					-0.032					-0.029
					[0.086]					[0.083]					[0.083]
Constant	0.357***	0.515***	0.435***	0.133	0.353	0.356***	0.518***	0.438***	0.132	0.346	0.338***	0.494***	0.412***	0.109	0.318
	[0.041]	[0.075]	[0.130]	[0.131]	[0.402]	[0.040]	[0.077]	[0.128]	[0.128]	[0.387]	[0.038]	[0.072]	[0.129]	[0.129]	[0.384]
Obs.	590	587	587	547	495	590	587	587	547	495	590	587	587	547	495
R^2	0.175	0.185	0.187	0.289	0.356	0.173	0.183	0.185	0.289	0.356	0.177	0.187	0.189	0.292	0.358
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed affect model with time trend added. The dependent variable is price or price of loans. The model is $price_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 align_{k,t} + \gamma_3 elect_{k,t}\#align_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 19. The Impact of Politics (in relation to variable $first\_TR$) in RDBs' Lending Price

price	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	-0.018***	-0.017**	-0.017**	-0.003	-0.002										
	[0.006]	[0.007]	[0.007]	[0.009]	[0.009]										
pre						0.004	0.003	0.003	0.007	0.003					
						[0.008]	[0.008]	[0.008]	[0.009]	[0.009]					
post											-0.030***	-0.031***	-0.033***	-0.029**	-0.020*
											[0.009]	[0.010]	[0.011]	[0.011]	[0.010]
first_TR	-0.034*	-0.039**	-0.039**	-0.011	-0.022	-0.033**	-0.038**	-0.039**	-0.015	-0.025*	-0.042***	-0.047**	-0.048***	-0.024*	-0.030**
	[0.017]	[0.019]	[0.018]	[0.014]	[0.015]	[0.015]	[0.017]	[0.017]	[0.013]	[0.014]	[0.014]	[0.017]	[0.017]	[0.012]	[0.013]
on#first_TR	0.013	0.017	0.016	-0.011	-0.001										
	[0.018]	[0.019]	[0.019]	[0.018]	[0.019]										
pre#first_TR						0.008	0.013	0.012	0.004	0.011					
						[0.015]	[0.016]	[0.016]	[0.015]	[0.014]					
post#first_TR											0.066**	0.071**	0.074***	0.060**	0.048*
											[0.028]	[0.026]	[0.026]	[0.023]	[0.023]
securities	-0.000	-0.014	-0.006	-0.074	-0.057	-0.005	-0.019	-0.010	-0.075	-0.058	-0.007	-0.021	-0.012	-0.076	-0.059
	[0.062]	[0.058]	[0.057]	[0.059]	[0.057]	[0.063]	[0.059]	[0.057]	[0.058]	[0.057]	[0.062]	[0.058]	[0.056]	[0.058]	[0.056]
branch		-0.083**	-0.082**	-0.087**	-0.066*		-0.083**	-0.083**	-0.088**	-0.067*		-0.084**	-0.083**	-0.088**	-0.067*
		[0.036]	[0.035]	[0.032]	[0.036]		[0.036]	[0.035]	[0.032]	[0.036]		[0.035]	[0.034]	[0.032]	[0.036]
rgdp			0.063	0.073	0.076			0.063	0.072	0.076			0.067	0.075	0.079
			[0.078]	[0.070]	[0.087]			[0.077]	[0.069]	[0.086]			[0.078]	[0.070]	[0.087]
electric				0.604***	0.416***				0.604***	0.417***				0.599***	0.415***
				[0.129]	[0.134]				[0.128]	[0.132]				[0.127]	[0.131]
rice					-0.027					-0.029					-0.027
					[0.085]					[0.084]					[0.083]
Constant	0.382***	0.548***	0.447***	0.148	0.350	0.384***	0.551***	0.449***	0.152	0.358	0.382***	0.550***	0.441***	0.148	0.345
	[0.033]	[0.072]	[0.127]	[0.126]	[0.394]	[0.033]	[0.073]	[0.126]	[0.125]	[0.389]	[0.033]	[0.071]	[0.126]	[0.126]	[0.384]
Obs.	590	587	587	547	495	590	587	587	547	495	590	587	587	547	495
R^2	0.175	0.187	0.190	0.287	0.357	0.174	0.186	0.189	0.287	0.357	0.177	0.190	0.193	0.290	0.359
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed affect model with time trend added. The dependent variable is price or price of loans. The model is, $price_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 first\_TR_{k,t} + \gamma_3 elect_{k,t}\#first\_TR_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 20. The Impact of Politics (in relation to variable $comm$) on RDBs' Lending Price

price	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.003	0.004	0.004	0.006	0.008										
	[0.008]	[0.008]	[0.008]	[0.008]	[0.009]										
pre						0.020	0.021	0.020	0.018	0.015					
						[0.014]	[0.014]	[0.013]	[0.012]	[0.012]					
post											-0.001	-0.001	-0.003	-0.008	-0.006
											[0.008]	[0.008]	[0.008]	[0.008]	[0.008]
comm	0.101**	0.099**	0.102**	0.067	0.062	0.100**	0.098**	0.101**	0.064	0.059	0.093**	0.091**	0.094**	0.058	0.053
	[0.040]	[0.041]	[0.041]	[0.041]	[0.041]	[0.042]	[0.043]	[0.042]	[0.041]	[0.040]	[0.039]	[0.039]	[0.039]	[0.038]	[0.038]
on#comm	-0.091**	-0.090**	-0.088**	-0.066*	-0.070*										
	[0.038]	[0.039]	[0.037]	[0.033]	[0.035]										
pre#comm						-0.084	-0.090	-0.085	-0.055	-0.057					
						[0.055]	[0.055]	[0.054]	[0.046]	[0.044]					
post#comm											-0.067	-0.067	-0.060	-0.025	-0.028
											[0.059]	[0.060]	[0.056]	[0.057]	[0.057]
securities	0.005	-0.005	0.005	-0.057	-0.046	0.001	-0.009	0.0001	-0.061	-0.050	-0.001	-0.011	-0.001	-0.062	-0.051
	[0.060]	[0.057]	[0.056]	[0.054]	[0.053]	[0.060]	[0.058]	[0.056]	[0.054]	[0.054]	[0.060]	[0.058]	[0.056]	[0.054]	[0.054]
branch		-0.060	-0.059*	-0.074**	-0.064*		-0.062*	-0.061*	-0.076**	-0.065*		-0.061*	-0.060*	-0.075**	-0.064*
		[0.035]	[0.034]	[0.032]	[0.036]		[0.035]	[0.034]	[0.032]	[0.036]		[0.035]	[0.034]	[0.032]	[0.036]
rgdp			0.068	0.074	0.081			0.066	0.073	0.081			0.068	0.075	0.082
			[0.079]	[0.074]	[0.086]			[0.078]	[0.074]	[0.087]			[0.079]	[0.074]	[0.086]
electric				0.544***	0.453***				0.545***	0.454***				0.545***	0.454***
				[0.136]	[0.143]				[0.135]	[0.142]				[0.137]	[0.144]
rice					-0.037					-0.034					-0.033
					[0.084]					[0.083]					[0.082]
Constant	0.346***	0.466***	0.355***	0.129	0.307	0.348***	0.473***	0.364***	0.136	0.300	0.352***	0.475***	0.362***	0.134	0.299
	[0.043]	[0.077]	[0.126]	[0.126]	[0.380]	[0.044]	[0.077]	[0.124]	[0.124]	[0.379]	[0.042]	[0.078]	[0.125]	[0.125]	[0.375]
Obs.	563	560	560	521	493	563	560	560	521	493	563	560	560	521	493
R^2	0.250	0.256	0.259	0.327	0.360	0.249	0.255	0.258	0.327	0.360	0.248	0.254	0.257	0.326	0.359
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed affect model with time trend added. The dependent variable is price or price of loans. The model is $price_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 comm_{k,t} + \gamma_3 elect_{k,t}\#comm_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 21. The Impact of Politics (in relation to variable $align$) on RDBs' price of Deposit

pr_deposit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.001	-0.004	-0.003	-0.0001	-0.0001										
	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]										
pre						0.004	0.003	0.003	0.005	0.005					
						[0.006]	[0.007]	[0.008]	[0.008]	[0.008]					
post											-0.006	-0.002	-0.003	-0.003	-0.004
											[0.007]	[0.006]	[0.006]	[0.005]	[0.005]
align	-0.006	-0.006	-0.009	-0.006	-0.009	-0.005	-0.003	-0.006	-0.003	-0.006	-0.005	-0.002	-0.006	-0.003	-0.006
	[0.007]	[0.007]	[0.006]	[0.007]	[0.007]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.007]	[0.007]	[0.006]	[0.006]	[0.006]
on#align	0.007	0.013	0.011	0.013	0.015										
	[0.011]	[0.010]	[0.011]	[0.010]	[0.009]										
pre#align						0.003	0.003	0.002	0.002	0.001					
						[0.009]	[0.010]	[0.011]	[0.010]	[0.010]					
post#align											0.001	-0.005	-0.005	-0.006	-0.002
											[0.009]	[0.008]	[0.008]	[0.007]	[0.007]
securities	-0.089***	-0.081***	-0.074***	-0.099***	-0.095***	-0.089***	-0.081***	-0.074***	-0.098***	-0.093***	-0.088***	-0.080***	-0.073***	-0.096***	-0.092***
	[0.021]	[0.023]	[0.024]	[0.020]	[0.022]	[0.021]	[0.023]	[0.024]	[0.020]	[0.021]	[0.021]	[0.023]	[0.024]	[0.020]	[0.021]
branch		0.051**	0.051***	0.047***	0.053***		0.050**	0.050**	0.047**	0.053***		0.050**	0.051**	0.048***	0.054***
		[0.019]	[0.018]	[0.017]	[0.018]		[0.020]	[0.018]	[0.017]	[0.018]		[0.020]	[0.019]	[0.017]	[0.018]
rgdp			0.052**	0.047**	0.035			0.052**	0.048**	0.036			0.053**	0.049**	0.037*
			[0.025]	[0.018]	[0.021]			[0.024]	[0.018]	[0.021]			[0.025]	[0.018]	[0.022]
electric				0.204***	0.147***				0.203***	0.146***				0.202***	0.145***
				[0.043]	[0.048]				[0.044]	[0.049]				[0.044]	[0.049]
rice					-0.032					-0.029					-0.028
					[0.030]					[0.029]					[0.030]
Constant	0.227***	0.125***	0.046	-0.040	0.128	0.225***	0.123***	0.043	-0.045	0.110	0.225***	0.121**	0.040	-0.049	0.106
	[0.014]	[0.043]	[0.060]	[0.057]	[0.127]	[0.013]	[0.044]	[0.059]	[0.056]	[0.125]	[0.014]	[0.045]	[0.061]	[0.058]	[0.129]
Obs.	590	587	587	547	495	590	587	587	547	495	590	587	587	547	495
R^2	0.120	0.162	0.178	0.271	0.306	0.120	0.160	0.177	0.267	0.300	0.119	0.161	0.177	0.267	0.299
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed affect model with time trend added. The dependent variable is price or price of loans. The model of the result is $pr\_deposit_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 align_{k,t} + \gamma_3 elect_{k,t}\#align_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 22. The Impact of Politics (in relation to variable $first\_TR$) on RDBs' price of Deposit

pr_deposit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.006*	0.007*	0.007*	0.012***	0.013***										
	[0.003]	[0.004]	[0.004]	[0.004]	[0.004]										
pre						0.004	0.003	0.003	0.005	0.004					
						[0.005]	[0.006]	[0.006]	[0.006]	[0.006]					
post											-0.009*	-0.009*	-0.010**	-0.009**	-0.007*
											[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
first_TR	0.001	0.003	0.003	0.012	0.008	-0.001	0.001	0.0001	0.008	0.005	-0.002	0.0001	-0.001	0.007	0.005
	[0.012]	[0.011]	[0.011]	[0.010]	[0.010]	[0.011]	[0.009]	[0.009]	[0.009]	[0.009]	[0.012]	[0.011]	[0.011]	[0.010]	[0.010]
on#first_TR	-0.000	-0.004	-0.006	-0.014	-0.010										
	[0.013]	[0.010]	[0.010]	[0.010]	[0.009]										
pre#first_TR						0.012	0.010	0.009	0.006	0.008					
						[0.015]	[0.015]	[0.015]	[0.013]	[0.014]					
post#first_TR											0.019	0.017	0.019	0.015	0.012
											[0.014]	[0.013]	[0.014]	[0.013]	[0.014]
securities	-0.088***	-0.080***	-0.074***	-0.099***	-0.094***	-0.088***	-0.080***	-0.073***	-0.098***	-0.093***	-0.088***	-0.080***	-0.073***	-0.097***	-0.092***
	[0.021]	[0.023]	[0.024]	[0.020]	[0.021]	[0.021]	[0.023]	[0.024]	[0.020]	[0.021]	[0.021]	[0.023]	[0.023]	[0.019]	[0.021]
branch		0.050**	0.051***	0.048***	0.053***		0.050**	0.051***	0.048***	0.054***		0.050**	0.051***	0.048***	0.054***
		[0.019]	[0.018]	[0.017]	[0.018]		[0.019]	[0.018]	[0.017]	[0.018]		[0.019]	[0.018]	[0.017]	[0.018]
rgdp			0.050*	0.047**	0.033			0.049*	0.046**	0.033			0.051*	0.047**	0.034
			[0.026]	[0.019]	[0.022]			[0.026]	[0.019]	[0.023]			[0.027]	[0.020]	[0.023]
electric				0.213***	0.156***				0.210***	0.152***				0.209***	0.152***
				[0.044]	[0.048]				[0.045]	[0.049]				[0.045]	[0.050]
rice					-0.031					-0.030					-0.029
					[0.029]					[0.029]					[0.029]
Constant	0.220***	0.119***	0.038	-0.051	0.114	0.220***	0.119***	0.039	-0.051	0.108	0.219***	0.118***	0.036	-0.053	0.100
	[0.011]	[0.040]	[0.058]	[0.055]	[0.126]	[0.011]	[0.040]	[0.058]	[0.055]	[0.124]	[0.011]	[0.040]	[0.059]	[0.056]	[0.124]
Obs.	590	587	587	547	495	590	587	587	547	495	590	587	587	547	495
R^2	0.119	0.161	0.176	0.273	0.304	0.120	0.161	0.176	0.269	0.300	0.120	0.162	0.178	0.270	0.300
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed affect model with time trend added. The dependent variable is price or price of loans. The model is $pr\_deposit_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 first\_TR_{k,t} + \gamma_3 elect_{k,t}\#first\_TR_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 23. The Impact of Politics (in relation to variable $comm$) on RDBs' price of Deposit

pr_deposit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.007*	0.008*	0.008*	0.011**	0.012**										
	[0.004]	[0.004]	[0.004]	[0.005]	[0.005]										
pre						0.009	0.008	0.007	0.009	0.008					
						[0.008]	[0.008]	[0.008]	[0.007]	[0.008]					
post											-0.007	-0.007	-0.008	-0.010*	-0.009*
											[0.006]	[0.005]	[0.005]	[0.005]	[0.005]
comm	-0.003	-0.001	0.0001	-0.0001	-0.004	-0.001	-0.001	0.001	-0.0001	-0.004	-0.005	-0.005	-0.003	-0.005	-0.008
	[0.013]	[0.013]	[0.012]	[0.014]	[0.014]	[0.014]	[0.013]	[0.012]	[0.014]	[0.014]	[0.012]	[0.012]	[0.011]	[0.012]	[0.013]
on#comm	0.000	-0.003	-0.002	-0.005	-0.005										
	[0.014]	[0.014]	[0.014]	[0.016]	[0.015]										
pre#comm						-0.022	-0.015	-0.012	-0.014	-0.013					
						[0.020]	[0.019]	[0.019]	[0.016]	[0.017]					
post#comm											0.027	0.029*	0.033*	0.038**	0.038**
											[0.017]	[0.016]	[0.017]	[0.016]	[0.017]
securities	-0.091***	-0.081***	-0.075***	-0.097***	-0.094***	-0.090***	-0.081***	-0.075***	-0.097***	-0.093***	-0.090***	-0.081***	-0.075***	-0.097***	-0.093***
	[0.021]	[0.023]	[0.024]	[0.020]	[0.021]	[0.021]	[0.022]	[0.024]	[0.019]	[0.021]	[0.021]	[0.023]	[0.024]	[0.020]	[0.021]
branch		0.057***	0.057***	0.050***	0.052***		0.057***	0.057***	0.051***	0.053***		0.057***	0.058***	0.051***	0.054***
		[0.019]	[0.018]	[0.017]	[0.018]		[0.019]	[0.018]	[0.017]	[0.018]		[0.019]	[0.018]	[0.017]	[0.018]
rgdp			0.043	0.040*	0.033			0.042	0.040*	0.033			0.044	0.041*	0.035
			[0.027]	[0.020]	[0.022]			[0.027]	[0.020]	[0.022]			[0.027]	[0.021]	[0.023]
electric				0.185***	0.159***				0.184***	0.158***				0.184***	0.158***
				[0.049]	[0.052]				[0.049]	[0.053]				[0.049]	[0.053]
rice					-0.032					-0.030					-0.029
					[0.030]					[0.030]					[0.030]
Constant	0.232***	0.118***	0.048	-0.024	0.118	0.231***	0.118***	0.048	-0.025	0.108	0.233***	0.119***	0.047	-0.027	0.104
	[0.011]	[0.040]	[0.058]	[0.060]	[0.126]	[0.011]	[0.039]	[0.058]	[0.060]	[0.125]	[0.011]	[0.040]	[0.059]	[0.060]	[0.125]
Obs.	563	560	560	521	493	563	560	560	521	493	563	560	560	521	493
R^2	0.154	0.206	0.217	0.292	0.306	0.154	0.205	0.216	0.289	0.302	0.153	0.206	0.217	0.290	0.304
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed affect model with time trend added. The dependent variable is price or price of loans. The model of the result is $pr\_deposit_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 comm_{k,t} + \gamma_3 elect_{k,t} \# comm_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

2.5.3 The political lending and the intervention in RDBs (with control variables)

When studying the impact of the political indicators on variable $assets$, it can be observed that the coefficient of the $post\#align$ variable is consistently positive and significant. If this connects with the previous assumption about clientelism, then we could infer that there is support from the central government to finance the agreement after the election ends. However, to get robust results, we will run another test to check the consistency of these results before drawing a conclusion as it did not show when we run without control variables (table 2-10). When analysing the $first\_TR$ variable we found no significant significance when interacting it with variable elect, but the main effect, $first\_TR$ shows a positive and significant coefficient for all models. It suggests that RDBs under the elected governor have more assets per capita compared to their counterpart.

If the decision to finance political lending is deliberate, then we expect a negative coefficient on the $on\#align$ or/and $pre\#align$ variable to affect variable $securities$. However, the result shows the opposite, a positive and significant coefficient on those times. These finding are connected with the previous one, that is, non-allied RDBs tend to be more aggressive in providing loans during elections at a lower interest rate, and therefore they need to finance their decision. The results on table 2-30 show that non-allied RDBs must reduce their investment proportion in securities to finance their political lending. Table 2-31 shows the same behaviour using the $first\_TR$ variable. As they distribute more lending close to election years, RDBs need to reduce the proportion of their securities investment around 6% up to 7% near the election year. There was an unclear result when we interacted variable $comm$ with the elect (on, pre and $post$) one. Although models 7 and 8 show a significant and positive coefficient, we found an insignificant statistical sign in models 5 and 6.

When examining the control variables, we found inconsistent results regarding the impact of the $securities$ variable on the variable $asset$. The coefficients are not stable, and only some of the variables are significant. This might be related to the fact (see the descriptive statistics at figure 2-8 and figure 2-9) that there is no certain pattern (in terms of size) in RDBs' placing more funds in $securities$ (central bank, other banks, or securities investment). Meanwhile, variable $branch$ shows a positive coefficient with variable $assets$; as these two variables should be in line, 'more branches' means 'more assets'. Variables $rgdp$ and $electric$ show a negative and significant coefficient affecting $assets$, suggesting that the richer and the more developed the regions, the smaller the assets (per capita) owned by RDBs. These findings might contradict expectations, as usually the asset growth is in line with the growth of the economy. Moreover, we suspect that since we use asset per capita, this influences the results. For example, due to the fact that West Java is quite developed (in terms of infrastructure accessibility) and has the largest population in Indonesia, RDBs in West Java seem to have small assets (per capita). This example also applies to RDBs in Central and East Java, whose asset size is below that of RDBs in poor regions such as Maluku, East Nusa Tenggara, and West Nusa Tenggara.

When we employ the $securities$ as a dependent one, the $branch$ shows a negative and significant relationship, meaning that the proportion of placing funds in central banks, other banks, and securities is greater for small banks; however not all of the models provide significant results. As the $securities$ variable is the proportion of placing funds (in central banks, other banks, and securities) over total assets, then it is possible that this proportion appears big, as small banks have a reduced asset size. Moreover, checking the impact of variable $rgdp$ and $electric$, it shows an opposite result in affecting the $securities$. In terms of economic conditions, this finding suggests that RDBs in low-income (per capita) regions tend to shift their funds in $securities$. Meanwhile, in terms of underdeveloped conditions, RDBs in underdeveloped regions place less funds in the $securities$. While, it seems to be contradicted; however, the descriptive statistics in table 2-4 has shown that the underdeveloped regions are mostly in Eastern Indonesia, but the most populous island is in Java island; therefore the highest percentage of the poor population is concentrated on this island (Baum, Schaffer, & Stillman, 2010). This means that these facts might refer to the RDBs in Java, which has a high percentage of poor population living in developed regions but have a high access of the electricity infrastructure. We are again aware of the endogeneity problem or omitted variable bias that might skew the results, and therefore we will run a robustness test using the two-stage least squares method (2SLS).

Table 2- 24. The Impact of Politics (in relation to variable align) on RDBs' Assets

asset	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.073	0.056	0.043	0.029	0.026										
	[0.049]	[0.045]	[0.060]	[0.048]	[0.046]										
pre						0.043	0.038	0.038	0.008	0.008					
						[0.043]	[0.041]	[0.047]	[0.030]	[0.029]					
post											-0.061	-0.055	-0.045	-0.026	-0.025
											[0.037]	[0.043]	[0.046]	[0.034]	[0.033]
align	-0.049	-0.050	-0.015	-0.024	-0.025	-0.060	-0.057	-0.019	-0.030	-0.029	-0.082	-0.076	-0.036	-0.036	-0.037
	[0.051]	[0.049]	[0.032]	[0.034]	[0.033]	[0.048]	[0.046]	[0.030]	[0.031]	[0.029]	[0.051]	[0.053]	[0.037]	[0.037]	[0.034]
on#align	-0.054	-0.033	-0.016	0.002	0.004										
	[0.060]	[0.058]	[0.073]	[0.063]	[0.061]										
pre#align						0.001	0.003	0.010	0.042	0.038					
						[0.063]	[0.061]	[0.063]	[0.038]	[0.037]					
post#align											0.097**	0.082*	0.084*	0.059	0.061*
											[0.041]	[0.045]	[0.049]	[0.035]	[0.034]
securities	0.008	0.029	-0.052	0.299**	0.349**	-0.001	0.023	-0.059	0.293**	0.343**	0.012	0.033	-0.046	0.306**	0.357**
	[0.323]	[0.324]	[0.352]	[0.131]	[0.130]	[0.321]	[0.322]	[0.351]	[0.135]	[0.133]	[0.325]	[0.326]	[0.354]	[0.136]	[0.135]
branch		0.151	0.145*	0.117	0.129		0.152	0.146*	0.120	0.131		0.149	0.143*	0.118	0.129
		[0.092]	[0.079]	[0.080]	[0.080]		[0.093]	[0.080]	[0.080]	[0.081]		[0.092]	[0.080]	[0.080]	[0.081]
rgdp			-0.621*	-0.315***	-0.265***			-0.624*	-0.315***	-0.264***			-0.623*	-0.315***	-0.265***
			[0.317]	[0.082]	[0.083]			[0.317]	[0.080]	[0.081]			[0.317]	[0.080]	[0.081]
electric				-0.481**	-0.510*				-0.485**	-0.510*				-0.485**	-0.517**
				[0.224]	[0.251]				[0.225]	[0.251]				[0.224]	[0.250]
rice					-0.054					-0.050					-0.050
					[0.100]					[0.098]					[0.097]
Constant	0.211	-0.089	0.865	0.506**	0.614	0.224	-0.084	0.874	0.510**	0.601	0.244	-0.060	0.894	0.518**	0.612
	[0.193]	[0.288]	[0.665]	[0.235]	[0.431]	[0.189]	[0.287]	[0.661]	[0.229]	[0.417]	[0.204]	[0.301]	[0.674]	[0.230]	[0.414]
Obs.	590	587	587	547	495	590	587	587	547	495	590	587	587	547	495
R^2	0.141	0.147	0.182	0.580	0.554	0.141	0.147	0.182	0.582	0.555	0.141	0.147	0.182	0.580	0.553
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is asset or assets per capita. The model is, $asset_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 align_{k,t} + \gamma_3 elect_{k,t}\#align_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 25. The Impact of Politics (in relation to variable $first\_TR$) on RDBs' Assets

$asset$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.031	0.033	0.028	0.029	0.028										
	[0.026]	[0.025]	[0.026]	[0.024]	[0.024]										
pre						0.036	0.034	0.036	0.035	0.031					
						[0.026]	[0.026]	[0.023]	[0.024]	[0.023]					
post											0.018	0.015	0.028	0.030	0.032
											[0.021]	[0.021]	[0.023]	[0.022]	[0.021]
first_TR	0.104***	0.111***	0.117***	0.072***	0.078***	0.092***	0.098***	0.107***	0.066***	0.072***	0.103***	0.108***	0.124***	0.081***	0.086***
	[0.037]	[0.037]	[0.036]	[0.023]	[0.021]	[0.032]	[0.032]	[0.033]	[0.022]	[0.020]	[0.034]	[0.034]	[0.038]	[0.027]	[0.025]
on#first_TR	-0.038	-0.051	-0.032	-0.019	-0.022										
	[0.035]	[0.042]	[0.044]	[0.036]	[0.035]										
pre#first_TR						0.007	0.001	0.010	0.003	0.005					
						[0.032]	[0.033]	[0.034]	[0.027]	[0.026]					
post#first_TR											-0.044	-0.049	-0.077*	-0.069*	-0.073**
											[0.029]	[0.034]	[0.041]	[0.035]	[0.034]
securities	0.003	0.028	-0.058	0.294**	0.342**	0.002	0.028	-0.060	0.291**	0.340**	0.012	0.037	-0.049	0.302**	0.352**
	[0.325]	[0.324]	[0.353]	[0.131]	[0.132]	[0.322]	[0.322]	[0.352]	[0.134]	[0.134]	[0.326]	[0.326]	[0.355]	[0.135]	[0.135]
branch		0.166*	0.157*	0.124	0.133		0.164*	0.155*	0.125	0.134		0.166*	0.157*	0.127	0.137
		[0.091]	[0.079]	[0.079]	[0.080]		[0.091]	[0.079]	[0.079]	[0.081]		[0.091]	[0.079]	[0.079]	[0.081]
rgdp			-0.638*	-0.328***	-0.279***			-0.641*	-0.329***	-0.280***			-0.643*	-0.331***	-0.283***
			[0.317]	[0.080]	[0.081]			[0.319]	[0.080]	[0.081]			[0.318]	[0.082]	[0.084]
electric				-0.428*	-0.436				-0.433*	-0.440				-0.429*	-0.442
				[0.230]	[0.260]				[0.231]	[0.259]				[0.232]	[0.260]
rice					-0.067					-0.066					-0.063
					[0.102]					[0.098]					[0.097]
Constant	0.159	-0.173	0.855	0.461**	0.609	0.159	-0.171	0.863	0.462**	0.604	0.157	-0.176	0.860	0.459**	0.594
	[0.175]	[0.259]	[0.657]	[0.218]	[0.436]	[0.175]	[0.260]	[0.659]	[0.216]	[0.421]	[0.175]	[0.260]	[0.659]	[0.219]	[0.420]
Obs.	590	587	587	547	495	590	587	587	547	495	590	587	587	547	495
R^2	0.144	0.150	0.188	0.586	0.561	0.144	0.150	0.188	0.587	0.562	0.143	0.150	0.188	0.586	0.562
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect model with time trend added. The dependent variable is asset or assets per capita. The model is, $asset_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 first\_TR_{k,t} + \gamma_3 elect_{k,t}\#first\_TR_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 26. The Impact of Politics (in relation to variable $comm$) on RDBs' Assets

asset	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
on	0.017	0.018	0.020	0.011	0.012										
	[0.026]	[0.025]	[0.028]	[0.020]	[0.021]										
pre						0.030	0.023	0.035**	0.021	0.020					
						[0.019]	[0.021]	[0.017]	[0.022]	[0.022]					
post											0.004	0.001	0.016	0.012	0.013
											[0.020]	[0.020]	[0.021]	[0.017]	[0.017]
comm	0.082	0.088	0.059	-0.059	-0.054	0.087	0.089	0.064	-0.052	-0.049	0.091	0.096	0.068	-0.044	-0.040
	[0.160]	[0.159]	[0.138]	[0.056]	[0.055]	[0.153]	[0.152]	[0.134]	[0.058]	[0.057]	[0.152]	[0.152]	[0.133]	[0.055]	[0.054]
on#comm	0.136	0.125	0.106	0.120	0.111										
	[0.106]	[0.099]	[0.097]	[0.084]	[0.083]										
pre#comm						0.102	0.118	0.070	0.095	0.094					
						[0.088]	[0.085]	[0.068]	[0.080]	[0.079]					
post#comm											0.074	0.077	0.008	0.031	0.031
											[0.139]	[0.141]	[0.157]	[0.126]	[0.125]
securities	0.023	0.050	-0.038	0.311**	0.338**	0.021	0.048	-0.040	0.309**	0.336**	0.035	0.062	-0.026	0.324**	0.351**
	[0.319]	[0.317]	[0.350]	[0.129]	[0.130]	[0.320]	[0.319]	[0.351]	[0.132]	[0.133]	[0.321]	[0.319]	[0.352]	[0.132]	[0.133]
branch		0.163*	0.155*	0.126	0.130		0.165*	0.156*	0.129	0.133		0.164*	0.156*	0.129	0.134
		[0.091]	[0.080]	[0.080]	[0.080]		[0.092]	[0.080]	[0.081]	[0.081]		[0.092]	[0.080]	[0.081]	[0.081]
rgdp			-0.631*	-0.310***	-0.279***			-0.632*	-0.309***	-0.278***			-0.634*	-0.312***	-0.280***
			[0.331]	[0.073]	[0.076]			[0.331]	[0.073]	[0.076]			[0.332]	[0.073]	[0.076]
electric				-0.555**	-0.564**				-0.554**	-0.560**				-0.562**	-0.572**
				[0.252]	[0.267]				[0.250]	[0.264]				[0.254]	[0.268]
rice					-0.042					-0.046					-0.042
					[0.102]					[0.099]					[0.099]
Constant	0.100	-0.228	0.811	0.539**	0.632	0.096	-0.234	0.807	0.525**	0.634	0.089	-0.240	0.803	0.525**	0.619
	[0.099]	[0.216]	[0.592]	[0.210]	[0.428]	[0.106]	[0.219]	[0.597]	[0.210]	[0.421]	[0.104]	[0.220]	[0.599]	[0.210]	[0.422]
Obs.	563	560	560	521	493	563	560	560	521	493	563	560	560	521	493
R^2	0.126	0.132	0.166	0.573	0.558	0.125	0.132	0.166	0.574	0.558	0.124	0.131	0.165	0.571	0.555
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed affect with time trend added. The dependent variable is $asset$ or assets per capita. The model of the result is $asset_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 comm_{k,t} + \gamma_3 elect_{k,t} \# comm_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 27. The Impact of Politics (in relation to variable align) on RDBs' Securities

securities	1	2	3	4	5	6	7	8	9	10	11	12
on	-0.069**	-0.074**	-0.069**	-0.060**								
	[0.030]	[0.032]	[0.032]	[0.028]								
pre					0.016	0.016	0.019	0.006				
					[0.015]	[0.017]	[0.016]	[0.015]				
post									0.022	0.027	0.026	0.040
									[0.029]	[0.031]	[0.030]	[0.034]
align	-0.023	-0.007	-0.017	-0.001	-0.013	0.004	-0.006	0.004	0.007	0.024	0.013	0.028
	[0.031]	[0.036]	[0.029]	[0.029]	[0.024]	[0.030]	[0.025]	[0.025]	[0.027]	[0.034]	[0.028]	[0.028]
on#align	0.073*	0.077*	0.077*	0.054								
	[0.040]	[0.042]	[0.041]	[0.039]								
pre#align					0.051*	0.052*	0.049**	0.057**				
					[0.026]	[0.027]	[0.024]	[0.023]				
post#align									-0.074*	-0.073*	-0.063	-0.079*
									[0.040]	[0.040]	[0.038]	[0.042]
branch	-0.107**	-0.106**	-0.088**	-0.045	-0.111**	-0.110**	-0.092**	-0.049	-0.107**	-0.106*	-0.089**	-0.045
	[0.048]	[0.050]	[0.040]	[0.051]	[0.048]	[0.052]	[0.042]	[0.051]	[0.049]	[0.052]	[0.042]	[0.051]
rgdp		-0.255***	-0.245***	-0.146**		-0.253***	-0.242***	-0.144**		-0.250***	-0.241***	-0.142**
		[0.070]	[0.062]	[0.064]		[0.069]	[0.062]	[0.064]		[0.070]	[0.063]	[0.064]
electric			0.396***	0.335***			0.401***	0.347***			0.400***	0.342***
			[0.120]	[0.119]			[0.119]	[0.118]			[0.119]	[0.117]
rice				0.675***				0.667***				0.680***
				[0.124]				[0.123]				[0.124]
Constant	0.607***	0.978***	0.712***	-1.908***	0.604***	0.973***	0.699***	-1.885***	0.573***	0.937***	0.672***	-1.967***
	[0.100]	[0.142]	[0.149]	[0.554]	[0.098]	[0.139]	[0.145]	[0.546]	[0.095]	[0.138]	[0.149]	[0.557]
Obs.	587	587	547	495	587	587	547	495	587	587	547	495
R^2	0.037	0.077	0.111	0.223	0.045	0.084	0.120	0.232	0.038	0.077	0.109	0.225
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect with time trend added. The dependent variable is $securities$ or percentage of securities over total assets. The model is, $securities_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 align_{k,t} + \gamma_3 elect_{k,t}\#align_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.11

Table 2- 28. The Impact of Politics (in relation to variable $first\_TR$) on RDBs' Securities

securities	1	2	3	4	5	6	7	8	9	10	11	12
on	0.004	0.001	0.006	-0.005								
	[0.015]	[0.015]	[0.017]	[0.017]								
pre					0.071***	0.069***	0.070***	0.064***				
					[0.020]	[0.019]	[0.022]	[0.022]				
post									-0.044**	-0.038*	-0.028	-0.027
									[0.020]	[0.019]	[0.017]	[0.019]
first_TR	0.010	0.012	0.030	0.018	-0.004	-0.001	0.015	0.008	-0.024	-0.018	-0.001	-0.010
	[0.024]	[0.024]	[0.023]	[0.029]	[0.017]	[0.017]	[0.015]	[0.022]	[0.021]	[0.019]	[0.018]	[0.022]
on#first_TR	-0.077**	-0.067*	-0.078**	-0.063								
	[0.037]	[0.038]	[0.038]	[0.041]								
pre#first_TR					-0.066**	-0.061**	-0.064**	-0.070**				
					[0.028]	[0.027]	[0.030]	[0.031]				
post#first_TR									0.089*	0.076	0.060	0.065
									[0.051]	[0.051]	[0.050]	[0.061]
branch	-0.108**	-0.109**	-0.088**	-0.046	-0.110**	-0.111**	-0.091**	-0.049	-0.111**	-0.111**	-0.092**	-0.050
	[0.047]	[0.052]	[0.041]	[0.050]	[0.048]	[0.052]	[0.041]	[0.050]	[0.048]	[0.053]	[0.042]	[0.051]
rgdp		-0.245***	-0.239***	-0.136**		-0.246***	-0.240***	-0.138**		-0.244***	-0.240***	-0.136**
		[0.065]	[0.060]	[0.064]		[0.065]	[0.060]	[0.065]		[0.065]	[0.060]	[0.064]
electric			0.417***	0.350***			0.408***	0.345***			0.404***	0.337***
			[0.119]	[0.114]			[0.118]	[0.114]			[0.119]	[0.115]
rice				0.675***				0.667***				0.676***
				[0.123]				[0.124]				[0.123]
Constant	0.585***	0.962***	0.674***	-1.928***	0.590***	0.968***	0.685***	-1.889***	0.589***	0.963***	0.688***	-1.919***
	[0.086]	[0.139]	[0.141]	[0.537]	[0.087]	[0.140]	[0.144]	[0.541]	[0.088]	[0.142]	[0.145]	[0.540]
Obs.	587	587	547	495	587	587	547	495	587	587	547	495
R^2	0.038	0.076	0.111	0.224	0.046	0.085	0.121	0.232	0.038	0.076	0.108	0.221
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect with time trend added. The dependent variable is $securities$ or percentage of securities over total assets. The model is $securities_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 first\_TR_{k,t} + \gamma_3 elect_{k,t}\#first\_TR_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of variable on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2- 29. The Impact of Politics (in relation to variable $comm$) in RDBs' Securities

securities	1	2	3	4	5	6	7	8	9	10	11	12
on	-0.020	-0.019	-0.020	-0.034*								
	[0.019]	[0.019]	[0.019]	[0.017]								
pre					0.035	0.039*	0.032	0.024				
					[0.021]	[0.020]	[0.022]	[0.021]				
post									-0.027	-0.020	-0.019	-0.017
									[0.021]	[0.020]	[0.020]	[0.024]
comm	-0.013	-0.022	-0.053	-0.065	-0.011	-0.018	-0.054	-0.061	-0.006	-0.015	-0.046	-0.051
	[0.064]	[0.060]	[0.050]	[0.046]	[0.063]	[0.060]	[0.047]	[0.042]	[0.059]	[0.056]	[0.047]	[0.044]
on#comm	0.050	0.036	0.051	0.083								
	[0.063]	[0.059]	[0.055]	[0.053]								
pre#comm					0.098	0.074	0.115**	0.123**				
					[0.064]	[0.061]	[0.051]	[0.050]				
post#comm									0.006	-0.024	0.009	0.014
									[0.104]	[0.107]	[0.107]	[0.111]
branch	-0.112**	-0.112**	-0.103**	-0.049	-0.110**	-0.110**	-0.102**	-0.050	-0.111**	-0.111**	-0.104**	-0.052
	[0.049]	[0.054]	[0.045]	[0.052]	[0.048]	[0.053]	[0.044]	[0.050]	[0.050]	[0.054]	[0.045]	[0.052]
rgdp		-0.247***	-0.241***	-0.140**		-0.243***	-0.235***	-0.138**		-0.247***	-0.241***	-0.142**
		[0.073]	[0.067]	[0.063]		[0.071]	[0.066]	[0.063]		[0.073]	[0.067]	[0.064]
electric			0.475***	0.377***			0.482***	0.391***			0.477***	0.384***
			[0.127]	[0.117]			[0.127]	[0.117]			[0.128]	[0.117]
rice				0.681***				0.661***				0.669***
				[0.120]				[0.120]				[0.120]
Constant	0.595***	0.980***	0.696***	-1.909***	0.590***	0.969***	0.681***	-1.849***	0.588***	0.973***	0.692***	-1.870***
	[0.086]	[0.140]	[0.150]	[0.515]	[0.083]	[0.135]	[0.150]	[0.516]	[0.086]	[0.138]	[0.152]	[0.518]
Obs.	560	560	521	493	560	560	521	493	560	560	521	493
R^2	0.031	0.068	0.112	0.228	0.043	0.079	0.127	0.238	0.032	0.069	0.112	0.225
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26

The regression equation is estimated with fixed effect and time trend. The dependent variable is $securities$ or percentage of securities over total assets. The model of the result is $securities_{j,k,t} = \alpha_{j,t} + \gamma_1 elect_{k,t} + \gamma_2 comm_{k,t} + \gamma_3 elect_{k,t}\#comm_{k,t} + \gamma_4 Control_{k,t} + c_k + u_{j,k,t}$. Elect variable consists of is on, pre, and post-election. The data is regional data (provincial data) from the year 1993 to 2016. The robust standard error within the region is applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

2.5.4 Robustness Test

This section reports results from robustness checks of the prior findings. Empirically, this study used a lagged model to avoid the problem of a reverse causality, however, we have become aware of the omitted variable bias or the endogeneity problem that might relate to some of the control variables, especially the geographical variables used and therefore affect the consistent parameter estimates. Thus, we will run similar analyses using Two Stages Least Square Method or 2SLS method. In addition, with the objective is to get a comprehensive picture of the RDBs' attitude towards politics, we also test how RDBs behave compared to non-RDB banks, which comprise of national public banks (NPBs), private banks (PBs), joint venture banks (JBs), and foreign banks (FBs). The data of these banks are not available at the regional level. The scope of the banks' operation differs for each type of bank; hence, the data is available in aggregate number. NPBs are operating across Indonesia and have many branches in all regions. While, some of PBs do operate at the national level and most of the headquarters are located in Jakarta (the capital city of Indonesia). The same condition goes to JB and FB, as most of these banks are locating in Jakarta. Hence, we test the attitude of the RDBs compared to the other banks (NPB, PB, JB, and FB) by analysing their quantity of loans as well as the price of loans using the national election (and not regional election) after the decentralisation took place in 2004.

2.5.4.1 Two Stages Least Square (2sls)

To run the models with 2SLS, we need to find the instrument variables that satisfy certain properties, uncorrelated with the error but correlated with the endogenous variable. We clustered the data based on year to generate coefficient estimates that are efficient in the presence of the corresponding deviations from i.i.d. (or independent and identically distributed) disturbances (Baum, Schaffer, et al., 2010). We use the first difference of lagged variable $rgdp$, percentage of households with access to decent sanitation, percentage of old people per region per year, and total area of rice fields per province as our instrument variables. After running the model, we conducted several tests, a weak instrument test to see the correlation between the instrument variables, and an overidentification test to test that the instrument set is valid, and the model is correctly specified. The weak-instruments problem arises when the correlations between the endogenous regressors and the excluded instruments are nonzero but small (Baum, Schaffer, et al., 2010). Regarding to the weak-instrument test, the null hypothesis is the instruments do not suffer from the specified bias, while using Kleibergen-Paap rk Wald F we found that we cannot reject the null hypothesis for at conventional levels for all models since the Wald F Statistic is above the critical value. The test statistic is based on the rejection rate r (10%, 20%, etc.). Hansen J

Stat tests whether the additional instruments are valid. The null hypothesis is the instrument set is valid and the model is correctly specified.

Referred to the result showed at Table A2-1 [see the Appendix], the outcome of the interaction variable, $on\#align$, is consistent negative and significant, albeit, the variable $pre\#align$ shows insignificant results in its effect on loans. However, this still confirms our prior findings that non-allied RDBs are more aggressive in providing loans near election years compared with allied RDBs, but allied RDBs seem to more be interested in providing MSME loans (see table A2-2), as it confirms the positive and significant results in the 2SLS method. Assuming about clientelism, the $post\#align$ variable is positive and significant at affecting the loans as well as affecting the price of loans in a negative way (see table A2-3), but, surprisingly, the $on\#align$ variable shows a positive and significant effect on the price of the deposit near election years, which this is not shown in the previous model. The allied RDBs might try to attract depositors near election years as they need to finance their funds for MSME loans, yet the pattern is still unclear if we relate the insignificant result on the variable $spread$ to the prior findings.

Using the FE method, variable $first\_TR$, the lending intensity significantly appears in the **pre**-election year and reduces a year after the election (**post**-election) by showing a negative and significant coefficient. Whereas with the 2SLS method (see table A2-1), variable $first\_TR$ significantly influences lending, not in the **pre**-election year, but during the election years (**on**), and does not show any significant results after the election takes place (**post**), however, still it confirms that elected governors seem to increase lending volume near election years. Having opposite results to allied-RDBs, RDBs under elected governors tend to reduce their support to MSMEs as the 2SLS method captures the significant decrease in lending in election years (see table A2-2), which has been captured using the FE method, though it is not significant. Regarding the price of loans, 2SLS method shows that variable $on\#first\_TR$ has a positive and significant impact of $price$, meaning that the RDBs under the elected government (governor) seem to increase the price of loans in the election year but not the price of deposits, which is quite unusual in this case. However, as we have stated, the finding may connect with the data on governors elected for the second time, and with their performance and attitude, they may not reduce their price of loans near the election year. They may facilitate the lending system and cut the bureaucracy process but not the price.

The continued observation of the impact of another political indicator, $comm$, reveals the findings of the 2SLS method are similar with the findings of the FE method, which shows that RDBs that have more politicians in their commissioner board tend to lend more but at a cheaper price in election years. However, using the 2SLS method, variable $pre\#comm$ shows a negative and significant effect on the price of a deposit ($pr\_deposit$), but this changed to a positive and significant after the election takes place. Connecting with the previous results, the political actions seem to appear in election years (not in the pre-election year). Hence, we may assume that fewer interest deposits offered by RDBs in the pre-election year might not be relevant in explaining the political situation as it does not really follow the pattern. They might have fewer interest deposits in the pre-election year, but this seems to change in the election year (that is why the result is not significant). However, finding a positive and significant sign of variable $post\#comm$ might suggest clientelism if the banks try to pay back the support they have had during the election time. Still, the pattern is unclear since we could not find a significant growth in loans occurring during the election years with both methods.

Observing the intervention that might occur to support the local election, we find that non-allied RDBs seem to get the fund injection that shows an increase in assets (per capita) in the election year (see table A2-5) and this may link with the earlier findings. Non-allied RDBs lend more at a cheaper price so they need backup during this political event. However, this finding (a negative and significant coefficient on variable $on\#align$ in affecting assets) does not appear when we use the FE method, as it shows that only the $post\#align$ variable significantly affects assets, however, on the contrary, we do not see this finding using the 2SLS method. Related to variable $securities$, variable $on\#align$ consistently significant and positive in affecting variable $securities$, and this confirms the idea about clientelism in non-allied RDBs. The non-allied RDBs need to reduce their investment so they will have enough funds to distribute. While, variable $pre\#comm$ shows a positive and significant in affecting $securities$, and this is contrary with our expectation. Again, similar with previous findings, we are unclear whether this finding connects with the political issue, as most of the pattern reveals during the election years (**on**), and not on the pre-election years.

Furthermore, in order to get a full understanding of the impact of the RDBs' behaviour, we extend the analyses by testing if politics compromise bank profitability and affect their non-performing loans (NPL). Using the net interest margin (NIM) and NPL as a dependent variable, we run the same model using 2sls. The instrument variables are the first difference of lagged variable $rgdp$, the percentage of households that have the private toilet facility and the total area of rice fields per province. We found that the political effects are short term and do not affect/damage banks' profitability and do not increase the risk of unpaid debt over the long run, as we see no statistical significant on the three political variables ($align, first\_TR,$ and $comm$) during the election period.

Observing control variables, variable $securities$ consistently show negative and significant effects on lending just as in the prior findings. Interestingly, we also find a negative and significant effect on MSME loans in table A2-2, although model 2 shows insignificant results. These results are different from the FE model as this variable is insignificant in affecting MSME loans. Moreover, we assume that there might be mixed results in this case, as some RDBs might try to consistently provide loans, while some might not. Linked with variable $price$, we found a different finding from the previous model, the $securities$ variable seems to affect the price of loans in a positive way (while it has no impact on affecting $price$ when we run with FE method), meaning that placing funds in a central bank, other banks, and securities increases the RDBs' interest gains, while connecting with the $pr\_deposit$ variable, we find none of the models significantly affect the price of deposits, but affecting the $spread$ of RDBs in a positive way. Connect with variable assets, the impact of variable securities consistent as previous findings, which is rarely significant and unstable coefficient.

Regarding $rgdp$, we also found a contrasting result on the effect on loans using the 2SLS method, as well as on the variable $pr\_deposit, spread$, and $assets$. We suspect that as this variable is treated as an endogenous variable and it might be possible to change direction after we control the endogeneity issue with the 2SLS method. Just as with the previous findings (with variable $branch$), we also surmise that the main effect of $rgdp$ is not constant for all levels of the observation and the impact on lending probably depends on another variable, what we call the moderator variable, but since we do not apply the interaction model to the control variables, thus we are limited in finding the problems that cause inconsistent results. Using the variable $electric$, the negative coefficient is consistent appear with the 2SLS method at affecting lending, although it is not significant. While using SME loans as a dependent variable, the 2SLS method does not show any significant results either, as it confirms that data might have some mixed results or it might have a moderator variable, as previous variables. In addition, we also found another contradictory result when we see the impact of the $electric$ variable on the $price$ variable, while the results are consistent when we regress variable $electric$ with variable $pr\_deposit, assets$ and $securities$. With FE method, the developed regions tend to gain more interest but pay more deposit interests, but with 2SLS method, it shows that the developed regions charged less interests to the borrowers but pay more deposit interests, and therefore they got a negative spread compared to their counterparts.

Examining the variable $rice$, after controlling the endogeneity, it started to show an impact on the dependent variables, but while using the FE method, it does not really show its role. The increase in the price of rice seems to affect the loans aggregately but not MSME loans, as it tends to lower the loans when the price increases, which the RDBs may fear to lend during this unconducive situation that can lead to unpaid debts and an increase in non-performing loans. Furthermore, the price of loans shows a negative coefficient, which is quite opposite to the increase in lending. Moreover, this might link with the regional mandate they have, which, in this case, the regional government might work through the banks to provide cheap loans in order to help people during unfavourable times, and, therefore, leads to a negative spread when the price increases.

2.5.4.2 RDBs versus non-RDBs

To do the second robustness test, we used two types dependent variables, namely loan (loans per capita) and loan2 or the aggregate loans (log), and employed another version of the rgdp, which we call gdp2 as a total gdp (log and lagged). Prior to this, we estimated the variable loan and rgdp by counting per head (divided by total population per region). However, as the non-RDBs have a different operational scope, we need to match with the population estimation in order to do the calculation. For instance, the national public banks operate across Indonesia, so we use the Indonesian population to estimate the loans per head; for the foreign banks or joint venture banks, we use the population from DKI Jakarta with the assumption that these banks mostly operate in the capital city and therefore, we only consider the population from the region where the headquarters of the bank is located. Yet, this calculation might not exactly fit; for instance, some banks might operate nationally but proportionally the number of loans is still quite small compared to the other national banks if we estimate the number per capita. The banks might only have a few branches across regions, while the other national banks might operate with many branches in many locations across regions. The limited information about branch locations impedes us to trace the correct method to estimate the loans per capita as well as the GDP per capita. Hence, to test the consistency, we add loan2 or log of total loans and gdp2 or log of total GDP.

We applied a random effect with time trend added, as we cannot apply the fixed effect method because the variables on, pre, and post (which are dummy variable for the national election) are the same for each observation, and therefore the fixed effect will remove the results of these variables. However, national elections were held in the year 2004 (5 July), the year 2009 (8 July), and in the year 2014 (9 July). We run several comparison analyses during the national election years; first, comparing RDBs' lending with the national public banks' lending; second, comparing the RDBs' lending vs the private banks' lending; third, comparing the RDBs' lending with the joint venture banks' lending; and fourth, comparing the RDBs' lending with the lending of the foreign banks. Using the random effect panel model, we indicated the political lending in table A2-9, A2-10, A2-11, and A2-13. Employing variable loan and loans2, generally, we found a similar result. Compared to the NPB and PB, the RDBs seemed to increase their credit quantities during the election period, and the increasing of lending did not in line with the increase in interest's income [see Table A2-17 and A2-18]. Yet, we found unclear findings when we compared the lending and the price of lending of the RDBs with the quantity of loans and the price of loans distributed by joint venture banks and foreign banks during the election period. The joint venture banks increased their lending higher than the RDBs during the election period, while the RDBs increased their quantities of lending higher than the joint venture banks a year before the scheduled election. Compared to the foreign banks, we found the quantities of loans of RDBs had no significant difference during the election period, while a year before the scheduled election, the loans of the foreign banks were higher than the RDBs. To confirm the political lending, we match with the interest gained generated during the same period. We found the price of loans generated by the joint venture banks seem lower than the RDBs during the election period, but we found an unclear political lending indication when observing the pre-scheduled election period (a year before the scheduled election). Examining foreign banks, we found no indication of the political lending, as the increase in the credit quantities (higher than the RDBs) during the election period was followed by an increase in the interest gained by the foreign banks (which is higher than the RDBs).

2.6 Conclusion

This paper investigates the impact of politics in lending distribution by Regional Development Banks (RDBs) in Indonesia. Government banks are prevalent in developing countries to this day, as they promise to fund socially desirable projects. Empirically, existing literature finds that government banks are engaged with the political interests which diverting them from their main mandate. To complement the literature, this paper analyses the implementation of the mandate of government banks in regional level and not national level as most scholars do. By studying the impact of direct election policy in regional level as a product of decentralisation policy, this paper enriches the literature by examining politically connected lending in RDBs in related with the regional election.

To give a clear explanation about how the regional election affects the RDBs' behaviour, we divide the time observation into three different time, **pre**-election (a year before election), **on** the election year, and **post**-election (a year after the election takes place). Unlike previous scholars, by seeing the pattern into three different times, it enables us to indicate the political patterns in RDBs near the election years. As they have the privilege of choosing the head of RDBs, as well as the commissioners of RDBs, the regional government holds an important role in directing the RDBs' decisions. Therefore, considering the alignment status and incumbent status of the regional government, we suspect it gives a better idea of how political interests connect with the RDBs' decisions. And the last, by taking into account the proportion of politicians who sit as commissioners on RDBs' board, this explains clearly how politics work in RDBs. To confirm the main regression results and to reach a conclusion, we carried out some robust research based on the potential endogeneity and extend the analyses by testing the impact of the political lending on the profitability of the bank, the risk of unpaid loans, and examine the RDBs' behaviour by comparing with the other type of banks.

Generally, we found evidence that, in the run-up to an election year, RDBs' behaviour changes, which is indicated by increased lending but at a lower price. Although we may conjecture that being allied might increase the possibility of becoming involved in political issues, the findings robustly show that non-allied RDBs tend to be too superior in giving loans near election years, while allied RDBs prefer to provide loans to low-income people (which can be observed from the significant increase in MSME loans in election years). However, we could not find robust proof that non-allied RDBs lower the price of loans during election years (compared to the allied RDBs), but we do find that they need to adjust their securities investment during the election period, as they need more funds to be dispersed. Interestingly, we found that the volume of loans increased significantly after the election had finished and were also at a cheaper price. Consequently, the banks seemed to liquidate their securities in order to increase their funds to be distributed. Additionally, we found no indication that the central government was involved in initiating political lending. As both methods confirmed the same findings (FE method and 2SLS method), we can conclude that clientelism might occur after the election. Regardless of the status before the election (being allied or not), once the election has been won and after the RDB has indicated that it is allied with the central government, we suspect suspicious loans may be issued. This connects it with clientelism as they might use RDBs to return favours in exchange for the services or support that they have had during election years.

About the variable $first\_TR$, with their power and networks, elected governors seem to increase loan volumes in the run-up to election years, while we do not find any significant pattern regarding MSME loans. The price of loans as well as the spread do not follow a clear pattern, as two different methods give different coefficient signs.

Looking at political issues by examining the existence of the politicians sitting as commissioners, there is clear and robust confirmation that near to the election years, RDBs with more politicians tend to increase loan volumes, but at a lower price; therefore, the interest spread is reduced during this time. Yet, we found no robust conclusion about how the RDBs finance their lending, as we found an unclear conclusion about the investment strategies during the election period and little indication of central government involvement.

We also found that this political lending does not harm the profitability and the NPL of the banks in the long term. While compared to the national public banks and private banks, we found that the RDBs' tend to more engaged with the political lending, but we found an unclear conclusion when we compare to the joint venture banks and foreign banks.

Appendix

Table A2- 1. The Impact of Politics on RDBs' Lending (2SLS method)

loan	1	2	3	4	5	6	7	8	9
on	0.121**			0.019			-0.010		
	[0.049]			[0.025]			[0.023]		
pre		0.029			0.017			0.009	
		[0.066]			[0.025]			[0.022]	
post			-0.071**			0.018			-0.009
			[0.034]			[0.028]			[0.026]
align	-0.016	-0.046**	-0.072***						
	[0.024]	[0.019]	[0.014]						
first_TR				0.047***	0.047***	0.051***			
				[0.011]	[0.012]	[0.011]			
comm							-0.059*	-0.039	-0.038
							[0.035]	[0.038]	[0.036]
on#align	-0.133***								
	[-0.044]								
pre#align		-0.014							
		[-0.059]							
post#align			0.115**						
			[-0.045]						
on#first_TR				0.115**					
				[-0.045]					
pre#first_TR					0.001				
					[-0.033]				
post#first_TR						-0.022			
						[-0.034]			
on#comm							0.205**		
							[-0.089]		
pre#comm								0.086	
								[-0.081]	
post#comm									0.164
									[-0.105]

The regression equation is estimated with the dependent variable ***loan***. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2-1. (continued)

loan	1	2	3	4	5	6	7	8	9
securities	-0.181***	-0.194***	-0.190***	-0.190***	-0.175***	-0.169***	0.004	0.005	0.004
	[-0.063]	[-0.064]	[-0.065]	[-0.065]	[-0.060]	[-0.060]	[-0.004]	[-0.004]	[-0.004]
branch	0.002	0.002	0.002	0.002	0.007	0.007*	-0.187***	-0.183***	-0.172***
	[-0.005]	[-0.005]	[-0.004]	[-0.004]	[-0.004]	[-0.004]	[-0.060]	[-0.062]	[-0.062]
rgdp	0.172***	0.177***	0.176***	0.176***	0.162***	0.160***	0.167***	0.166***	0.161***
	[-0.022]	[-0.020]	[-0.021]	[-0.021]	[-0.021]	[-0.020]	[-0.021]	[-0.020]	[-0.021]
electric	-0.014	-0.018	-0.015	-0.015	-0.014	-0.013	-0.026	-0.026	-0.020
	[-0.026]	[-0.027]	[-0.025]	[-0.025]	[-0.027]	[-0.027]	[-0.024]	[-0.024]	[-0.024]
rice	0.265***	0.259***	0.249***	0.249***	0.270***	0.268***	0.251***	0.263***	0.266***
	[-0.038]	[-0.036]	[-0.037]	[-0.037]	[-0.037]	[-0.038]	[-0.042]	[-0.047]	[-0.048]
Constant	-1.137***	-1.085***	-1.025***	-1.025***	-1.172***	-1.164***	-1.059***	-1.115***	-1.124***
	[-0.179]	[-0.166]	[-0.168]	[-0.168]	[-0.164]	[-0.167]	[-0.182]	[-0.202]	[-0.205]
Obs.	468	468	468.	468	468	468	466	466	466
R^2	0.465	0.449	0.456	0.456	0.463	0.465	0.464	0.458	0.462
F-stat	31.520***	31.640**	27.580**	34.950**	39.790**	41.800**	22.140**	23.860**	24.580**
Wald F Stat. (critical val.)	29.652 (9.08)	29.412 (13.91)	29.008 (9.08)	31.120 (9.08)	31.420 (9.08)	30.795 (9.08)	29.180 (9.08)	29.302 (9.08)	29.399 (9.08)
Hansen J Stat.(p-val.)	1.26(0.26)	1.36(0.24)	1.12(0.29)	1.06(0.30)	1.07(0.30)	1.09(0.29)	1.29(0.25)	1.52(0.21)	1.49(0.22)

The regression equation is estimated with the dependent variable $\boldsymbol{loan}$. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 2. The Impact of Politics on RDBs' Loans to MSMEs (2SLS method)

loan_MSME	1	2	3	4	5	6	7	8	9
on	-0.069			0.0788*			-0.007		
	[-0.069]			[-0.044]			[-0.057]		
pre		-0.042			-0.049			-0.065*	
		[-0.055]			[-0.032]			[-0.037]	
post			0.084			0.028			0.026
			[-0.086]			[-0.045]			[-0.056]
align	0.018	0.053	0.071***						
	[-0.037]	[-0.039]	[-0.025]						
first_TR				0.132***	0.079**	0.079**			
				[-0.041]	[-0.038]	[-0.031]			
comm							0.002	0.042	0.065
							[-0.065]	[-0.076]	[-0.068]
on#align	0.138*								
	[-0.083]								
pre#align		0.005							
		[-0.066]							
post#align			-0.080						
			[-0.075]						
on#first_TR				-0.220***					
				[-0.069]					
pre#first_TR					0.006				
					[-0.085]				
post#first_TR						0.035			
						[-0.085]			
on#comm							0.281		
							[-0.227]		
pre#comm								0.130	
								[-0.202]	
post#comm									0.006
									[-0.150]

The regression equation is estimated with the dependent variable $\boldsymbol{loan\_MSME}$. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 2. (continued)

loan_MSME	1	2	3	4	5	6	7	8	9
securities	-0.465*	-0.410	-0.417*	-0.446**	-0.410*	-0.426**	-0.507**	-0.474*	-0.480**
	[-0.238]	[-0.259]	[-0.242]	[-0.196]	[-0.213]	[-0.209]	[-0.241]	[-0.247]	[-0.236]
branch	0.065***	0.069***	0.068***	0.072***	0.070***	0.069***	0.065***	0.067***	0.065***
	[-0.019]	[-0.021]	[-0.020]	[-0.017]	[-0.018]	[-0.018]	[-0.019]	[-0.020]	[-0.019]
rgdp	0.026	0.010	0.013	0.012	0.009	0.013	0.035	0.029	0.032
	[-0.074]	[-0.078]	[-0.077]	[-0.065]	[-0.064]	[-0.065]	[-0.069]	[-0.074]	[-0.072]
electric	-0.119	-0.107	-0.110	-0.110	-0.095	-0.095	-0.107	-0.101	-0.099
	[-0.141]	[-0.146]	[-0.144]	[-0.129]	[-0.130]	[-0.131]	[-0.147]	[-0.154]	[-0.148]
rice	-0.606***	-0.565***	-0.570***	-0.619***	-0.599***	-0.618***	-0.639***	-0.599***	-0.603***
	[-0.107]	[-0.124]	[-0.115]	[-0.086]	[-0.093]	[-0.089]	[-0.111]	[-0.129]	[-0.114]
Constant	3.111***	2.907***	2.905***	3.150***	3.072***	3.146***	3.257***	3.076***	3.079***
	[-0.496]	[-0.574]	[-0.525]	[-0.363]	[-0.399]	[-0.379]	[-0.510]	[-0.581]	[-0.517]
Obs.	340	340	340	340	340	340	339	339	339
R^2	0.124	0.125	0.125	0.142	0.131	0.128	[0.116]	[0.113]	[0.109]
F-stat.	56.48***	32.64***	18.96***	79.56***	17.93***	21.68***	46.21***	12.92***	14.90***
Wald F Stat.	23.088	23.233	23.019	25.983	26.103	25.896	23.815	23.871	23.934
(critical val.)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)
Hansen J Stat.(p-val.)	0.18(0.67)	0.24(0.61)	0.27(0.60)	0.10(0.74)	0.13(0.71)	0.09(0.76)	0.09(0.75)	0.21(0.64)	0.14(0.70)

The regression equation is estimated with the dependent variable $\boldsymbol{loan\_MSME}$. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 3. The Impact of Politics on RDBs' Price of Loans (2SLS method)

price	1	2	3	4	5	6	7	8	9
on	-0.022*			-0.026**			-0.006		
	[0.013]			[0.010]			[0.008]		
pre		-0.008			-0.011			-0.001	
		[0.009]			[0.012]			[0.008]	
post			0.023			-0.004			0.0001
			[0.018]			[0.009]			[0.006]
align	0.008	0.009	0.017						
	[0.010]	[0.011]	[0.011]						
first_TR				-0.030***	-0.023**	-0.023**			
				[0.011]	[0.012]	[0.009]			
comm							0.063***	0.056**	0.049**
							[0.022]	[0.024]	[0.022]
on#align	0.005								
	[0.016]								
pre#align		-0.001							
		[0.016]							
post#align			-0.034*						
			[0.021]						
on#first_TR				0.039**					
				[0.018]					
pre#first_TR					0.014				
					[0.019]				
post#first_TR						0.013			
						[0.026]			
on#comm							-0.072***		
							[0.027]		
pre#comm								-0.04	
								[0.031]	
post#comm									0.002
									[0.065]

The regression equation is estimated with the dependent variable $price$. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 3 (continued)

price	1	2	3	4	5	6	7	8	9
securities	0.284***	0.282***	0.282***	0.280***	0.273***	0.271***	0.277***	0.268***	0.262***
	[0.052]	[0.050]	[0.051]	[0.050]	[0.049]	[0.048]	[0.048]	[0.046]	[0.043]
branch	-0.003	-0.004	-0.004	-0.005	-0.005	-0.006	-0.003	-0.004	-0.003
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
rgdp	-0.01	-0.009	-0.009	-0.009	-0.008	-0.007	-0.008	-0.004	-0.003
	[0.015]	[0.015]	[0.015]	[0.015]	[0.015]	[0.014]	[0.015]	[0.015]	[0.015]
electric	-0.049*	-0.048*	-0.049*	-0.047*	-0.048*	-0.049*	-0.035	-0.037	-0.039
	[0.027]	[0.027]	[0.027]	[0.027]	[0.027]	[0.027]	[0.025]	[0.025]	[0.025]
rice	-0.181***	-0.189***	-0.182***	-0.186***	-0.194***	-0.193***	-0.163***	-0.176***	-0.181***
	[0.049]	[0.049]	[0.049]	[0.047]	[0.048]	[0.047]	[0.046]	[0.046]	[0.045]
Constant	0.998***	1.027***	0.994***	1.032***	1.066***	1.061***	0.899***	0.954***	0.979***
	[0.214]	[0.216]	[0.218]	[0.211]	[0.211]	[0.209]	[0.206]	[0.206]	[0.199]
Obs.	376	376	376	376	376	376	374	374	374
R^2	0.555	0.552	0.553	0.564	0.559	0.558	0.570	0.568	0.567
F-stat.	35.510***	51.320***	28.910***	32.130***	40.190***	30.160***	26.160***	43.170***	27.120***
Wald F Stat. (critical val.)	43.025 (19.930)	42.559 (19.930)	43.015 (19.930)	45.933 (19.930)	46.137 (19.930)	46.740 (19.930)	42.750 (19.930)	43.057 (19.930)	43.475 (19.930)
Hansen J Stat. (p-val.)	1.219 (0.26)	1.357 (0.24)	1.082 (0.29)	1.101 (0.29)	1.338 (0.24)	1.218 (0.26)	0.966 (0.32)	1.207 (0.27)	1.105 (0.29)

The regression equation is estimated with the dependent variable $\boldsymbol{price}$. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 4. The Impact of Politics on RDBs' Price of Deposits (2SLS method)

pr_deposit	1	2	3	4	5	6	7	8	9
on	-0.005			0.009*			0.011		
	[0.011]			[0.005]			[0.007]		
pre		-0.0001			0.005			0.013	
		[0.010]			[0.007]			[0.009]	
post			0.0001			-0.005			-0.006
			[0.009]			[0.009]			[0.010]
align	-0.002	0.001	0.003						
	[0.004]	[0.005]	[0.006]						
first_TR				-0.010	-0.011	-0.011			
				[0.008]	[0.007]	[0.008]			
comm							0.009	0.014	0.002
							[0.010]	[0.012]	[0.008]
on#align	0.018*								
	[0.011]								
pre#align		0.009							
		[0.010]							
post#align			-0.003						
			[0.010]						
on#first_TR				0.003					
				[0.012]					
pre#first_TR					0.011				
					[0.015]				
post#first_TR						0.013			
						[0.022]			
on#comm							-0.010		
							[0.021]		
pre#comm								-0.039**	
								[0.019]	
post#comm									0.040*
									[0.021]

The regression equation is estimated with the dependent variable ***pr_deposit***. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 4. (continued)

pr_deposit	1	2	3	4	5	6	7	8	9
securities	-0.034	-0.03	-0.028	-0.034	-0.033	-0.031	-0.031	-0.028	-0.031
	[0.036]	[0.036]	[0.036]	[0.034]	[0.035]	[0.034]	[0.037]	[0.036]	[0.035]
branch	-0.001	-0.001	-0.001	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
rgdp	-0.040***	-0.041***	-0.041***	-0.040***	-0.040***	-0.041***	-0.041***	-0.042***	-0.041***
	[0.009]	[0.009]	[0.009]	[0.008]	[0.008]	[0.008]	[0.009]	[0.009]	[0.009]
electric	0.048***	0.048***	0.048***	0.048***	0.048***	0.048***	0.052***	0.053***	0.050***
	[0.018]	[0.018]	[0.018]	[0.018]	[0.018]	[0.018]	[0.019]	[0.019]	[0.018]
rice	-0.026	-0.021	-0.019	-0.026	-0.022	-0.019	-0.023	-0.016	-0.023
	[0.019]	[0.019]	[0.021]	[0.019]	[0.019]	[0.020]	[0.018]	[0.018]	[0.019]
Constant	0.330***	0.303***	0.295***	0.330***	0.316***	0.302***	0.310***	0.280***	0.312***
	[0.094]	[0.093]	[0.104]	[0.091]	[0.091]	[0.095]	[0.091]	[0.092]	[0.093]
Obs.	376	376	376	376	376	376	374	374	374
R^2	0.197	0.186	0.18	0.198	0.194	0.189	0.188	0.186	0.185
F-stat.	31.020***	25.280***	20.190***	29.240***	29.120***	26.550***	32.700***	23.360***	28.390***
Wald F Stat. (critical val.)	43.025 (19.93)	42.559 (19.93)	43.015 (19.93)	45.933 (19.93)	46.137 (19.93)	46.740 (19.93)	42.750 (19.93)	43.057 (19.93)	43.475 (19.93)
Hansen J Stat. (p-val.)	3.131 (0.07)	3.196 (0.07)	3.222 (0.07)	2.985 (0.08)	3.069 (0.07)	3.116 (0.07)	2.648 (0.10)	2.571 (0.10)	2.707 (0.10)

The regression equation is estimated with the dependent variable ***pr_deposit***. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 5. The Impact of Politics on RDBs' Assets (2SLS method)

asset	1	2	3	4	5	6	7	8	9
on	0.129			0.024			-0.011		
	[0.092]			[0.051]			[0.039]		
pre		0.036			0.019			-0.002	
		[0.117]			[0.055]			[0.037]	
post			-0.098			0.015			-0.029
			[0.090]			[0.056]			[0.048]
align	-0.061	-0.092***	-0.121***						
	[0.042]	[0.031]	[0.024]						
first_TR				0.048**	0.044**	0.059***			
				[0.021]	[0.022]	[0.018]			
comm							-0.029	-0.017	-0.005
							[0.056]	[0.057]	[0.057]
on#align	-0.138*								
	[0.082]								
pre#align		-0.019							
		[0.098]							
post#align			0.123						
			[0.103]						
on#first_TR				-0.006					
				[0.042]					
pre#first_TR					0.015				
					[0.051]				
post#first_TR						-0.096			
						[0.062]			
on#comm							0.249		
							[0.175]		
pre#comm								0.192	
								[0.156]	
post#comm									0.194
									[0.211]

The regression equation is estimated with the dependent variable ***asset***. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 5 (continued)

asset	1	2	3	4	5	6	7	8	9
securities	-0.003	-0.003	-0.003	0.004	0.005	0.007	0.001	0.002	0.002
	[0.010]	[0.009]	[0.008]	[0.010]	[0.008]	[0.009]	[0.010]	[0.008]	[0.009]
branch	0.212**	0.198**	0.201*	0.236**	0.235**	0.243**	0.219*	0.218**	0.235**
	[0.103]	[0.100]	[0.103]	[0.105]	[0.104]	[0.104]	[0.114]	[0.108]	[0.108]
rgdp	0.326***	0.332***	0.331***	0.302***	0.302***	0.299***	0.310***	0.311***	0.305***
	[0.046]	[0.043]	[0.046]	[0.047]	[0.044]	[0.046]	[0.050]	[0.046]	[0.047]
electric	-0.087*	-0.091**	-0.089*	-0.081*	-0.082*	-0.084*	-0.088**	-0.091**	-0.083**
	[0.045]	[0.045]	[0.046]	[0.047]	[0.047]	[0.047]	[0.041]	[0.041]	[0.041]
rice	0.359***	0.353***	0.348***	0.383***	0.386***	0.386***	0.383***	0.390***	0.404***
	[0.033]	[0.034]	[0.038]	[0.035]	[0.039]	[0.042]	[0.052]	[0.059]	[0.063]
Constant	-1.654***	-1.603***	-1.556***	-1.797***	-1.811***	-1.808***	-1.776***	-1.812***	-1.871***
	[0.161]	[0.147]	[0.176]	[0.151]	[0.172]	[0.184]	[0.233]	[0.259]	[0.278]
Obs.	468	468	468	468	468	468	466	466	466
R^2	0.504	0.498	0.501	0.499	0.499	0.500	0.503	0.500	0.500
F-stat.	38.010***	59.340***	53.580***	33.060***	35.360***	33.400***	31.350***	40.750***	29.390***
Wald F Stat.	29.652	29.412	29.008	31.120	31.420	30.795	29.180	29.302	29.399
(critical val.)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)
Hansen J	0.28	0.28	0.37	0.37	0.36	0.34	0.25	0.13	0.10
Stat.(p-val.)	(0.59)	(0.59)	(0.53)	(0.54)	(0.54)	(0.55)	(0.61)	(0.70)	(0.74)

The regression equation is estimated with the dependent variable ***asset***. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 6. The Impact of Politics on RDBs' Securities (2SLS method)

securities	1	2	3	4	5	6	7	8	9
on	-0.057***			-0.015*			-0.016*		
	[0.021]			[0.008]			[0.010]		
pre		0.028			0.022			-0.012	
		[0.020]			[0.019]			[0.013]	
post			-0.023			-0.015			-0.013
			[0.032]			[0.018]			[0.019]
align	-0.049***	-0.034*	-0.038***						
	[0.019]	[0.019]	[0.014]						
first_TR				-0.007	-0.017	-0.013			
				[0.019]	[0.016]	[0.017]			
comm							0.082***	0.037	0.072**
							[0.031]	[0.023]	[0.031]
on#align	0.047*								
	[0.027]								
pre#align		-0.018							
		[0.038]							
post#align			-0.002						
			[0.030]						
on#first_TR				-0.036					
				[0.023]					
pre#first_TR					-0.006				
					[0.040]				
post#first_TR						-0.043			
						[0.035]			
on#comm							-0.050		
							[0.032]		
pre#comm								0.145*	
								[0.080]	
post#comm									-0.058
									[0.050]

The regression equation is estimated with the dependent variable $\boldsymbol{securities}$. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2-6 (continued)

securities	1	2	3	4	5	6	7	8	9
branch	-0.024***	-0.025***	-0.025***	-0.021**	-0.023***	-0.022**	-0.018**	-0.019***	-0.020***
	[0.008]	[0.008]	[0.008]	[0.009]	[0.008]	[0.009]	[0.008]	[0.007]	[0.007]
rgdp	-0.171***	-0.169***	-0.171***	-0.169***	-0.164***	-0.169***	-0.147***	-0.146***	-0.149***
	[0.027]	[0.025]	[0.027]	[0.029]	[0.027]	[0.029]	[0.025]	[0.021]	[0.021]
electric	0.038***	0.039***	0.039***	0.021	0.024	0.024	0.029*	0.030*	0.031**
	[0.013]	[0.013]	[0.012]	[0.014]	[0.015]	[0.015]	[0.015]	[0.016]	[0.015]
rice	-0.237***	-0.239***	-0.232***	-0.221***	-0.223***	-0.225***	-0.218***	-0.225***	-0.211***
	[0.082]	[0.082]	[0.079]	[0.063]	[0.066]	[0.066]	[0.066]	[0.072]	[0.071]
Constant	1.540***	1.529***	1.512***	1.461***	1.458***	1.472***	1.391***	1.419***	1.360***
	[0.353]	[0.349]	[0.337]	[0.259]	[0.267]	[0.271]	[0.280]	[0.299]	[0.299]
Obs.	282	282	282	282	282	282	281	281	281
R^2	0.287	0.280	0.282	0.240	0.238	0.242	0.265	0.271	0.266
F-stat.	19.440***	40.570***	46.360***	32.060***	33.670***	23.160***	273.700***	39.620***	21.590***
Wald F Stat. (critical	20.531	19.853	20.007	19.316	19.269	19.275	20.208	19.838	20.406
val.)	(13.910)	(13.910)	(13.910)	(13.910)	(13.910)	(13.910)	(13.910)	(13.910)	(13.910)
Hansen J Stat.	3.545	3.474	3.529	3.993	3.902	3.942	3.674	3.627	3.550
(p-val.)	(0.16)	(0.17)	(0.17)	(0.13)	(0.14)	(0.13)	(0.15)	(0.16)	(0.16)

The regression equation is estimated with the dependent variable ***securities***. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 7. The Impact of Politics on RDBs' NIM (2SLS method)

NIM	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
on	0.014***			0.009***			0.007**		
	[0.005]			[0.003]			[0.003]		
pre		-0.002			-0.006			-0.004	
		[0.004]			[0.008]			[0.007]	
post			-0.009*			0.002			0.003
			[0.005]			[0.004]			[0.004]
align	-0.006**	-0.007**	-0.011***						
	[0.003]	[0.003]	[0.002]						
first_TR				0.012***	0.011***	0.012***			
				[0.004]	[0.003]	[0.003]			
comm							-0.010	-0.004	-0.002
							[0.010]	[0.010]	[0.008]
on_align	-0.006								
	[0.006]								
pre_align		-0.004							
		[0.008]							
post_align			0.014						
			[0.009]						
on#first_TR				-0.0001					
				[0.008]					
pre#first_TR					0.005				
					[0.008]				
post#first_TR						0.002			
						[0.008]			
on#comm							0.016		
							[0.010]		
pre#comm								-0.002	
								[0.015]	
post#comm									-0.017
									[0.018]

The regression equation is estimated with the dependent variable NIM or Net Interest Margin. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2-7 (continued)

NIM	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
securities	-0.078***	-0.076***	-0.078***	-0.066***	-0.063***	-0.063***	-0.072***	-0.069***	-0.070***
	[0.012]	[0.013]	[0.012]	[0.011]	[0.011]	[0.012]	[0.013]	[0.013]	[0.014]
branch	-0.004***	-0.004***	-0.004***	-0.003**	-0.003**	-0.003**	-0.004***	-0.003***	-0.003***
	[0.001]	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
rgdp	0.002	0.002	0.002	-0.001	-0.001	-0.002	0.001	0.000	0.001
	[0.005]	[0.006]	[0.006]	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]	[0.006]
electric	-0.051***	-0.052***	-0.051***	-0.047***	-0.047***	-0.047***	-0.052***	-0.053***	-0.053***
	[0.014]	[0.014]	[0.014]	[0.013]	[0.013]	[0.013]	[0.012]	[0.012]	[0.012]
rice	-0.102***	-0.103***	-0.105***	-0.090***	-0.091***	-0.090***	-0.099***	-0.099***	-0.098***
	[0.022]	[0.025]	[0.024]	[0.020]	[0.022]	[0.022]	[0.023]	[0.026]	[0.026]
Constant	0.604***	0.608***	0.620***	0.538***	0.542***	0.540***	0.588***	0.586***	0.583***
	[0.104]	[0.116]	[0.111]	[0.093]	[0.102]	[0.100]	[0.107]	[0.118]	[0.118]
Observations	282	282	282	282	282	282	281	281	281
R^2	0.365	0.346	0.350	0.384	0.370	0.367	0.359	0.340	0.339
F-stat	10.81***	8.611***	23.87***	87.90***	23.03***	15.48***	21.22***	15.89***	15.44***
Wald F Stat.	22.59	22.02	22.18	23.63	23.12	23.10	23.35	22.57	23.09
(critical val.)	(13.91)	(13.91)	(13.91)	(13.91)	(13.91)	(13.91)	(13.91)	(13.91)	(13.91)
Hansen J	5.321	5.002	4.733	5.822	5.426	5.552	4.967	4.760	4.837
Stat. (p-val.)	(0.07)	(0.08)	(0.09)	(0.06)	(0.07)	(0.06)	(0.08)	(0.09)	(0.09)

The regression equation is estimated with the dependent variable NIM or Net Interest Margin. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 8. The Impact of Politics on RDBs' NPL (2SLS method)

NPL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
on	-0.004			-0.003			-0.002		
	[0.003]			[0.004]			[0.004]		
pre		-0.000			-0.000			-0.002	
		[0.006]			[0.004]			[0.004]	
post			0.001			-0.003			0.003
			[0.004]			[0.005]			[0.006]
align	0.007***	0.008***	0.008***						
	[0.002]	[0.002]	[0.002]						
first_TR				-0.007***	-0.005	-0.007*			
				[0.003]	[0.003]	[0.004]			
comm							0.004	0.004	0.008*
							[0.005]	[0.005]	[0.004]
on#align	0.004								
	[0.004]								
pre#align		-0.001							
		[0.006]							
post#align			-0.001						
			[0.008]						
on#first_TR				0.007					
				[0.008]					
pre#first_TR					-0.002				
					[0.006]				
post#first_TR						0.012			
						[0.009]			
on#comm							0.003		
							[0.010]		
pre#comm								0.006	
								[0.009]	
post#comm									-0.028*
									[0.015]

The regression equation is estimated with the dependent variable $\boldsymbol{npl}$ or non-performing loans. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 8 (continued)

NPL	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
securities	-0.008***	-0.008***	-0.008***	-0.009***	-0.009***	-0.009***	-0.008***	-0.008***	-0.008***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
branch	-0.016	-0.016	-0.016	-0.025*	-0.025*	-0.026*	-0.024*	-0.025*	-0.026*
	[0.016]	[0.016]	[0.016]	[0.014]	[0.014]	[0.014]	[0.014]	[0.015]	[0.014]
rgdp	0.012**	0.012**	0.012**	0.015***	0.015***	0.015***	0.015***	0.015***	0.016***
	[0.005]	[0.005]	[0.005]	[0.004]	[0.004]	[0.005]	[0.004]	[0.005]	[0.005]
electric	-0.025***	-0.025***	-0.025***	-0.027***	-0.028***	-0.027***	-0.026***	-0.027***	-0.027***
	[0.007]	[0.007]	[0.006]	[0.006]	[0.006]	[0.007]	[0.007]	[0.007]	[0.007]
rice	-0.004	-0.004	-0.004	-0.011	-0.011	-0.010	-0.008	-0.009	-0.008
	[0.009]	[0.008]	[0.010]	[0.008]	[0.008]	[0.009]	[0.009]	[0.008]	[0.009]
Constant	0.062	0.061*	0.060	0.100***	0.101***	0.097***	0.084**	0.089**	0.082**
	[0.038]	[0.036]	[0.042]	[0.034]	[0.031]	[0.036]	[0.041]	[0.036]	[0.037]
Obs.									
R^2	351	351	351	351	351	351	349	349	349
F-stat.	140.98***	73.14***	63.36***	162.38***	28.17***	33.34***	40.12***	19.10***	49.69***
Wald F Stat.	22.93	23.05	22.77	25.20	25.35	25.07	23.19	23.14	23.43
(critical val.)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)	(19.93)
Hansen J Stat.	1.513	1.575	1.663	1.433	1.456	1.456	1.397	1.383	1.413
(*p*-val.)	(0.22)	(0.21)	(0.19)	(0.19)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)

The regression equation is estimated with the dependent variable $\boldsymbol{npl}$ or non-performing loans. The data is regional data (provincial data) from the year 1993 to 2016. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 9. The Impact of the national election (RDB vs National Public Banks) --- version 1

	(1) loan	(2) loan_MSME	(3) loan	(4) loan_MSME	(5) loan	(6) loan_MSME
rdb_nat	0.245***	0.074**	0.249***	0.067*	0.245***	0.080***
	[0.084]	[0.031]	[0.083]	[0.035]	[0.080]	[0.023]
on	-0.003***	0.125***				
	[0.001]	[0.000]				
pre			-0.005	-0.024***		
			[0.005]	[0.001]		
post					-0.036***	-0.003
					[0.004]	[0.023]
on_rdbNAT	0.031***	-0.074***				
	[0.002]	[0.003]				
pre_rdbNAT			0.017***	-0.005***		
			[0.002]	[0.001]		
post_rdbNAT					0.022***	-0.019
					[0.001]	[0.015]
branch	0.053	-0.034	0.053	-0.032	0.052	-0.028
	[0.037]	[0.025]	[0.037]	[0.026]	[0.035]	[0.022]
securities	-0.081**	-0.178	-0.084**	-0.203*	-0.086***	-0.216*
	[0.034]	[0.124]	[0.034]	[0.121]	[0.031]	[0.117]
gdp	0.003**	-0.005***	0.003**	-0.005***	0.003***	-0.005***
	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]
electric	-0.232**	-0.029	-0.234**	-0.037	-0.228***	-0.033
	[0.092]	[0.099]	[0.092]	[0.108]	[0.085]	[0.104]
rice	0.167***	0.278***	0.146***	0.208***	0.134***	0.197***
	[0.041]	[0.012]	[0.041]	[0.034]	[0.042]	[0.045]
Constant	-0.780***	-0.036	-0.712***	0.235***	-0.672***	0.242***
	[0.261]	[0.094]	[0.261]	[0.022]	[0.260]	[0.030]
Observations	555	427	555	427	555	427
R-squared	0.367	0.112	0.367	0.107	0.375	0.110

The regression equation is estimated with the random effect model with time trend added. The dependent variables are loan or loans per capita, and loan_MSME or the percentage of MSME loans to total loans. The independent variables are: variable rdb_nat is a dummy variable, 1 is for rdb and 0 for the national public banks; variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbNAT is an interaction variable between variable on and rdb_nat; variable pre_rdbNAT is an interaction variable between variable pre and rdb_nat; and variable post_rdbNAT is an interaction variable between variable post and rdb_nat. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp is calculated per capita (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 10. The Impact of the national election (RDB vs National Public Banks) --- version 2

	(1)	(2)	(3)	(4)	(5)	(6)
	loan2	loan_MSME	loan2	loan_MSME	loan2	loan_MSME
rdb_nat	-0.703*	0.194***	-0.699*	0.188***	-0.681	0.193***
	[0.408]	[0.023]	[0.400]	[0.026]	[0.419]	[0.021]
on	-0.001	0.126***				
	[0.016]	[0.001]				
pre			-0.066	-0.019***		
			[0.054]	[0.003]		
post					-0.010	-0.006
					[0.012]	[0.020]
on_rdbNAT	0.115***	-0.078***				
	[0.006]	[0.004]				
pre_rdbNAT			0.149***	-0.011**		
			[0.053]	[0.005]		
post_rdbNAT					0.008	-0.020
					[0.037]	[0.012]
branch	0.539	-0.054	0.544	-0.053	0.540	-0.048
	[0.364]	[0.049]	[0.365]	[0.051]	[0.365]	[0.045]
securities	0.367***	-0.216	0.345***	-0.239*	0.362***	-0.256**
	[0.121]	[0.134]	[0.121]	[0.131]	[0.115]	[0.126]
gdp2	0.472***	0.049***	0.471***	0.049***	0.472***	0.046***
	[0.106]	[0.016]	[0.106]	[0.017]	[0.106]	[0.014]
electric	-0.237	-0.145*	-0.242	-0.153*	-0.250	-0.147
	[0.314]	[0.084]	[0.314]	[0.092]	[0.318]	[0.090]
rice	0.358***	0.244***	0.286***	0.177***	0.259**	0.164***
	[0.106]	[0.022]	[0.109]	[0.045]	[0.104]	[0.055]
Constant	2.474***	-0.753***	2.734***	-0.496**	2.803***	-0.426*
	[0.396]	[0.161]	[0.400]	[0.247]	[0.388]	[0.253]
Observations	555	427	555	427	555	427
R-squared	0.895	0.096	0.895	0.092	0.894	0.095

The regression equation is estimated with the random effect model with time trend added. The dependent variables are variable loan2 or log of total loans, and loan_MSME or the percentage of MSME loans to total loans. The regression equation is estimated with the dependent variable loan or loans per capita, and loan_MSME or the percentage of SME loans to total loans. The independent variables are: variable rdb_nat is a dummy variable, 1 is for rdb and 0 for the national public banks; variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbNAT is an interaction variable between variable on and rdb_nat; variable pre_rdbNAT is an interaction variable between variable pre and rdb_nat; and variable post_rdbNAT is an interaction variable between variable post and rdb_nat. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp2 is a total gdp (log and lagged) (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 11. The Impact of the national election (RDB vs Private Banks) --- version 1

	(1) loan	(2) loan_MSME	(3) loan	(4) loan_MSME	(5) loan	(6) loan_MSME
rdb_private	0.109	0.035	0.115	0.055	0.130	0.054
	[0.220]	[0.058]	[0.225]	[0.054]	[0.220]	[0.060]
on	0.008**	0.004				
	[0.003]	[0.005]				
pre			0.009***	0.025***		
			[0.003]	[0.003]		
post					-0.034***	-0.026**
					[0.008]	[0.011]
on_rdbPRIVATE	0.034**	0.046***				
	[0.013]	[0.004]				
pre_rdbPRIVATE			0.007	-0.055***		
			[0.010]	[0.004]		
post_rdbPRIVATE					0.049	-0.000
					[0.030]	[0.001]
branch	0.051***	-0.034***	0.050***	-0.034***	0.050***	-0.034***
	[0.005]	[0.011]	[0.006]	[0.011]	[0.005]	[0.010]
securities	-0.015	-0.046	-0.019	-0.055	-0.019	-0.063
	[0.051]	[0.124]	[0.050]	[0.132]	[0.052]	[0.135]
gdp	0.003	0.001	0.003	0.001	0.004	0.001
	[0.006]	[0.001]	[0.006]	[0.001]	[0.006]	[0.001]
electric	-0.021	-0.042	-0.018	-0.043	-0.028	-0.048
	[0.432]	[0.271]	[0.444]	[0.272]	[0.428]	[0.270]
rice	0.291***	0.131	0.269***	0.114	0.230***	0.064
	[0.074]	[0.127]	[0.075]	[0.089]	[0.050]	[0.134]
Constant	-1.176	0.352***	-1.108	0.410***	-0.987	0.575***
	[0.715]	[0.048]	[0.730]	[0.079]	[0.629]	[0.066]
Observations	1,213	1,074	1,213	1,074	1,213	1,074
R-squared	0.184	0.096	0.183	0.0968	0.187	0.096

The regression equation is estimated with the random effect model with time trend added. The dependent variables are variable loan or loans per capita, and loan_MSME or the percentage of MSME loans to total loans. The independent variables are: variable rdb_private is a dummy variable, 1 is for rdb and 0 for the private banks; variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbPRIVATE is an interaction variable between variable on and rdb_private; variable pre_rdbPRIVATE is an interaction variable between variable pre and rdb_private; and variable post_rdbPRIVATE is an interaction variable between variable post and rdb_private. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp is calculated per capita (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 12. The Impact of the national election (RDB vs Private Banks) --- version 2

	(1)	(2)	(3)	(4)	(5)	(6)
	loan2	loan_MSME	loan2	loan_MSME	loan2	loan_MSME
rdb_private	1.096*	0.003	1.112*	0.023	1.103*	0.007
	[0.627]	[0.156]	[0.650]	[0.154]	[0.646]	[0.161]
on	-0.093***	0.005				
	[0.001]	[0.004]				
pre			-0.048***	0.026***		
			[0.011]	[0.004]		
post					-0.088	-0.022**
					[0.056]	[0.010]
on_rdbPRIVATE	0.242***	0.045***				
	[0.048]	[0.004]				
pre_rdbPRIVATE			0.172***	-0.055***		
			[0.042]	[0.007]		
post_rdbPRIVATE					0.139***	-0.005
					[0.015]	[0.005]
branch	0.568***	-0.034*	0.566***	-0.034*	0.572***	-0.034*
	[0.041]	[0.020]	[0.043]	[0.020]	[0.043]	[0.020]
securities	-0.011	-0.041	-0.007	-0.050	0.003	-0.056
	[0.491]	[0.134]	[0.466]	[0.141]	[0.473]	[0.145]
gdp2	0.382*	-0.002	0.381*	-0.001	0.380*	-0.003
	[0.196]	[0.083]	[0.201]	[0.083]	[0.199]	[0.086]
electric	0.406	-0.046	0.426	-0.049	0.372	-0.052
	[1.204]	[0.340]	[1.238]	[0.343]	[1.208]	[0.345]
rice	0.265***	0.140	0.286***	0.122	0.201***	0.080
	[0.025]	[0.112]	[0.078]	[0.078]	[0.064]	[0.114]
Constant	2.350	0.388	2.270	0.433	2.616	0.620
	[4.060]	[1.521]	[4.547]	[1.386]	[4.441]	[1.568]
Observations	1,218	1,074	1,218	1,074	1,218	1,074
R-squared	0.663	0.0902	0.662	0.0894	0.664	0.0873

The regression equation is estimated with the random effect model with time trend added. The dependent variables are variable loan2 or log of total loans, and loan_MSME or the percentage of MSME loans to total loans. The regression equation is estimated with the dependent variable loan or loans per capita, and loan_MSME or the percentage of MSME loans to total loans. The independent variables are: variable rdb_private is a dummy variable, 1 is for rdb and 0 for the private banks; variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbPRIVATE is an interaction variable between variable on and rdb_private; variable pre_rdbPRIVATE is an interaction variable between variable pre and rdb_private; and variable post_rdbPRIVATE is an interaction variable between variable post and rdb_private. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp2 is a total gdp (log and lagged) (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 13. The Impact of the national election (RDB vs Joint Venture Banks) --- version 1

	(1)	(2)	(3)	(4)	(5)	(6)
	loan	loan_MSME	loan	loan_MSME	loan	loan_MSME
rdb_joint	0.076	-0.171***	0.070	-0.192***	0.071	-0.194***
	[0.205]	[0.023]	[0.196]	[0.018]	[0.202]	[0.013]
on	0.031***	0.048***				
	[0.007]	[0.001]				
pre			0.012***	-0.029***		
			[0.004]	[0.002]		
post					-0.012	-0.029*
					[0.007]	[0.016]
on_rdbJOINT	-0.019***	-0.045***				
	[0.004]	[0.006]				
pre_rdbJOINT			0.041***	0.052***		
			[0.007]	[0.006]		
post_rdbJOINT					0.012***	0.067**
					[0.001]	[0.028]
branch	0.033	0.006	0.035	0.006	0.033	0.005
	[0.041]	[0.018]	[0.040]	[0.018]	[0.041]	[0.018]
securities	-0.093*	-0.076	-0.095*	-0.090	-0.099*	-0.109
	[0.052]	[0.263]	[0.051]	[0.281]	[0.050]	[0.269]
gdp	0.0001	-0.001	0.0001	-0.001	0.0001	-0.001
	[0.004]	[0.004]	[0.003]	[0.004]	[0.003]	[0.004]
electric	-0.232	-0.225	-0.233	-0.228	-0.235	-0.222
	[0.173]	[0.340]	[0.174]	[0.336]	[0.181]	[0.331]
rice	0.241***	0.123	0.221**	0.081	0.209**	0.081
	[0.088]	[0.243]	[0.090]	[0.215]	[0.092]	[0.215]
Constant	-0.728**	0.480	-0.663**	0.645	-0.620*	0.646
	[0.311]	[0.711]	[0.321]	[0.607]	[0.327]	[0.610]
Observations	652	475	652	475	652	475
R-squared	0.240	0.167	0.240	0.165	0.238	0.166

The regression equation is estimated with the random effect model with time trend added. The dependent variables are variable loan or loans per capita, and loan_MSME or the percentage of MSME loans to total loans. The independent variables are: variable rdb_joint is a dummy variable, 1 is for rdb and 0 for the joint venture banks. Variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbJOINT is an interaction variable between variable on and rdb_joint; variable pre_rdbJOINT is an interaction variable between variable pre and rdb_joint; and variable post_rdbJOINT is an interaction variable between variable post and rdb_joint. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp is calculated per capita (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 14. The Impact of the national election (RDB vs Joint Venture Banks with 2sls method) --- version 2

	(1)	(2)	(3)	(4)	(5)	(6)
	loan	loan_MSME	loan	loan_MSME	loan	loan_MSME
rdb_joint	-0.404	-0.291***	-0.464	-0.308***	-0.415	-0.317***
	[0.730]	[0.104]	[0.751]	[0.104]	[0.750]	[0.108]
on	0.119***	0.047***				
	[0.015]	[0.001]				
pre			0.085***	-0.029***		
			[0.016]	[0.003]		
post					-0.005***	-0.031**
					[0.001]	[0.013]
on_rdbJOINT	-0.183***	-0.045***				
	[0.011]	[0.002]				
pre_rdbJOINT			0.157***	0.050***		
			[0.037]	[0.011]		
post_rdbJOINT					-0.051	0.067***
					[0.073]	[0.023]
branch	0.262	-0.007	0.264	-0.008	0.261	-0.009
	[0.343]	[0.034]	[0.345]	[0.035]	[0.347]	[0.034]
securities	0.186	-0.094	0.188	-0.106	0.193	-0.127
	[0.456]	[0.289]	[0.423]	[0.305]	[0.439]	[0.293]
gdp2	0.498***	0.040***	0.500***	0.041***	0.493***	0.041***
	[0.036]	[0.006]	[0.045]	[0.006]	[0.035]	[0.006]
electric	-0.273	-0.315	-0.277	-0.322	-0.295	-0.319
	[0.610]	[0.348]	[0.633]	[0.348]	[0.636]	[0.341]
rice	0.355***	0.110	0.325**	0.068	0.268**	0.065
	[0.067]	[0.227]	[0.135]	[0.203]	[0.105]	[0.199]
Constant	1.979***	-0.054	2.042***	0.097	2.359***	0.097
	[0.319]	[0.536]	[0.720]	[0.453]	[0.447]	[0.443]
Observations	652	475	652	475	652	475
R-squared	0.669	0.157	0.669	0.155	0.666	0.156

The regression equation is estimated with the random effect model with time trend added. The dependent variables are variable loan or loans per capita, and loan_MSME or the percentage of MSME loans to total loans. The independent variables are: variable rdb_joint is a dummy variable, 1 is for rdb and 0 for the joint venture banks. Variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbJOINT is an interaction variable between variable on and rdb_joint; variable pre_rdbJOINT is an interaction variable between variable pre and rdb_joint; and variable post_rdbJOINT is an interaction variable between variable post and rdb_joint. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp2 is a total gdp (log and lagged) (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 15. The Impact of the national election (RDB vs Foreign Banks with 2sls method) --- version 1

	(1)	(2)	(3)	(4)	(5)	(6)
	loan	loan_MSME	loan	loan_MSME	loan	loan_MSME
rdb_foreign	-0.452**	0.261***	-0.440**	0.279***	-0.370	0.283***
	[0.199]	[0.062]	[0.195]	[0.064]	[0.284]	[0.070]
on	0.031***	0.027*				
	[0.000]	[0.015]				
pre			0.111***	0.016***		
			[0.001]	[0.002]		
post					-0.151***	0.029*
					[0.019]	[0.017]
on_rdbFOREIGN	0.002	0.018*				
	[0.010]	[0.010]				
pre_rdbFOREIGN			-0.096***	-0.046***		
			[0.006]	[0.002]		
post_rdbFOREIGN					0.135***	-0.052***
					[0.023]	[0.006]
branch	0.089***	-0.021	0.089***	-0.022	0.081***	-0.024
	[0.018]	[0.028]	[0.020]	[0.030]	[0.026]	[0.031]
securities	-0.094	-0.239***	-0.100	-0.260***	-0.106	-0.274***
	[0.062]	[0.048]	[0.067]	[0.053]	[0.070]	[0.045]
gdp	-0.001	-0.004***	-0.001	-0.004***	0.002	-0.004***
	[0.004]	[0.001]	[0.004]	[0.001]	[0.007]	[0.001]
electric	-0.279	-0.024	-0.281	-0.032	-0.291	-0.037
	[0.216]	[0.133]	[0.217]	[0.136]	[0.215]	[0.133]
rice	0.277*	0.191	0.256*	0.136	0.183***	0.123
	[0.143]	[0.174]	[0.146]	[0.165]	[0.041]	[0.164]
Constant	-0.470	0.090	-0.408	0.288	-0.232	0.331
	[0.764]	[0.614]	[0.761]	[0.578]	[0.498]	[0.580]
Observations	606	420	606	420	606	420
R-squared	0.264	0.220	0.267	0.217	0.288	0.214

The regression equation is estimated with the random effect model with time trend added. The dependent variables are variable loan or loans per capita, and loan_MSME or the percentage of MSME loans to total loans. The independent variables are: variable rdb_foreign is a dummy variable, 1 is for rdb and 0 for the foreign banks; variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbFOREIGN is an interaction variable between variable on and rdb_foreign; pre_rdbFOREIGN is an interaction variable between variable pre and rdb_foreign; and variable post_rdbFOREIGN is an interaction variable between variable post and rdb_foreign. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp is calculated per capita (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 16. The Impact of the national election (RDB vs Foreign Banks with 2sls method) --- version 2

	(1) loan2	(2) loan_MSME	(3) loan2	(4) loan_MSME	(5) loan2	(6) loan_MSME
rdb_foreign	-1.307***	0.515***	-1.336***	0.528***	-1.375***	0.533***
	[0.412]	[0.171]	[0.441]	[0.173]	[0.432]	[0.177]
on	0.051	0.022				
	[0.040]	[0.016]				
pre			0.300***	0.012***		
			[0.010]	[0.000]		
post					-0.182***	0.016
					[0.066]	[0.011]
on_rdbFOREIGN	0.062	0.021*				
	[0.052]	[0.011]				
pre_rdbFOREIGN			-0.197***	-0.043***		
			[0.025]	[0.001]		
post_rdbFOREIGN					0.116***	-0.043***
					[0.015]	[0.003]
branch	0.739***	-0.046	0.748***	-0.047	0.735***	-0.049
	[0.189]	[0.051]	[0.199]	[0.053]	[0.209]	[0.054]
securities	-0.037	-0.281***	-0.034	-0.299***	-0.044	-0.314***
	[0.931]	[0.058]	[0.904]	[0.063]	[0.938]	[0.057]
gdp2	0.358***	0.043***	0.336***	0.045***	0.332***	0.046***
	[0.007]	[0.013]	[0.010]	[0.014]	[0.020]	[0.015]
electric	-0.735**	-0.114	-0.844***	-0.120	-0.878***	-0.127
	[0.302]	[0.090]	[0.318]	[0.092]	[0.268]	[0.089]
rice	0.545*	0.166	0.493	0.116	0.366**	0.100
	[0.280]	[0.176]	[0.327]	[0.165]	[0.151]	[0.165]
Constant	4.371***	-0.699	4.985***	-0.532	5.553***	-0.507
	[0.716]	[0.894]	[0.871]	[0.863]	[0.046]	[0.874]
Observations	606	420	606	420	606	420
R-squared	0.642	0.203	0.637	0.201	0.634	0.199

The regression equation is estimated with the random effect model with time trend added. The dependent variables are variable loan or loans per capita, and loan_MSME or the percentage of MSME loans to total loans. The independent variables are: variable rdb_foreign is a dummy variable, 1 is for rdb and 0 for the foreign banks; variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbFOREIGN is an interaction variable between variable on and rdb_foreign; pre_rdbFOREIGN is an interaction variable between variable pre and rdb_foreign; and variable post_rdbFOREIGN is an interaction variable between variable post and rdb_foreign. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp2 is a total gdp (log and lagged) (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 17. The Impact of the national election on the price of loans (RDB vs National Public Banks)

	(1)	(2)	(3)	(4)	(5)	(6)
	price	price	price	price	price	price
rdb_nat	0.080***	0.075***	0.079***	0.180***	0.181***	0.184***
	[0.009]	[0.011]	[0.010]	[0.038]	[0.042]	[0.043]
on	-0.012***			-0.012***		
	[0.000]			[0.000]		
pre		-0.009***			-0.009***	
		[0.001]			[0.001]	
post			0.020***			0.019***
			[0.004]			[0.004]
on_rdbNAT	-0.021***			-0.021***		
	[0.002]			[0.002]		
pre_rdbNAT		-0.002			-0.003***	
		[0.001]			[0.001]	
post_rdbNAT			-0.019***			-0.017***
			[0.001]			[0.001]
branch	-0.018***	-0.018***	-0.018***	-0.022***	-0.023**	-0.022**
	[0.006]	[0.007]	[0.006]	[0.008]	[0.009]	[0.009]
securities	-0.052***	-0.049***	-0.051***	-0.051***	-0.048**	-0.049***
	[0.017]	[0.018]	[0.017]	[0.017]	[0.019]	[0.018]
gdp	0.004***	0.003***	0.003***			
	[0.000]	[0.000]	[0.000]			
gdp2				0.023***	0.025***	0.025***
				[0.006]	[0.006]	[0.007]
electric	0.291***	0.300***	0.302***	0.279***	0.288***	0.291***
	[0.046]	[0.048]	[0.045]	[0.048]	[0.049]	[0.048]
rice	-0.115***	-0.088***	-0.084***	-0.106***	-0.080***	-0.076***
	[0.026]	[0.029]	[0.028]	[0.023]	[0.025]	[0.025]
Constant	0.474***	0.383***	0.366***	-0.009	-0.128	-0.151
	[0.097]	[0.110]	[0.107]	[0.218]	[0.240]	[0.247]
Observations	555	555	555	555	555	555
R-squared	0.194	0.189	0.188	0.174	0.169	0.168

The regression equation is estimated with the random effect model with time trend added. The dependent variable is price or price of loans (the interest income to total loans). The independent variables are: variable rdb_nat is a dummy variable, 1 is for rdb and 0 for the national public banks; variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbNAT is an interaction variable between variable on and rdb_nat; variable pre_rdbNAT is an interaction variable between variable pre and rdb_nat; and variable post_rdbNAT is an interaction variable between variable post and rdb_nat. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp is calculated per capita (deflated using gdp deflator of year 2000), the gdp2 is a total gdp (log and lagged) (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 18. The Impact of the national election on the price of loans (RDB vs Private Banks)

	(1) price	(2) price	(3) price	(4) price	(5) price	(6) price
rdb_private	0.154*	0.149*	0.152*	0.145***	0.145***	0.145***
	[0.085]	[0.087]	[0.084]	[0.016]	[0.017]	[0.018]
on	-0.015***			-0.010***		
	[0.003]			[0.000]		
pre		-0.007***			-0.005***	
		[0.002]			[0.001]	
post			-0.012***			-0.003
			[0.003]			[0.010]
on_rdbPRIVATE	-0.023**			-0.028***		
	[0.009]			[0.007]		
pre_rdbPRIVATE		-0.007			-0.009	
		[0.007]			[0.006]	
post_rdbPRIVATE			-0.005			-0.015
			[0.019]			[0.013]
branch	-0.003	-0.003	-0.003	-0.006	-0.006	-0.006
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
securities	-0.059***	-0.055***	-0.062***	-0.054***	-0.050***	-0.056***
	[0.008]	[0.008]	[0.011]	[0.011]	[0.011]	[0.013]
gdp	0.003	0.003	0.003			
	[0.002]	[0.002]	[0.002]			
gdp2				0.032***	0.033***	0.032***
				[0.000]	[0.001]	[0.000]
electric	0.096	0.093	0.090	0.048	0.046	0.046
	[0.244]	[0.252]	[0.249]	[0.232]	[0.239]	[0.238]
rice	-0.070	-0.044	-0.056	-0.052	-0.030	-0.032
	[0.082]	[0.078]	[0.063]	[0.076]	[0.071]	[0.059]
Constant	0.314***	0.231***	0.267***	-0.223	-0.317**	-0.302***
	[0.065]	[0.045]	[0.001]	[0.143]	[0.128]	[0.068]
Observations	1,218	1,218	1,218	1,218	1,218	1,218
R-squared	0.119	0.117	0.116	0.085	0.083	0.082

The regression equation is estimated with the random effect model with time trend added. The dependent variable is price or price of loans (the interest income to total loans). The independent variables are: variable rdb_private is a dummy variable, 1 is for rdb and 0 for the private banks; variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbPRIVATE is an interaction variable between variable on and rdb_private; variable pre_rdbPRIVATE is an interaction variable between variable pre and rdb_private; and variable post_rdbPRIVATE is an interaction variable between variable post and rdb_private. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp is calculated per capita (deflated using gdp deflator of year 2000), the gdp2 is a total gdp (log and lagged) (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2- 19. The Impact of the national election on the price of loans (RDB vs Joint Venture Banks)

	(1)	(2)	(3)	(4)	(5)	(6)
	price	price	price	price	price	price
rdb_joint	-0.245***	-0.245***	-0.244***	-0.162***	-0.168***	-0.167***
	[0.028]	[0.031]	[0.026]	[0.020]	[0.018]	[0.018]
on	-0.033***			-0.032***		
	[0.000]			[0.001]		
pre		-0.011***			-0.011***	
		[0.001]			[0.001]	
post			0.001			0.001
			[0.001]			[0.003]
on_rdbJOINT	0.011***			0.016***		
	[0.001]			[0.001]		
pre_rdbJOINT		0.016***			0.019***	
		[0.002]			[0.003]	
post_rdbJOINT			-0.008***			0.003***
			[0.000]			[0.000]
branch	-0.005	-0.005	-0.005	-0.002	-0.003	-0.003
	[0.009]	[0.009]	[0.009]	[0.012]	[0.012]	[0.012]
securities	-0.047***	-0.042**	-0.044**	-0.043**	-0.039*	-0.041*
	[0.016]	[0.020]	[0.019]	[0.020]	[0.023]	[0.022]
gdp	0.004***	0.004***	0.004***			
	[0.000]	[0.000]	[0.000]			
gdp2				0.017***	0.019***	0.019***
				[0.004]	[0.005]	[0.005]
electric	0.261***	0.268***	0.267***	0.225**	0.232**	0.233**
	[0.049]	[0.055]	[0.057]	[0.089]	[0.094]	[0.095]
rice	-0.109***	-0.080**	-0.081***	-0.091**	-0.066*	-0.062*
	[0.031]	[0.035]	[0.028]	[0.036]	[0.038]	[0.037]
Constant	0.524***	0.424***	0.425***	0.215	0.101	0.083
	[0.102]	[0.116]	[0.091]	[0.180]	[0.203]	[0.201]
Observations	652	652	652	652	652	652
R-squared	0.245	0.241	0.240	0.226	0.222	0.221

The regression equation is estimated with the random effect model with time trend added. The dependent variable is price or price of loans (the interest income to total loans). The independent variables are: variable rdb_joint is a dummy variable, 1 is for rdb and 0 for the joint venture banks. Variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbJOINT is an interaction variable between variable on and rdb_joint; variable pre_rdbJOINT is an interaction variable between variable pre and rdb_joint; and variable post_rdbJOINT is an interaction variable between variable post and rdb_joint. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp is calculated per capita (deflated using gdp deflator of year 2000), the gdp2 is a total gdp (log and lagged) (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A2- 20. The Impact of the national election on price of loans (RDB vs Foreign Banks)

	(1)	(2)	(3)	(4)	(5)	(6)
	price	price	price	price	price	price
rdb_foreign	0.281***	0.282***	0.285***	0.257***	0.262***	0.262***
	[0.015]	[0.014]	[0.007]	[0.010]	[0.010]	[0.013]
on	-0.010***			-0.005***		
	[0.002]			[0.002]		
pre		-0.009***			-0.007***	
		[0.001]			[0.000]	
post			-0.012***			-0.003**
			[0.001]			[0.001]
on_rdbFOREIGN	-0.022***			-0.027***		
	[0.002]			[0.001]		
pre_rdbFOREIGN		-0.001			-0.004***	
		[0.001]			[0.001]	
post_rdbFOREIGN			0.014***			0.005***
			[0.001]			[0.001]
branch	-0.021***	-0.023***	-0.023***	-0.031***	-0.033***	-0.033***
	[0.000]	[0.000]	[0.001]	[0.001]	[0.001]	[0.001]
securities	-0.053***	-0.051***	-0.053***	-0.054***	-0.051***	-0.053***
	[0.011]	[0.012]	[0.011]	[0.010]	[0.009]	[0.009]
gdp	0.003***	0.003***	0.003***			
	[0.000]	[0.000]	[0.000]			
gdp2				0.025***	0.027***	0.027***
				[0.006]	[0.006]	[0.007]
electric	0.293***	0.301***	0.299***	0.271***	0.278***	0.278***
	[0.027]	[0.031]	[0.033]	[0.048]	[0.052]	[0.054]
rice	-0.111***	-0.087***	-0.088***	-0.100***	-0.079***	-0.075***
	[0.031]	[0.027]	[0.020]	[0.032]	[0.027]	[0.025]
Constant	0.269***	0.188***	0.186***	-0.113	-0.216	-0.234
	[0.080]	[0.065]	[0.048]	[0.193]	[0.178]	[0.181]
Observations	606	606	606	606	606	606
R-squared	0.235	0.230	0.230	0.216	0.212	0.211

The regression equation is estimated with the random effect model with time trend added. The dependent variable is price or price of loans (the interest income to total loans). The independent variables are: variable rdb_foreign is a dummy variable, 1 is for rdb and 0 for the foreign banks; variable 'on' is the election year, 'pre' is a year before the election year and 'post' is a year after the election year; variable on_rdbFOREIGN is an interaction variable between variable on and rdb_foreign; pre_rdbFOREIGN is an interaction variable between variable pre and rdb_foreign; and variable post_rdbFOREIGN is an interaction variable between variable post and rdb_foreign. Variable branch is total branches of each bank (log and lagged); securities is the sum of total funds placed in central banks, other banks and the securities/total asset. Variable gdp, electric, and rice are regional and national control variables. The gdp is calculated per capita (deflated using gdp deflator of year 2000), the gdp2 is a total gdp (log and lagged) (deflated using gdp deflator of year 2000); variable electric is a percentage of electricity access; variable rice is a price of rice (Rp/kg) (deflated using gdp deflator of year 2000; log and lagged). The data observation is from year 1993 to 2016. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Chapter Three

Does geography influence the RDBs lending?

3.1 Introduction

The regional economy is important to promote national growth (OECD[1], 2009). One important factor that is crucial to induce economic growth is financial development. Beck, Levine, and Loayza (2000) stated that the speed of development in the banking sector is in line with the speed of economic growth. Moreover, concerning the disparity among regions, inequality exists in access to banking services, as geographical factors play an important role in banking activities (Tabak, Miranda, and Fazio, 2013), and potentially lead to 'market failure'. (Krugman, 1999)[2] state that spatial spillover is one of the causes of market failure in the banking sector.

Spatial clustering and geographic correlation may occur due to certain economic and socio-demographic factors, such as endowment, poverty, living costs, crime rates, and etcetera. As economies of scale matter, spatial issues become a crucial factor in the economy (Krugman, 1999). In general, firms concentrate their business in wealthy regions with a large potential market, close to the financial centre. Doing so reduces average operating costs and increases profitability. This also occurs in the banking sector and these factors are indicators to be considered when realising the objective to maximise positive return (Singh, 1970). However, focus on these factors may lead to negative externalities or market failure due to red-lining limited access to banking services in unfavourable regions. As the disparity increases, poor regions struggle to access funds. Hence, the government's intervention must step in with the objective to correct the market failure.

This chapter studies how geographical factors affect the intermediation process in public banks, which showing in the lending distribution. This study emphasises spatial issues and employs public banks with a regional focus (referred to as regional development banks [RDBs]) to address how spatial issues affect lending by RDBs. The existence of RDBs is intended to encourage economic and social development in their owned region (Singh, 1970), and RDBs are the best places to fulfil regional needs and demands (Griffith-Jones, Griffith-Jones, and Hertova, 2008). As public banks with a regional perspective, RDBs

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[1] The Organization for Economic Cooperation and Development (OECD)

[2] Levy et al. (2007) stated that market failures in the banking sector are related to information asymmetries, intangible assets, spatial spillover, and large external financing needs.

are inseparable from social and developmental views. Under the social view, public banks are expected to provide funds to sectors that offer socially profitable investments, while the development view stresses the role of public banks in solving the problem of scarce capital in the market (Levy et al., 2007; Sapienza, 2004). Hence, RDBs with a regional mandate play an important role in mitigating market failure.

Empirically, studies about RDBs' responses caused by disparity among regions are rare in the literature. Most banking scholars address how public banks respond to economic downturns (Bertay, Demirgüç-Kunt, & Huizinga, 2014; Brei & Schclarek, 2013; Cornett, Guo, Khaksari, & Tehranian, 2010; Micco & Panizza, 2006)[3]. While many studies have examined public banks' responses in solving scarcity caused by economic downturn, few have examined public banks' responses relating to geographical factors. Using German data, Condrad, Neuberger, Reißig, and Maria (2008) observed that public banks with a higher branch penetration, especially in less developed regions, helped to reduce regional discrepancies in credit access. Without applying RDB data, a similar idea was raised by (Önder and Özyildirim, 2010), who found that when studying Turkey regionally, the opposite result emerged—state-owned banks did not contribute to the regional economy. Dietsch and Lozano-Vivas (2000), Conrad et al. (2009), and Tabak et al. (2013) claimed that the situation, condition, or geographical condition of each bank is essential to comprehensively demonstrate that the process of intermediation is actually happening. Ignoring environmental variables leads to misperception or false analysis of banking performance (Dietsch and Lozano-Vivas, 2000).

Therefore, this paper will fill the gap in the literature by studying the implementation of RDBs' mandate concerning diversity in location. This study is motivated by Tabak et al. (2013)[4], who addressed the contribution of regional banks in promoting economic growth, and highlighted the efficiency factors in strengthening the impact on economic growth. Furthermore, we emphasise on lending aspect is crucial to elucidate the actual implementation of financial intermediary, especially for public banks as they have a specific mission to fill the gap in the market (Micco & Panizza, 2006; Bertay et al., 2014; Brei &

[3] Bertay et al. (2014), using 1,633 banks, 111 countries, and time observations from 1999–2010, found that public banks, especially those located in developed countries, supply more credit during economic downturns. Countercyclical action was also found by Brei and Schclarek (2013); Cornett, Guo, Khaksari, and Tehranian (2010); Micco and Panizza (2006); and Saadaoui (2014). Using national data, Coleman and Feler (2015) found that public banks undertook a stabilisation function when a crisis hit Brazil between 2005 and 2010. The same results were reported by Leony and Romeu (2011) in South Korea, and Önder and Özyıldırım (2013) in Turkey. Contrasting findings were reported by Iannotta, Nocera, and Sironi (2013), using a sample of large European banks from 2000–2009, who found no support regarding credit supply during economic crisis.

[4] Tabak et al. (2013) used an unbalanced panel, which contains registers of 198 US savings banks over nine years (2001–2009), totalling 1260 observations.

Schclarek, 2015). Therefore, this study contributes to the literature by exploring how well RDBs carry out their mandate to distribute loans across regions by comparing them with non-RDBs. In addition, we contribute to the literature by studying loan distribution to specific sectors, such as small and medium-sized enterprises (MSMEs) to see how well RDBs carry out their mandate in this sector. Berger et al., (2005), Berger et al., (1995) and Strahan & Weston (1998) found that small banks contribute more to MSME loans than larger banks because of diseconomies of scale. These findings were also supported by Degryse and Ongena (2005). Loans to MSMEs will strengthen the results regarding how well RDBs carry out their mandate, as this sector relies heavily on banking support (Bhaumik and Piesse, 2008). At the same time, it is vulnerable because of high exposure to new businesses.

A second motivation emerges from the theoretical model presented by Hakenes and Schnabel (2006), who stated that there is a possibility that a capital drain can occur in poor regions, as it flows out to the wealthy regions because they have more capital to pay back and potentially less moral hazard problems. By setting two regions with different levels of endowment, and using the concept of credit rationing `ala Stiglitz and Weiss (1981), (Tobler, 1970) proved that the existence of RDBs may prevent the capital drain from poorer regions. However, the present study will test whether the theory is empirically proven. By utilising the spatial econometrics which, based on the assumption that there is a spatial correlation between regions and the close entities are not independent (Gallup et al., 1999), this study will examine the impact of geographical factors, by assessing the contribution of the neighbouring regions in affecting the distribution of loans within the regions, and determining what factors are crucial in influencing the inflow and outflow of loans to and from neighbouring regions.

The aim of this study is to examine whether RDBs disproportionately provide loans to their region with respect to spatial issues. We observe the geographical issues in several ways. First, we would like to see the behaviour of RDBs and non-RDBs[5] when lending, including the level of endowment that the regions have, proxied by the regional GDP. Second, we will examine the behaviour of RDBs compared to non-RDBs based on their strategic location[6], as this information reflects the potential market and the size of the market (Gallup et al., 1999). Third, considering the spillover effect, we will check whether the loans

[5] Non-RDBs are non-regional banks, which consist of national public banks, private banks, joint venture banks and foreign banks. We also refer to these banks as interregional banks, and they are not tied with the regional mandate.
[6] The scale of economies makes the banking sector focus on a big market size/big population, prospective businesses, high investment return of projects, etc. This ultimately creates negative externalities in the market. For instance, small firms might find it difficult to obtain financing to expand their business, there may be no credit facility for some sectors, or peripheral regions may not have access to funding because most banks are located in large areas.

disbursed by RDBs and non-RDBs are affected by neighbouring regions. If RDBs implement their mandates, then we expect that the spillover has less of an effect on RDBs, referred to theory of Hakenes and Schnabel (2006)[7]. To dig deeper, this study employs spatial panel analysis, which, to the best of our knowledge no other studies have incorporated in banking studies. Use of spatial analysis enables us to see what factors affect the spillover for aggregate loans, and for MSME loans from both RDBs and non-RDBs.

With the objective to enlarge the banking literature in regional studies, this paper uses Indonesia as an example, due to the fact that not every country has local banks or regional banks such as RDBs. Furthermore, Indonesia has a range of different geographical areas. Unlike Germany, which has been used as an example in most studies of regional banks and is a developed country that is geographically located as a continental country, Indonesia is an example of a developing country, which is geographically different from Germany. With more than 17,000 islands, Indonesia is an archipelago country, which is geographically opposite to the German landscape as a continental country. Therefore, the location of the regions might not be contiguous or share a border (or a vertex), and this might provide empirical evidence about the impact of how spatial dependence might affect the intermediation process of RDBs.

Taking advantage of the geographical features of Indonesia, this paper will contribute to the literature by relating geographical factors with intermediation functions carried out by RDBs compared to non-RDBs, which were not explored by Condrad et al. (2008); Hakenes et al. (2009); Hakenes et al. (2015); and Hasan, Koetter, and Wedow (2009)[8]. Regarding loans to MSMEs, this study will enrich the literature by observing how well RDBs implement their mandates by supporting small businesses in their regions.

[7] Hakenes and Schnabel (2006) stated that the existence of RDBs is important to prevent the potential of capital flight from a region caused by a disadvantageous location surrounded by wealthy regions. As agents are subject to moral hazard, in the absence of RDBs, agents tend to invest in regions that have a high level of endowment, so they can obtain higher interest rates. Because they have more capital, wealthy regions have a greater ability to pay back debt, which means that the risk of moral hazard is lower in wealthy regions than in poor regions, as they fewer resources to pay back funds. Firms tend to locate their businesses in wealthy areas because of the potential for business growth (Hakenes & Schnabel, 2006).

[8] Most of the literature emphasises the impact of regional banks' behaviour in lending, and their efficiency on economic growth. None of them explore the implications of geographical factors on the intermediation function. For details see Condrad et al. (2008) ; Hasan et al. (2009); Hakenes et al. (2009); Önder and Özyildirim, (2010); Hakenes et al. (2015).

The remainder of this paper is organised as follows. Section 3.2 reviews relevant literature. Section. 3.3 formulates the hypotheses. Section 3.4 discusses the methodology and data set. Section 3.5 presents the empirical results. Section 3.6 concludes.

3.2 Literature

3.2.1 Geography and Economy

The idea of economic agglomeration [see Krugman, 1991] opened a new approach to understanding the movement of economic activity in regions. There are some approaches with the aim of explaining inequalities among locations proposed by some economists and geographers, but the most significant ones came from Gallup et al. (1999) and Krugman (1999). Gallup et al. (1999) explained that the gap between locations/regions is underlined on inherent differences in those locations; for example, there is a tendency for locations endowed with tropical climates to have low per capita income or for great cities to emerge where there are good harbours.

Furthermore, agglomeration is related to urbanisation processes. This can lead to negative externalities, such as increasing in the price index, congestion, and crime. People tend to move to bigger cities to improve their living standard. Davis & Weinstein (2002) discover that location is important consideration in forming economic activity across space but increasing returns to scale determines the intensity of concentration. Referring to Krugman's theory (1999), increasing return to scale is one of the ingredient in agglomeration, and yet there is no further exploration about the role of banking industry in alter the concentration of economy. In their paper, although OECD (2009) does not really explain about the important of banking sector but they argue that labour, capital and technology are the important factors in influence economic growth. Related to the spatial issue, Matsuyama (2004) develops a model and prove that the financial markets may lead to inequality as a symmetric equilibrium becomes unstable and separate into rich regions and poor regions. This model is coherent with Krugman's idea in 1981, which emphasizes that a gap in capital-labour ratios increases due to capital accumulation over time. Empirically proved by Clarke, Xu, & Zou (2006) and Beck, Demirgüç-Kunt, & Levine (2007) find that financial market development has negative correlation with income inequality.

Since banking sector holds an important capital in business/ economy, which is fund, then we can surmise that banking sector plays a vital role in inducing economic agglomeration. Like other firms, banks also focus on financial management activities. Market, location, and scale are important factors in the banking sector as well as (OECD, 2009) stated that spatial spill-over is one of the factors that cause market failures in the banking sector. The objective to be efficient and attain maximum profit may direct them to focus on a big potential market with big access, high potential demand, and big firms/industry with high prospective returns, and this eventually leads to market agglomeration. Agglomeration economies occur when a firm enjoys increasing returns to scale in a certain place, probably because of the presence of a natural advantage, monopolistic protection, political reasons, or any other reason (OECD, 2009). The government should step in or intervene by applying policies that promote economic growth in remote areas (World Bank, 2013); the OECD (2009) stated that subsidies and financial aid can solve the market failure.

Generally, to apply such policies and distribute the funds, the government uses public banks. This is related to the mandate of public banks, which focus not only on profit maximisation but on social and development mandates with the intention of providing money for sectors that are forgotten or unfavourable but have a high social impact in the economy. If public banks can apply this mandate properly, then it can be envisaged that the disparity among regional economies would decrease because every region has the same opportunity to get funds. (Griffith-Jones et al., 2008) showed that better access to external funds leads to less incentive for mobile workers to migrate, and this would avoid a large agglomeration.

3.2.2 Regional Development Banks and Geography

Regional development banks (RDBs) are one type of state-owned banks, owned by the regional government. RDBs are created with the objective to reduce the financial disintermediary problem caused by information asymmetry given the proximity and geographical distance (Griffith-Jones et al., 2008). Taking advantage of regional knowledge, RDBs can be effective financial intermediaries to meet the needs of local people, especially those who require large initial investments and a regional coordination mechanism. Because regional development is important in supporting the national economy (OECD, 2009), the ability to fulfil the demands and the needs of regions is crucial.

RDBs’ presence is inseparable from the problem of market failure because of asymmetric information caused by proximity and spatial issues that lead to limited access to financial services. Economic agents, including banks, may decide to allocate their investments based on various factors. First, market conditions are related to the level of endowment in the market. Firms tend to locate their businesses in rich areas because of the potential growth of business that they may gain (De Young, Klier, & McMillen, 2004). Second is the market size. A higher population tends to increase the likelihood of a company opening branches because of the cost savings or high opportunity cost consideration (Gallup et al., 1999). Third is the strategic location. As for size, many firms tend to concentrate their activities in the capital city, which usually have the biggest market in a country. Coastal areas tend to benefit because of the accessibility factor, while hinterland locations are likely to have less development because of the lower interest of investors in investments related to an unfavourable position. Fourth, the existence of high-value natural resources raises the possibility of achieving high economic growth (Conrad et al., 2009). Fifth, the structure of demographic factors such as the number of young people and the elderly implies the existence of potential clients/consumers to obtain a significant return in the long term (Conrad et al., 2009). Sixth is the business potential in a particular location. This concept outlines some elements that enable the region to grow, such as government policies that support the business atmosphere in the region, low political conflict, cheap labour, etc. (Grinblatt & Keloharju, 2001). Seventh, similarities in culture such as similarity in language allow the bank to reach more customers in new regions, and this could be another drive to open or move a branch (Condrad et al., 2008).

Therefore, concerning the problems caused by location, the government needs to intervene to mitigate the potential for market failure that may affect the growth of the national economy as an aggregate. With a regional perspective, RDBs gain reliable soft information through spatial factors (Condrad et al., 2008). The ability to reach customers in the region enables them to justify the credit ratings properly. (Bhaumik & Piesse, 2008) stated that the existence of RDBs is important to prevent the potential of capital flight from a region caused by a disadvantageous location surrounded by rich regions. As agents are subject to moral hazard, in the absence of RDBs, agents tend to invest in regions that have a high level of endowment so they can obtain higher interest rates. Because they have more capital, rich regions have a greater ability to pay back debt, which means that the risk of moral hazard is lower in rich regions than in poor regions. Under these conditions, RDBs that follow their mandate and get support (subsidies) from the regional government may have the ability to avoid potential capital drain by offering a competitive deposit rate.

Public banks, with their mission to support social and development banks, are important in reducing scarcity for MSMEs cause by difficulties accessing funds. As a new business, an MSME may pose a high risk because of the uncertainty of regular cash inflow, or problems with liquidity, but at the same time, the dependence on bank credit is higher in MSMEs than in larger organisations (Bhaumik & Piesse, 2008). The location or the environment also affects the potential growth of MSMEs; for example, some regions may have inherited a good endowment, have enough natural resources, have a big potential market, or be located next to a potential market. Concerning the disparity among regions, the challenges of building a small business in each region are different. With a regional focus, RDBs provide important to be a financial support for MSMEs within regions. Emphasising the social and development views, regional banks are expected to accommodate the needs of MSME credit supply to reduce market failure caused by limited access to loans from larger banks or non-RDBs. Associated with a regional mandate and subsidised by the regional government, the presence of RDBs in reducing financial disintermediaries becomes crucial in inducing regional economic growth (King & Levine, 1993).

3.3 Hypothesis Development

The focus of the present study is to investigate whether geographical factors affect the loans distributed by RDBs in Indonesia. Regional development banks in Indonesia were created with the objective to support regional economies and to lower the disparity among regions[9]. The OECD Report (2009) stated that leading regions are important for national welfare. Empirically, data shows that the economy of lagging regions contributes strongly to national growth, generating more than 50 per cent of national growth. However, dealing with the regional economy means dealing with location issues that are very divergent across regions. Wealthy regions are always the main investment destination. The level of endowment, the potential market, and the location are the main reasons for firms, including banks, to locate their investment (Conrad et al., 2009; De Young et al., 2004; Gallup et al., 1999; Grinblatt and Keloharju, 2001). This condition may lead to disparity due to agglomeration in wealthy regions. Hakenes and Schnabel (2006) proved that poor regions suffer from insufficient loan supply because the moral hazard problem is potentially higher in poor regions, which may cause capital drain to wealthy regions. Hakenes and Schnabel (2006) argued that the existence of RDBs enables unfavourable regions to access credit and prevent capital drain, while in most cases, non-RDBs or the interregional banks are more attractive to regions with a higher endowment, which leads to hypothesis one (1).

Hypothesis (1) : The higher the level of the endowment, the less the supply of funds (including the supply to MSMEs[10]) distributed by the RDBs.

[9] Indonesian Government Regulation No. 13, 1962.
[10] In addition, regarding loans to MSMEs, Berger et al., (2005) and Strahan & Weston (1998) found that larger banks are reluctant to lend to this sector, while Degryse and Ongena (2005) .

Hypothesis (1.1) : The RDBs lend more to unfavourable regions than non-RDBs.
Hypothesis (1.2) : The RDBs provide more MSME loans to unfavourable regions than non-RDBs.

Furthermore, spatial dependence connects with 'strategic location'. When economies of scale matter, then the location is important, and when economy is concentrated in a large potential market, it will reduce the average operational cost. The strategy to look for a large market, consider the size of the population, the location of the population, and the growing area (Condrad et al., 2008; Gallup et al., 1999), represents a potential market for companies and banks. De Young et al. (2004) documented that with the advantages and benefits of a capital city or financial centre, commercial banks tend move to big trading cities to strengthen their core business, which leads to market failure, because they have less access to the financial market. As the RDBs are tied with their regions and if they commit to implement their regional mandate, we expect that they will supply the needs of the regions regardless of the distance from the potential location, which leads to hypothesis two (2).

Hypothesis (2) : The supply of funds (including the supply to MSMEs) from RDBs is disproportionately distributed in the context of the distance from the financial centre compared to non-RDBs.
Hypothesis (2.1) : The longer the distance from the financial centre, the more RDBs distribute loans compared to non-RDBs.
Hypothesis (2.2) : The longer the distance from the financial centre, the more MSME loans RDBs distribute compared to non-RDBs.

Concerning the effect of geographical issues in determining the lending distribution, we are aware of the influence of neighbouring regions in affecting this disbursement. Spatial dependence among regions makes neighbouring regions important in affecting the lending distribution, which drives 'capital flight'. If RDBs obey their mandate, we expect that the neighbouring regions may have less impact on RDBs' lending. As stated by Hakenes and Schnabel (2006), the existence of RDBs is crucial to avert the potential of capital flight from a region caused by a disadvantageous location surrounded by wealthy regions, which leads to hypothesis three (3).

Hypothesis (3) : If RDBs implement their mandate properly, then the loans distributed by RDBs (including MSME lending) within their regions should not be affected by the conditions of nearby regions, while non-RDBs are more likely affected by the conditions of neighbouring regions since they are not tied with the regional mandate.

Hypothesis (3.1) : Neighbouring regions have insignificant influence on the changes of RDB' aggregate lending within regions.

Hypothesis (3.2) : Neighbouring regions have insignificant influence on the changes of RDB' MSME lending within regions.

Hypothesis (3.3) : Neighbouring regions have a significant influence on the changes of non-RDB' aggregate lending within regions.

Hypothesis (3.4) : Neighbouring regions have a significant influence on the changes of Non-RDB' MSME lending within regions.

3.4 Methodology

This section describes the methodologies to be employed in this paper. It starts with the alternative approaches that can be used to see the causal effects of geographical factors on dependent data and continue with a presentation of the variables used in this study.

3.4.1 Estimation of the impact of the geographical factors on lending (including MSME lending)

This study employs panel data or longitudinal data from a set of time series for each cross-sectional member in the data set. Observing regional data for RDBs and non-RDBs as well as geographical factors for each region, this study observes 26 sets of regions for a 15-year period. Using panel data, we can observe the same unit over time, which shows trends in social phenomena and reveals a causal model (Wooldridge, 2009). In this study, the focus of the causal relationship between geographical factors and RDBs' contribution in loans per capita, including loans to MSME (per capita). The main idea is to observe how well RDBs carry their regional mandate despite the disparity across regions. In order to prove our hypotheses, we begin our analysis by applying regression model. Following is the regression model[11]:

$$\mathrm{LoanCap}_{j,i,t} = a + b_1\mathrm{RDB}_i + b_2\mathrm{RGDPCap}_{i,t} + b_3\mathrm{RGDPCap}_{i,t}\#\mathrm{RDB}_i + b_4\mathrm{control} + b_5\mathrm{u}_{it} \qquad \text{......Eq.3- 1}$$

[11] In order to generate an efficient estimation, we run several tests including multicollinearity test (see Appendix A3-12 and A3-13). Applied VIF test, we found that the covariates in the model are not independent (the correlation between variable RGDPCap, distance, spillover1, and spillover2 are high or VIF>10) and may increase the variance of the explanatory variables. Hence, we run the independent variables separately to avoid the issue. While excluded variables from the model might create omitted variable bias.

$$LoanCap_{j,i,t} = a + b_1 RDB_i + b_2 distance_i + b_3 distance_i \# RDB_i + b_4 control + b_5 u_{it} \quad \text{.......Eq.3- 2}$$

$$LoanCap_{j,i,t} = a + b_1 RDB_i + b_2 spill_{i,t} + b_3 spill_{i,t} \# RDB_i + b_4 control + b_5 u_{it} \quad \text{.......Eq.3- 3}$$

$$MSMECap_{j,i,t} = a + b_1 RDB_i + b_2 RGDPCap_{i,t} + b_3 RGDPCap_{i,t} \# RDB_i + b_4 control + b_5 u_{it} \quad \text{........Eq.3- 4}$$

$$\mathrm{MSMECap}_{j,i,t} = \mathrm{a} + \mathrm{b}_1 \mathrm{RDB}_i + \mathrm{b}_2 \mathrm{distance}_i + \mathrm{b}_3 \mathrm{distance}_i \# \mathrm{RDB}_i + \mathrm{b}_4 \mathrm{control} + \mathrm{b}_5 \mathrm{u}_{it} \quad \text{........Eq.3- 5}$$

$$MSMECap_{j,i,t} = a + b_1 RDB_i + b_2 spill_{i,t} + b_3 spill_{i,t} \# RDB_i + b_4 control + b_5 u_{it} \quad \text{........Eq.3- 6}$$

Where:

$\mathrm{LoanCap}_{j,i,t}$: loans per capita of bank j at region i, at time t;
$\mathrm{MSMECap}_{j,i,t}$: MSME loans per capita of bank j at region i, at time t;
RDB : a dummy variable, 1 for RDB, and 0 for non-RDB;
$\mathrm{RGDPCap}_{i,t}$: Regional GDP per capita of region i at time t;
$\mathrm{distance}_{i,t}$: a distance from financial centre to region i (km^2) (logged);
$\mathrm{spill}_{i,t}$: a relative wealth of neighbouring regions to home region i at time t;
$\mathrm{RGDPCap}_{i,t}\#\mathrm{RDB}_i$: an interaction between regional GDP (per capita) and RDBs at region i at time t;
$\mathrm{distance}_i\#\mathrm{RDB}_i$: an interaction between variable distance and RDBs at region i at time t;
$\mathrm{spill}_i\#\mathrm{RDB}_i$: an interaction between variable spill and RDBs at region i at time t
control : the control variables such as electric, poverty gap index (p1), price of rice (rice), the percentage of elderly people compared to the total population in the regions (old), school participation rate (educ), and total branches (branch).

There are two main dependent variables in this study, LoanCap and MSMECap. To obtain the real value, variable loans and loans to MSME are deflated by a GDP deflator. The variable RGDP[12] is used as a proxy of the level of the endowment refer to the idea of Hakenes and Schnabel (2006). If RDBs implement their mandate to support the local economy, we expect that the interaction between RDB and RGDP per capita is negative and significant ($\mathrm{RGDPCap}_{i,t}\#\mathrm{RDB}_i$). This implies that the lending behaviour of RDBs and non-RDBs are moderated by these variables, and a negative coefficient tells that the RDBs are more dominant in distributing loans in regions with less endowment compared to the non-RDBs as suggested by Hakenes and Schnabel (2006).

The second geographical variables used in this paper is distance. Variable distance represents the distance between the financial centre of Indonesia, Jakarta, with each region. To get the distance between regions, we use latitude and longitude points for each region and generate the distance using Euclidian distance. In mathematics, the Euclidean distance or Euclidean metric is the "ordinary" straight-line

[12] We use real regional GDP with the basis year of 2000.

distance between two points in Euclidean space. With this distance, Euclidean space becomes a metric space. The associated norm is called the Euclidean norm. Older literature refers to the metric as the Pythagorean metric. A generalized term for the Euclidean norm is the L^2 norm or L^2 distance. Euclidian distance between points p (or latitude) and q (or longitude) is the length of the line segment connecting them ($\overline{pq}$). In Cartesian coordinates, if $p = (p_1, p_2, \ldots\ldots, p_n)$ and $q = (q_1, q_2, \ldots\ldots, q_n)$ are two points in Euclidian n-space, then distance(d) from p to q, or from q to p is given from Pythagorean formula:

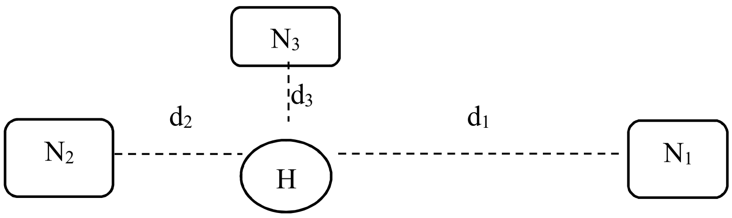
$$d(p,q) = d(q,p) = \sqrt{(q_1 - p_1)^2 + (q_2 - p_2)^2 + \cdots + (q_n - p_n)^2}$$

$$= \sqrt{\sum_{i=1}^{n}(q_i - p_i)^2} \qquad \ldots\ldots\ldots\ldots\ldots\ldots \qquad \text{Eq.3- 7}$$

De Young et al. (2004) stated that big cities or financial centres are always a favourite destination to do business since they usually have a big market with high potential investment. We expect that, without a strong local development mandate, non-RDBs may be tempted to establish themselves in a big area, such as Jakarta or places close to Jakarta. Hence, if RDBs obey their mandate, then we expect the interaction variable ($\text{distance}_i\#\text{RDB}_i$) to be positive and significant, meaning that regardless the distance from strategic location, the RDBs show their commitment to support their region.

The variable spill is created to prove the theory of Hakenes and Schnabel (2006), who stated that the capital drain may be happening in regions surrounded by rich neighbouring regions. Before applying a spatial panel model, firstly we create a formula to test the existence of the spillover. Assuming that there is a region, call H, and region H has three neighbouring regions, N_1, N_2 and N_3. The distance between region H to N_1 is d_1, H to N_1 is d_2 and H to N_3 is d_3. Picture below shows the illustration.

Figure 3- 1. Illustration



If we assume that H is the home region, N_i is the neighbouring regions, d_i is the distance of each neighbouring regions from home region, then the spillover will be:

$$spill1 = \frac{\left[\left(1-\frac{d_1}{d_{total}}\right)xRGDP_1+\left(1-\frac{d_2}{d_{total}}\right)xRGDP_2+\left(1-\frac{d_3}{d_{total}}\right)xRGD\ _3\right]}{RGDP_{Home}} x\ distance \quad \dots\dots\dots \qquad \text{Eq.3- 8}$$

Where $RGDP_{Home}$ is the regional GDP of home region (H) (per capita).

If we assume that $d_3 < d_2 < d_1$, and $d_{total} = d_1+d_2+d_3$, then distance = $d_3 + \frac{d_1-d_3}{2}$, or $d_1 - \frac{d_1-d_3}{2}$

This equation assumes that the influence of the neighbouring regions depends on the distance, the closer the stronger the impact. Moreover, if we assuming that the neighbouring regions have the same probability to affect the home regions, as they are located within the threshold, then the spillover formula will be like following.

$$spill2 = \frac{1}{n}\sum_1^n RGDP\_Neigbouring\ regions \Big/ RGDP\_Home\ Regions \dots\dots\dots\dots\dots \qquad \text{Eq.3- 9}$$

Or the average of the RGDP (per capita) of the neighbouring regions divided by the RGDP (per capita of the home region.

Regarding the characteristic of Indonesia as an archipelago country, not many regions share the same borders with their neighbours. Java may consist of five provinces that share the same borders, but Bali, East Nusa Tenggara, West Nusa Tenggara, Papua, and Maluku are located on islands where the closest neighbouring regions are located on different islands. Therefore, we could not apply the contiguity method suggested by LeSage and Pace (2009) as the type of the country consists of the group of islands; hence, distance method is more applicable for our data[13]. To choose the neighbouring regions, we need to set a threshold distance define how far a province can be regarded as a neighbour of another province. Using Indonesian data and apply Euclidian distance, Rodríguez-Pose, Tselios, Winkler, and Farole (2013) set 400 km as a threshold to see the impact of the agglomeration effect on firms' export propensity.

[13] Referred to LeSage & Pace (2009), there are two main methods to define the spatial neighbours, those are contiguity method and distance method. Contiguity methods consists of linear contiguity, rook contiguity, bishop contiguity, and queen contiguity. Linear contiguity is when i and j are neighbours if they share (part of) a common eastern or western border, while Rook contiguity refers to the condition when the two regions share a common border (on any side). Whereas, Bishop continuity spatial neighbour if they meet at a "point", and queen contiguity is a combination between Rook and Bishop contiguity, which means two regions are neighbours in this sense if they share any part of a common border, no matter how short. One can go further and define 'second order' measures of contiguity: these would count as neighbour's regions sharing a border with a first-order neighbour according to each of the criteria listed. However, the distance-based approach, and considers two regions as the neighbour if, for example, their population-weighted centroids are within some distance of one another.

However, we do simulate a threshold distance between 250 km up to 500 km and ended up with 500 km as the most appropriate distance that minimize the number of regions which have no neighbours, but in the same time keeping the threshold level relatively low. The 500 km seems to be appropriate for us as we set the total regions (provinces) back to the original number, which is 26 provinces. This is related to the objective to easily connect with the data from the RDBs, as we have 26 RDBs (the number of provinces has changed, from 26 provinces become 34 provinces, but the number of RDBs remained the same at 26).

If there is a spillover in loans of RDBs and non-RDBs, then the main indicator of $\mathrm{spill1}$ and $\mathrm{spill2}$ should be negative and significant, while to prove whether RDBs prevent capital drain from poor regions, this paper will interact the variable RDB with spill ($\mathrm{spill_i\#RDB_i}$). If the interaction variable is positive and significant, then we conclude that RDBs are important in protecting the poor regions from a capital flight.

Furthermore, to get a deeper understanding about the spillover, we run the second geographical method, which is spatial panel analysis. With this spatial analysis, we are be able to test, do all the banks (RDBs vs non-RDBs) get affected by the spatial spillover? and what factors that contribute to the spatial spillover in each bank (RDBs vs non-RDBs) and affect the lending and the MSME lending in each type of bank. As the spatial panel analysis requires a balance panel data, then the interpolation method is applied for unbalanced variables, such as variable $\mathrm{p1, old, rice}$, and educ. This method can be also our robustness test, as it should link with the aforementioned method, linear regression. If variable spill shows a significant in affecting the lending, it should inline with the results in spatial panel method. Apart from getting the comparison results between RDBs and non-RDBs, the shortcoming of applying linear regression is we could not analyse in detail of the spatial impact in each type of bank, RDBs and non-RDBs, as we only emphasise the cause of the spillover because of the level of the regional GDP (endowment). Albeit we can generate another variable spill based on some geographical indicators, such as unemployment, the percentage of poor people, and etcetera, it is not quite practical, hence by applying spatial panel method, enables us to detect what factors that trigger the potential of spillover for each bank, and each dependent variable.

According to Tobler's first law of geography, "Everything is related to everything else, but near things are more related than distant things" (Tobler, 1970, p. 236), spatial autocorrelation between unit i and j depends on their relative location. To apply the spatial panel analysis, we need to build the spatial weight matrix or 'spatial neighbour' matrix, which mapping the neighbours of each region. A spatial (spillover) arises when a causal relationship between the rth characteristic/ action of the ith entity/agent (X_i^r) located at position i in space exerts a significant influence on the outcomes/ decisions/ actions (y_j) of an agent/entity located at position j (LeSage, 2014). In the context of a spatial regression relationship where $y_j, j = 1, \dots \dots, n$ is a vector of outcomes/decisions/ actions of an agent/entity located in region/location j, and X is a matrix of k characteristics/actions of all n regions/entities/agents, a formal definition would be $\partial y_j / \partial X_i^r \neq 0$, which implies a spillover/impact from the rth characteristic/action of region/agent/entity i that impacts the outcome/decision/action in region j.

To build the spatial neighbours, we need to create a spatial neighbour's matrices. As we have set the threshold for 500km, then we build the matrix of each region based on that. This spatial weights matrix is equal to 1, or it is called 'row-standardisation'. Let W with elements $\widetilde{w}_{ij}$ be a spatial neighbour matrix. To row-standardise this, we divide each element in a row by the sum of the elements in the row. Thus a spatial weights matrix W[14], with element w_{ij} is defined by:

$$w_{ij} = \widetilde{w}_{ij} / \sum_j \widetilde{w}_{ij} \qquad \text{Eq.3- 10}$$

If the region i may have no neighbours, of beyond the threshold that have set (for instance: Papua, West Kalimantan, Maluku, East Nusa Tenggara, North Sulawesi and North Sumatera for the case of this study), then $W_{ij} = \widetilde{w}_{ij} / \max(1, \sum \widetilde{w}_{ij})$. The matrix W is also referred to as a row-stochastic matrix, since, if there are no regions, each element is between zero and 1, and the rows sum to one, like probabilities. The full information about the detailed weight using in this paper can be found in the appendix, table A3-14.

When specifying the interaction between spatial units, the model may contain a spatially lagged dependent variable or a spatial autoregressive process in the error term, known as the spatial lag and the spatial error model, respectively. The spatial lag model posits that the dependent variable depends on the dependent variable observed in neighbouring units and on a set of observed local characteristics.

[14] A spatial lag consists of a matrix product such as WX, Wy, which forms a linear combination of values from the matrix X or vector y, reflecting neighbouring region values. The matrix W is of dimension nxn, where n is the number of observations, and each observation represents a region (or location). Non-zero elements in the i, j row and column positions of the matrix W indicate that region/observation j is a neighbour to i. Main diagonal elements are zero, and rows are normalized so elements of each row sum to unity.

$$y_{it} = \delta \sum_{j=1}^{N} w_{ij} y_{jt} + x_{it}\beta + \mu_i + u_{it}, \quad \text{Eq.3- 11}$$

Where δ is called the spatial autoregressive coefficient (SAR or Spatial Autoregressive Model) and w_{ij} is an element of a spatial weights matrix, W describing the spatial arrangement of the units in the sample. It is assumed that W is a pre-specified non-negative matrix of order N. The spatial error model (SEM), on the other hand, posits that the dependent variable depends on a set of observed local characteristics and that the error terms are correlated across space.

$$y_{it} = x_{it}\beta + \mu_i + \phi_{it}, \quad \text{Eq.3- 12}$$

$$\phi_{it} = \rho \sum_{j=1}^{N} w_{ij} \phi_{it} + u_{it} \quad \text{Eq.3- 13}$$

Where ϕ_{it} reflects the spatially autocorrelated error term and ρ is called the spatial autocorrelation coefficient. In the empirical literature on the strategic interaction among local governments, the spatial error model is consistent with a situation where unobserved shocks follow a spatial pattern.

(Payne, 2010; Tusianti et al., 2017) stated the limitation of the spatial lag model and the spatial error model is that spatial patterns in the data may be explained not only by endogenous interaction effects (which indicates that the outcome of a spatial unit is dependent on the outcomes of other spatial units) or correlated error terms (that refers to the phenomenon where unobserved factors lead to similar outcomes across spatial units), but also by exogeneous interaction effects (that suggests that the outcome of a spatial unit is associated with the determinants of the outcome in other spatial units) and correlated error terms at the same time. The solution seems to be to include the spatially lagged dependent variable, the *K* spatially lagged independent variables, and the spatially autocorrelated error term simultaneously. Alternatively, one may first test whether spatially lagged independent variables must be included and then whether the model should be extended to include a spatially lagged dependent variable or a spatially autocorrelated error term, or adopt an unconstrained spatial Durbin model, and then test whether this model can be simplified. An unconstrained spatial Durbin model with spatial fixed effects takes the form:

$$y_{it} = \delta \sum_{j=1}^{N} w_{ij} y_{jt} + x_{it}\beta + \sum_{j=1}^{N} w_{ij} x_{ijt}\gamma + \mu_i + u_{it} \quad \text{Eq.3- 14}$$

Where γ, just as β, is an $(K, 1)$ vector of fixed but unknown parameters. The hypothesis $H_0: \gamma = 0$ can be tested to investigate whether this model can be simplified to the spatial lag model and the hypothesis $H_0: \gamma + \delta\,\beta = 0$ whether it can be simplified to the spatial error model. The spatial specific effects may be treated as fixed effects or as random effects. In this fixed effect model, a dummy variable is introduced for each spatial unit, while in the random effects model, μ_i is treated as a random variable that is independently and identically distributed with zero mean and variance σ_{μ}^2. Furthermore, it is assumed that the random variables μ_i and u_{it} are independent of each other. To control other factors that may affect the distribution of loans in RDBs and non-RDBs, this study employs several variables, which are generally divided into two: financial indicators; and geographical indicators. Financial indicators consist of the variable branch or total branches of each bank per region (logged) to control the size of the banks. However, we have limited data available regarding the non-RDBs, with only certain data available, such as total deposit, which we could not apply in the analysis since the correlation between the deposit and the lending and the RGDP (per capita) leads to having an inconsistent estimation. In addition, the information on the total assets is also crucial to controlling certain variables, yet this data is not available for the non-RDBs; hence, we only use the variable branch to control the size of the bank.

There are several geographical indicators used in this study as control variables. The first is the percentage of electricity access in each region, or electric. As has been explained in the previous chapter [see Chapter 2], this variable enables us to capture the disparity among regions due to infrastructural development. Lack of this infrastructure may explain the stagnation of the economy or a higher amount of disparity in the regions (Gibson & Olivia, 2010). The variable $electric$ might have a positive relationship with the variable loan_cap as it shows that development in the infrastructure should affect employment and income from rural non-farming businesses (Park, Wang, & Wu, 2002), which might in turn affect the demand for money (as the economy starts to develop) as well as the demand for MSME loans. Second, is the poverty gap index or p1. The poverty gap index is a measure of the intensity of poverty. It is defined as the average poverty gap in the population as a proportion of the poverty line. The poverty gap counts all the people below a poverty line, in a given population, and considers them equally poor. The poverty gap index estimates the depth of poverty by considering how far, on average, the poor are from that poverty line. The relationship between p1 and lending (and/or MSME lending) can be positive and negative. A negative relationship might be a general response that we might expect, as the lending distribution might be reduced regarding the unfavourable conditions occurring in the regions, as it can trigger a high non-performing loans(NPL) for the banks (Dawe & Peter Timmer, 2012). A positive connection can be detected if we consider the mandate that the RDBs have, which is to encourage the growth of the regions. Third, is the price of rice. As used in the previous chapter, this variable enables us to control the potential of having inflation in the regions as this commodity is the main food of Indonesia (Conrad et al., 2009). The relationship between the variables $rice$ and $loan$ is expected to be positive. A higher price of rice will impact the purchasing power of the people, which in the end will push them to borrow more money from the banks to cover their needs, as the increasing price is taking up their funds that they have budgeted for other purposes. Fourth, is the variable old. This variable is defined as the percentage of elderly people compared to the total population in the regions. We expect a negative coefficient between the variable old and variable loan_cap including MSME_cap, as it implies the potential clients/consumers in order to obtain a significant return for the long term (Conrad et al., 2009). The higher the percentage of elderly people, the more the probability of having a positive return for the longer term may be difficult to achieve. Fifth, is the variable educ or school participation rate. This is a measure of the absorptive capacity of educational institutions towards a school-age population. This is a basic indicator used to see a population's access to educational facilities, especially for the school-aged population. We chose the ages 16 up to 18 in this sample as we suspect that at least the people within the regions can have education access up to high school level due to the government policy, "12-year compulsory education programme", which has been stated in the Indonesian National Medium-Term Development Plan (RPJMN) 2015–2019. The higher the School Participation Rate the greater the number of people who have access to education. However, the increase of the variable educ cannot always be interpreted as the increase of equal opportunity for the society to get the education. The relationship between the lending and the variable educ can be a negative relationship since we expect that the education enables people to get a proper job, which increases their income and automatically reduces the demand for lending.

3.4.2 Exploratory Data Analysis

As this research emphasises the impact of geographical factors in explaining the performance of regional public banks in every province in Indonesia, the data used in this research consist of three main sources, financial reports of RDBs, financial reports of non-RDBs, and regional macroeconomic data for every province in Indonesia. The sources of the data are from the Central Bank of Indonesia (BI), Financial Services Authority of Indonesia (OJK), Central Bureau of Statistics Indonesia (BPS), and specifically, from Indonesian Banking Statistics (IBS) published by BI and OJK. Furthermore, the IBS report only present the regional/provincial data, available from year 2002 for commercial banks in aggregate and does not present the regional data for each listed bank.

In addition, since RDBs are considered part of commercial banks based on Law No.10/1998, to obtain the number of non-RDBs, it is necessary to recalculate all the variables by deducting the commercial banks with RDB data, which are already provided by BI and OJK report. Commercial banks comprise of national public banks, private banks (including sharia bank), and RDBs. Although national public banks are included in non-RDB data, they are not tied to a regional mandate as RDBs are. The commercial bank data should be tailored to 26 provinces as the report presented is based on the new province created in the reported year, while the RDB report remains based on 26 provinces. As this study focuses on the geography factor, the distance is matter in the analysis. Moreover, in accordance with the information provided earlier, table 3-1 shows the distance between the capital city of Indonesia, Jakarta, and the neighbouring regions for each region, which have generated by applying the Euclidian distance analysis with the help of the latitude and longitude points.

Table 3-1. Distance from capital city and the neighbouring regions under 500 km

No	Provinces in Indonesia	Distance from Capital City (Jakarta) (km)	Neighbouring Provinces (under the radius of 500km)	Distance[15] from neighbouring Province(s)(km)
1.	Nanggroe Aceh Darussalam(NAD)	1,829.26	North Sumatera	432.48
2.	North Sumatera	1,416.64	NAD, Riau	432.48 462.37
3.	Riau	954.74	West Sumatera, Jambi, North Sumatera, Bengkulu	201.98 334.52 462.37 485.45
4.	West Sumatera	926.72	Riau, Jambi, Bengkulu	201.98 368.47 380.70
5.	Jambi	623.88	South Sumatera, Bengkulu, Riau West Sumatera, Lampung	202.14 285.09 334.52 386.47 464.63
6.	Bengkulu	573.94	Jambi, South Sumatera, West Sumatera, Lampung, Riau	285.09 291.87 380.70 380.90 485.45
7.	South Sumatera	422.73	Jambi, Lampung, Bengkulu, DKI Jakarta	202.14 276.55 291.87 422.73

[15] The distance is measured using Euclidian distance (suggested by Rodríguez-Pose et al., 2013). The distance between home regions and neighbouring regions is measured from the centre point (centroid) of each region.

Table 3.1. (continued)

No	Provinces in Indonesia	Distance from Capital City (Jakarta) (km)	Neighbouring Provinces (under the radius of 500km)	Distance[16] from neighbouring Province(s)(km)
8.	Lampung	1193.20	DKI Jakarta, South Sumatera, Bengkulu, West Java, Jambi	192.20 276.55 380.90 308.97 464.63
9.	West Kalimantan	739.68	-	
10.	Central Kalimantan	905.12	South Kalimantan East Kalimantan	143.76 405.70
11.	South Kalimantan	920.94	Central Kalimantan East Kalimantan East Java	143.76 423.19 481.66
12.	East Kalimantan	1,310.75	Central Sulawesi Central Kalimantan South Kalimantan South Sulawesi	306.48 405.70 423.29 473.57
12.	East Kalimantan	1,310.75	Central Sulawesi Central Kalimantan South Kalimantan South Sulawesi	306.48 405.70 423.29 473.57
13.	DKI Jakarta	-	West Java, Lampung, Central Java South Sumatera DI Yogyakarta	119.32 193.20 409.98 422.73 433.71
14.	West Java	119.33	DKI Jakarta, Lampung, Central Java, DI Yogyakarta	119.32 308.97 313.98 323.46
15.	Central Java	409.98	DI Yogyakarta, East Java, West Java, DKI Jakarta	90.55 260.35 313.98 409.98
16.	DI Yogyakarta	433.71	Central Java, East Java, West Java, DKI Jakarta	90.55 271.20 323.46 433.71
17.	East Java	669.40	Central Java, DI Yogyakarta, Bali, West Nusa Tenggara South Kalimantan	260.35 271.20 317.05 406.13 481.66
18.	Bali	973.44	West Nusa Tenggara, East Java	103.01 317.05

(Source : Author's estimation)

[16] The distance is measured using Euclidian distance (suggested by Rodríguez-Pose et al., 2013). The distance between home regions and neighbouring regions is measured from the centre point (centroid) of each region.

Table 3.1 (continued)

No	Provinces in Indonesia	Distance from Capital City (Jakarta) (km)	Neighbouring Provinces (under the radius of 500km)	Distance[17] from neighbouring Province(s)(km)
19.	West Nusa Tenggara	1,070.28	Bali East Java	103.02 406.13
20.	East Nusa Tenggara	1,917.16	-	
21.	South Sulawesi	1,489.85	Southeast Sulawesi, Central Sulawesi East Kalimantan	288.60 309.07 473.57
22.	Central Sulawesi	1,565.91	East Kalimantan, South Sulawesi, Southeast Sulawesi	306.48 309.07 453.98
23.	Southeast Sulawesi	1,767.43	South Sulawesi Central Sulawesi	288.61 453.98
24.	North Sulawesi	2,178.90	-	
25.	Maluku	2,392.05	-	
26.	Papua	3,082.41	-	

(Source : Author's estimation)

Referring to the threshold of 500 km, the table above shows that not every region has neighbours, some of them have one neighbouring region, some of them have multiple neighbouring regions, and some do not. Regarding the financial data, table 3-2 shows the summary of the financial figures for RDBs and non-RDBs.

[17] The distance is measured using Euclidian distance (suggested by Rodríguez-Pose et al., 2013). The distance between home regions and neighbouring regions is measured from the centre point (centroid) of each region.

Table 3- 2. Descriptive Statistics of RDBs and Non-RDBs

	Stat	Total loans(mn)	Loans per capita	Loans to MSME (per capita)	Deposits per capita	Total branches
RDBs[18]	Mean	2,068,133.00	0.27	0.12	0.40	17
	Min	22,000.00	0.01	0.00	0.03	2
	Max	17,400,000.00	1.15	0.76	1.91	62
	sd	2,484,868.00	0.20	0.13	0.30	11
	N	390	390	390	390	390
Non-RDBs	Mean	67,400,000.00	2.51	2.41	3.38	95
	Min	289,497.00	0.13	0.17	0.24	12
	Max	2,100,000,000.00	53.41	36.39	66.24	548
	sd	222,000,000.00	6.94	4.74	9.40	120
	N	390	390	390	390	390
Total	Mean	34,700,000.00	1.39	1.27	1.89	58
	Min	22,000.00	0.01	0.00	0.03	2
	Max	2,100,000,000.00	53.41	36.39	66.24	548
	sd	160,000,000.00	5.03	3.54	6.81	94
	N	780	780	780	780	780

This table presents the descriptive results of the RDBs and the non-RDBs data. The data have been deflated using the GDP deflator year 2000. Total loans are in millions of rupiah. RDBs refers to regional development banks, while non-RDBs refers to non-regional development banks. The source of data is from BI and OJK.

As it shows at table 3-2, overall, non-RDBs distribute more loans, including loans to MSMEs compared to RDBs, which is in line with the size (deposits and branches) that they have. Interestingly, these figures show a proportional amount of deposit and lending in RDBs and non-RDBs. RDBs' deposits (per capita) are 8.45 times less than non-RDBs, and at the same time, they provide the aggregate loans 9.29 times (per capita) and 20.08 (MSME lending per capita) times less than non-RDBs. While the table above shows the aggregate numbers for all provinces from 2002 to 2016, the table 3-3 shows the financial indicators of RDBs and non-RDBs regionally.

[18] The financial numbers for RDBs and non-RDBs are calculated based on 26 provinces. Some regions that have been established are adjusted to the original provinces. Total loans and total deposits are already adjusted with the GDP deflator to get the real value of each variable.

Table 3- 3. Mean of Financial Indicators for RDBs and Non-RDBs per region

Provinces	type	Total Loans(mn)	Loans per capita	Deposits per capita	Loans to MSME (per capita)	Total Branches
Sumatera Island						
Nanggroe Aceh Darussalam	1	2,098,600.00	0.45	0.86	0.14	16.27
	0	8,168,209.00	0.64	0.98	0.82	45.67
North Sumatera	1	3,224,667.00	0.23	0.3	0.18	24.2
	0	80,800,000.00	2.23	2.82	2.16	137.93
Riau	1	1,929,067.00	0.26	0.55	0.09	17.13
	0	51,300,000.00	2.11	2.68	1.77	95.2
West Sumatera	1	2,165,800.00	0.45	0.59	0.41	27.27
	0	13,700,000.00	1.06	1	1.29	44.87
Jambi	1	389,666.70	0.12	0.17	0.02	8.93
	0	11,200,000.00	0.89	1.08	1.28	36.93
Bengkulu	1	505,266.70	0.26	0.31	0.07	6.2
	0	4,945,183.00	0.92	0.75	1.17	17.27
South Sumatera	1	2,435,400.00	0.27	0.38	0.04	17.47
	0	15,000,000.00	0.78	1.05	1.6	85.87
Lampung	1	594,666.70	0.08	0.08	0.01	5.47
	0	18,200,000.00	0.75	0.75	1.18	42.73
Kalimantan Island						
West Kalimantan	1	1,418,067.00	0.31	0.45	0.22	16.47
	0	13,300,000.00	1.14	1.76	1.63	24.33
Central Kalimantan	1	562,933.30	0.25	0.44	0.06	10.2
	0	6,998,530.00	1.11	1.28	2.33	10.2
South Kalimantan	1	1,218,933.00	0.33	0.53	0.12	12.53
	0	15,100,000.00	1.75	2.08	2.39	49.8
East Kalimantan	1	2,390,267.00	0.65	1.25	0.16	13.27
	0	24,900,000.00	2.08	3.56	3.61	80.27

This table presents the pattern of the financial data (in average from year 2002 up to 2016) for the RDBs and the non-RDBs regionally based on the group of islands. The variable type consists of number 1 and 0 which 1 refers to the RDBs, while 0 refers to the non-RDBs. The data have been deflated using the GDP deflator year 2000. Total loans are in millions of rupiah. RDBs refers to regional development banks, while non-RDBs refers to non-regional development banks. The source of data is from BI and OJK.

Table 3-3. (continued)

Provinces	bank	Total Loans(mn)	Loans per capita	Deposits per capita	Loans to SME (per capita)	Total Branches
Java Island						
DKI Jakarta	1	3,591,133.00	0.35	0.54	0.11	16.73
	0	932,000,000.00	35.61	49.56	24.62	477.47
West Java	1	11,000,000.00	0.21	0.26	0.09	47.07
	0	173,000,000.00	1.35	1.9	1.75	363.67
Central Java	1	4,734,667.00	0.14	0.17	0.06	34.6
	0	91,900,000.00	0.96	1.06	1.19	244.67
DI Yogyakarta	1	944,866.70	0.26	0.37	0.18	5.4
	0	10,900,000.00	1.16	2.35	1.32	44.53
East Java	1	4,747,333.00	0.12	0.18	0.08	38.4
	0	161,000,000.00	1.55	2.15	1.78	336.53
Bali Island						
Bali	1	2,340,533.00	0.61	0.67	0.33	12.33
	0	20,900,000.00	1.86	3.14	2.49	66.6
West Nusa Tenggara						
West Nusa Tenggara	1	781,266.70	0.16	0.17	0.11	8.07
	0	8,696,742.00	0.59	0.55	0.69	30.8
East Nusa Tenggara Island						
East Nusa Tenggara	1	1,072,933.00	0.23	0.27	0.12	18.4
	0	5,685,583.00	0.42	0.65	0.42	25.27
Sulawesi Island						
South Sulawesi	1	1,631,133.00	0.17	0.19	0.05	29.47
	0	42,400,000.00	1.66	1.37	1.78	93.6
Central Sulawesi	1	252,266.70	0.09	0.14	0.02	6.33
	0	8,719,410.00	1.27	1.08	1.53	25.67
Southeast Sulawesi	1	369,266.70	0.16	0.18	0.03	6.4
	0	7,018,100.00	0.69	0.78	0.91	21.87
North Sulawesi	1	1,164,733.00	0.33	0.36	0.06	13.6
	0	13,800,000.00	1.46	1.62	1.58	50.93
Maluku Island						
Maluku	1	556,800.00	0.21	0.31	0.15	14.67
	0	4,350,666.00	0.53	0.71	0.74	26.13
Papua Island						
Papua	1	1,605,200.00	0.43	0.8	0.13	19.8
	0	7,666,966.00	0.63	1.16	0.72	48.07

This table presents the pattern of the financial data (in average from year 2002 up to 2016) for the RDBs and the non-RDBs regionally based on the group of islands. The variable type consists of number 1 and 0 which 1 refers to the RDBs, while 0 refers to the non-RDBs. The data have been deflated using the GDP deflator year 2000. Total loans are in millions of rupiah. RDBs refers to regional development banks, while non-RDBs refers to non-regional development banks. The source of data is from BI and OJK.

Table 3-3 presents the pattern of the financial data (in average from year 2002 up to 2016) for the RDBs and the non-RDBs regionally based on the group of islands. As shown in Table 3-3, aggregately, regions in Java have the highest level of lending distribution (for the RDBs and non-RDBs). If comparing with the total lending for all regions in Indonesia (RDBs and non-RDBs lending), total of the non-RDBs' lending for regions in Java island is three times (3x) higher, which suggest that the non-RDBs are interested to disburse their lending in this area due to certain strategic and economic reasons, for instance, most of the regions in this island is the most developed regions in Indonesia, and the capital city of Indonesia, Jakarta is located on this island. While total RDBs'lending in Java island is only 1.827% of the non-RDBs total lending in the same island. Unlike the non-RDBs, the percentage of lending that the RDBs distributed in Java is around 79% of total RDBs' lending for the rest of Indonesia.

However, the proportion is not as big as in non-RDBs, but concerning the highest percentage (more than 50%) lending in Java suggests that this island has the most focus of the banking industry. In average, DKI Jakarta gets the major attention from the non-RDBs, since the lending distribution (total and per capita) is the highest one, Rp. 932,000,000 (in millions) for the total, and Rp.35.61 (in millions per capita), while West Java Region gets the highest loans amount from the RDBs, around Rp.11,000,000 (in millions) in total. Surprisingly, with the highest amount of lending (in total), the lending per capita is relatively small for West Java, it is around Rp. 0.21(in millions), which is similar with lending per capita of Maluku that have the average lending (in total) is only five percent (5%) or Rp.556,800 (in millions) from the West Java Region's lending, or the lowest lending across regions. This is due to the fact the West Java' population is higher, and the highest in Indonesia [see the summary of the population data in table 3-4]. Regarding deposits, the highest deposit (per capita) is in DKI Jakarta as well as the total branches, with Rp. 49,560,000 per head for deposits, and total branches around 478 branches for non-RDBs, and 16 RDBs branches. While the largest RDBs branches are in West Java, Central Java and East Java, for each around 47, 35, and 38 branches respectively. Regarding size of deposits and branches, non-RDBs in Jakarta held the highest rank compared to non-RDBs outside Jakarta. This indicates that non-RDBs put Jakarta as a main destination for their investments, as they knew that Jakarta may provide promising business, as the data shows that locating in Jakarta, non-RDBs are able to generate a large number of deposits; while after adjusting for population size, the number was still bigger compared to other non-RDBs outside Jakarta.

Table 3- 4. Mean of Geographical indicators per region

Provinces	RGDP_cap	electric	p1	rice	old	educ	popul
Sumatera Island							
Nanggroe Aceh Darussalam	8.288	0.921	0.039	4.399	0.065	0.729	4,553,333
North Sumatera	8.390	0.902	0.021	4.419	0.063	0.683	13,700,000
Riau	19.662	0.708	0.016	4.463	0.044	0.660	7,073,333
West Sumatera	7.537	0.855	0.015	4.468	0.085	0.700	5,000,000
Jambi	5.425	0.707	0.017	4.401	0.059	0.591	3,120,000
Bengkulu	4.549	0.826	0.034	4.400	0.064	0.648	2,120,000
South Sumatera	8.474	0.763	0.030	4.381	0.067	0.540	8,646,667
Lampung	4.965	0.737	0.033	4.411	0.068	0.557	7,506,667
Kalimantan Island							
West Kalimantan	6.677	0.710	0.017	4.440	0.064	0.530	4,420,000
Central Kalimantan	8.394	0.661	0.013	4.478	0.056	0.549	2,173,333
South Kalimantan	8.271	0.893	0.009	4.428	0.057	0.529	3,566,667
East Kalimantan	31.157	0.829	0.015	4.433	0.047	0.680	3,493,333
Java Island							
DKI Jakarta	38.207	0.998	0.006	4.445	0.058	0.653	9,993,333
West Java	7.511	0.974	0.018	4.407	0.077	0.555	52,300,000
Central Java	5.367	0.985	0.029	4.383	0.110	0.560	33,800,000
DI Yogyakarta	5.787	0.988	0.031	4.372	0.136	0.771	3,553,333
East Java	8.602	0.982	0.025	4.378	0.110	0.559	38,700,000
Bali Island							
Bali	7.351	0.981	0.008	4.415	0.085	0.689	3,773,333
West Nusa Tenggara Island							
West Nusa Tenggara	3.945	0.857	0.041	4.348	0.079	0.592	4,660,000
East Nusa Tenggara Island							
East Nusa Tenggara	2.711	0.450	0.046	4.424	0.076	0.545	4,513,333
Sulawesi Island							
South Sulawesi	5.799	0.723	0.020	4.343	0.074	0.540	9,360,000
Central Sulawesi	6.688	0.705	0.033	4.369	0.063	0.559	2,553,333
Southeast Sulawesi	4.974	0.697	0.031	4.359	0.057	0.606	2,266,667
North Sulawesi	5.961	0.938	0.017	4.407	0.080	0.565	3,426,667
Maluku Island							
Maluku	2.731	0.695	0.050	4.444	0.063	0.669	2,600,000
Papua Island							
Papua	9.182	0.574	0.078	4.473	0.024	0.579	3,406,667

The table presents the average of the geographical indicators used in this study for the period 2002 up to 2016. RGDP_cap is regional GDP per capita (deflated using RGDP deflator with the basis, year 2000), electric is the percentage of the electricity access, p1 is the poverty gap index (in percentage), rice is the price of the rice (log), old defines as a percentage of the total elderlies, educ is school participation rate, popul is total population. Source : BI and OJK ; author's compilation.

Associated with the geographical pattern across regions, figure 3-2 shows the pattern of the regional GDP across provinces.

Figure 3-2. The mapping of the regional GDP (aggregate) across provinces

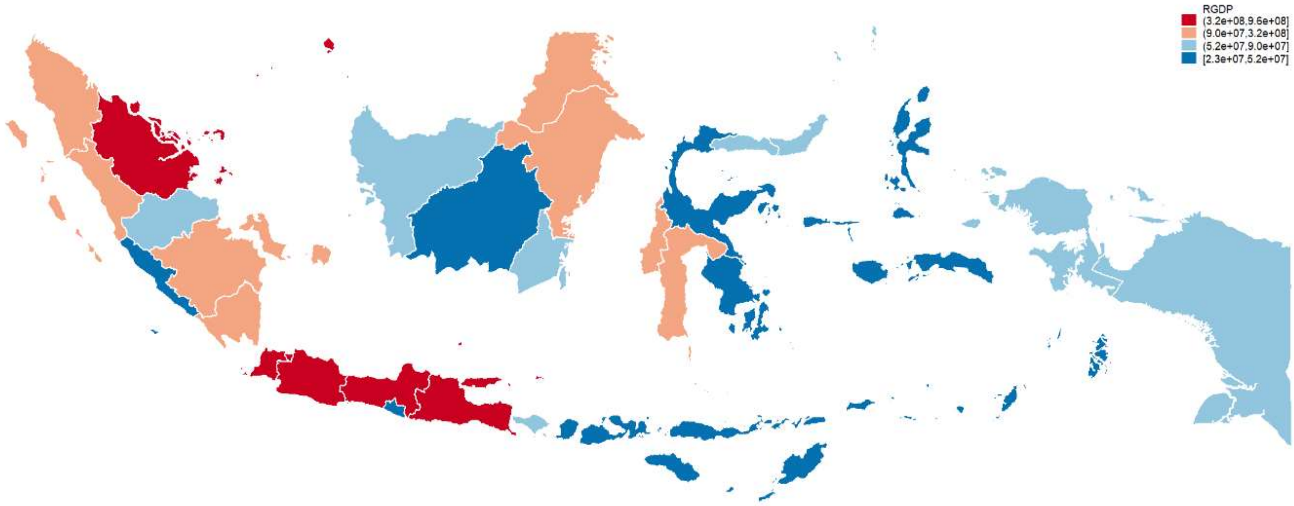
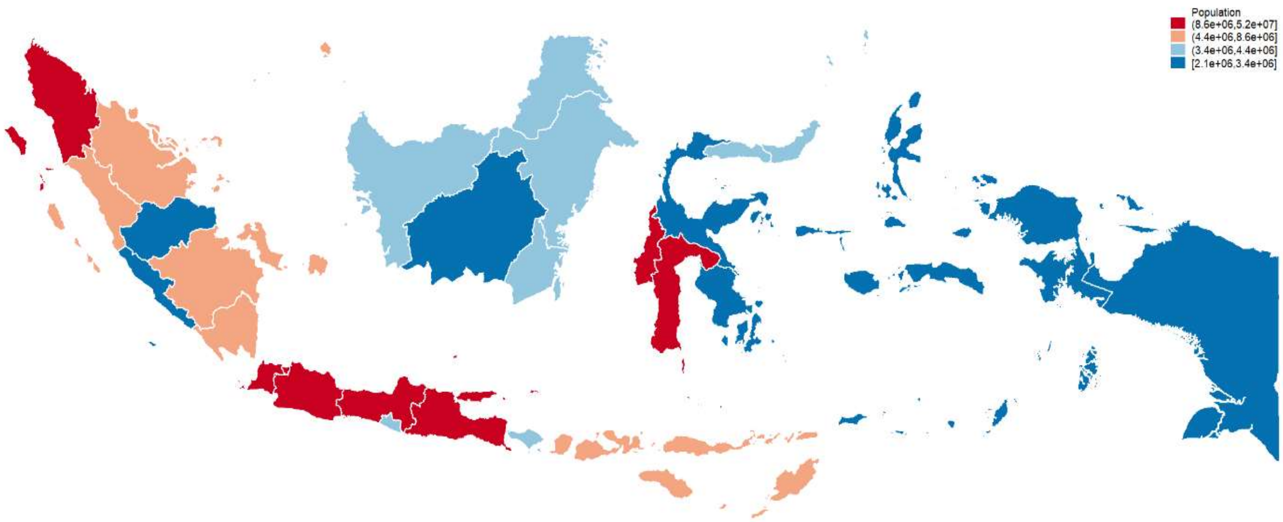
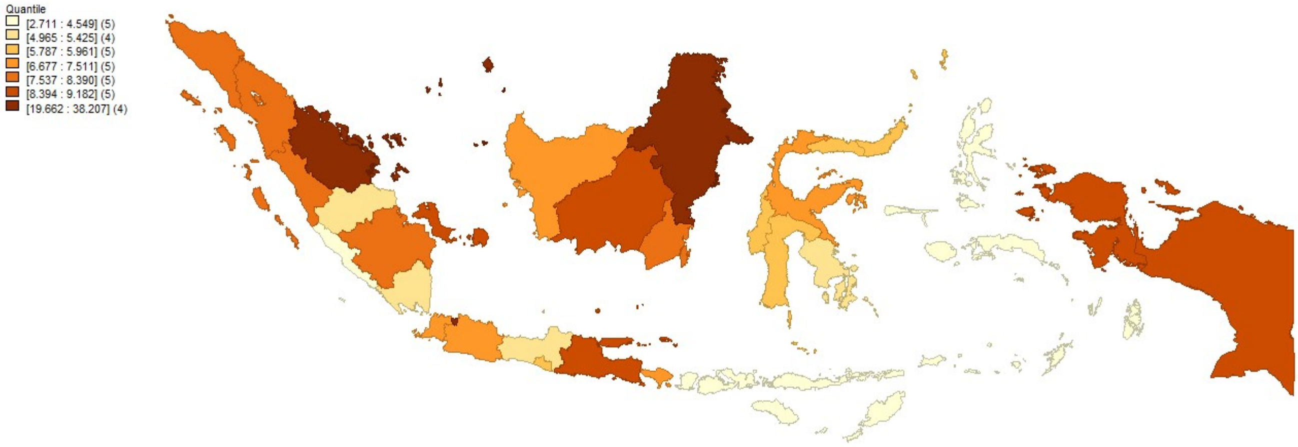


Figure 3- 3. The mapping of the Population across provinces



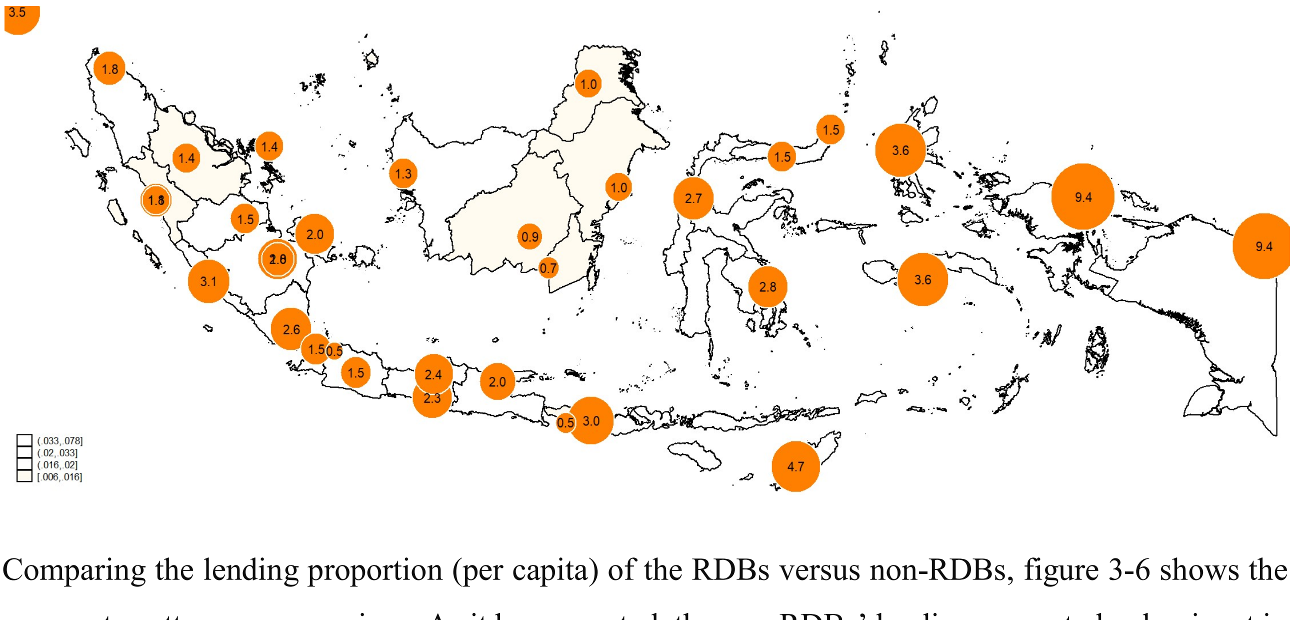
Connecting with the previous explanation, the figure 3-2 and figure 3-3 confirms visually that since the highest RGDP (aggregate) generated by the regions located in the Java island, meanwhile the same time, most of the highest population located in Java island as well, hence the pattern of the RGDP per capita is lower, especially for the west Java (the most populous island), while DKI Jakarta still holds the highest RGDP (per capita), followed by East Kalimantan and Riau.

Figure 3- 4. The mapping of the RGDP per capita



Concerning the pattern of the poverty gap (referred to year 2016) Yogyakarta holds the highest percentage of the poverty gap in Java island. While, in aggregate, Eastern Indonesia seems to have the highest poverty level, for instance, Papua, Maluku, East Nusa Tenggara.

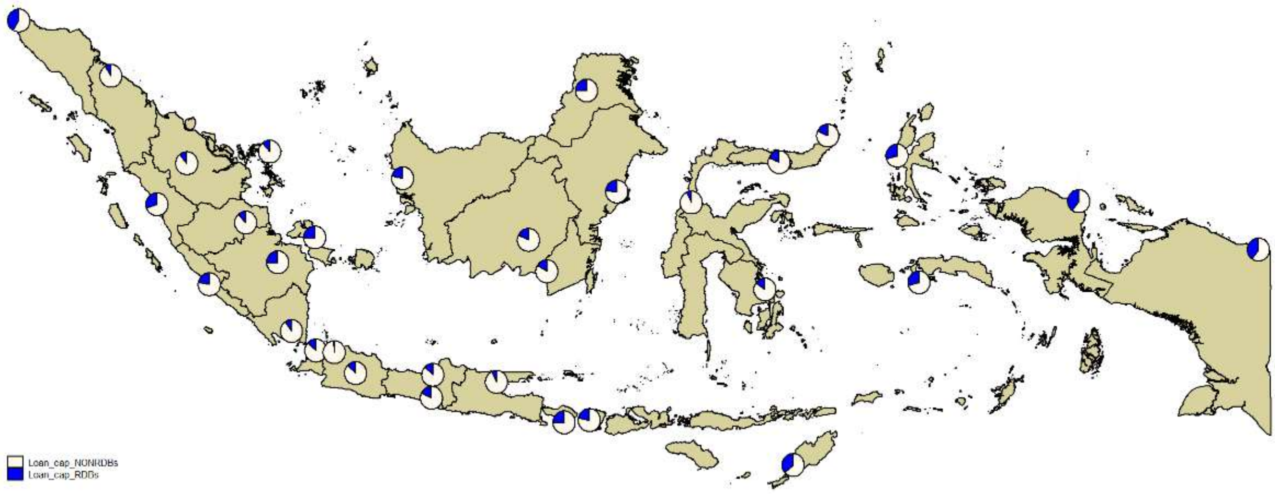
Figure 3- 5. Poverty Gap Index



Comparing the lending proportion (per capita) of the RDBs versus non-RDBs, figure 3-6 shows the aggregate pattern across regions. As it has expected, the non-RDBs' lending seems to be dominant in most of the regions in Java, especially in DKI Jakarta; while the RDBs' lending proportion seems higher mostly in the eastern part of Indonesia, such as in Papua, Maluku, East Nusa Tenggara, and

West Nusa Tenggara, which is known as the poor regions. As most of the banks located in this strategic island, Java, the lending of the RDBs' seems to be inferior compared to the lending distributed by the non-RDBs, while in the eastern areas, or several remote regions, the lending proportion of the RDBs is higher.

Figure 3- 6. The proportion of the RDBs' lending over the non-RDBs' lending



3.5 Results

Referring to the hypothesis, this section presents the empirical results using statistical methods in objective to test the hypothesis**.**

3.5.1 Main Findings

This study tests whether the geographical indicators play a crucial role in RDBs and non-RDBs lending decisions. We employ two different methods to test the hypothesis: first, linear regression; and second, spatial panel analysis. We use an interaction model to see the behaviour of the RDBs and the non-RDBs regarding the lending distribution as we suspect that their attitudes may differ when interacting with a certain variable, which we call a moderator variable. The moderator variables that we chose related to the geographical issue and we predict these variables are crucial in explaining the different attitudes of these two banks, the RDBs and the non-RDBs.

To do so, first, we test whether the responses (in terms of lending distribution, either aggregate lending or MSME lending) of these two banks are different if they operate in a different level of a region's wealth; in this case, we test the hypothesis by interacting these two types of banks with regional GDP per capita (LoanCap). Second, we study whether the behaviour of RDBs and non-RDBs (in providing loans) is different when their location is further than the main strategic location. We chose Jakarta, the Indonesian capital, as the most attractive location economically and financially. Third, we examine whether the behaviour of RDBs and non-RDBs changes when their neighbouring regions' economy changes, or if there is a spatial spill-over between the regions with their neighbours.

Applying a linear regression model, we will test whether RDBs implement their mandate by providing loans (as an aggregate and to the specific sector, MSMEs) disproportionally, regarding the level of economic wealth in regions in Indonesia. By applying regression analysis and interacting with certain geographical indicators with variable RDB, we would like to prove whether the presence of RDBs is crucial in sustaining the regions that may inherit low-level endowments or are in unfavourable locations (far from the financial centre or the potential market) and prevent capital drain to rich neighbouring regions. Moreover, since we apply an interaction model, we emphasise the interaction effect rather than the main effect because the main effect assesses a constant effect of an independent variable on a dependent variable generalised across all levels of the moderator variable. If the interaction variable is statistically significant, it indicates that no such constant effect occurs (Hays, 1983; Hayes, 2005; Jaccard et al., 1990).

We start by presenting the result of the linear regression model. We use two different dependent variables in this study: first, we use loans per capita (LoanCap) as a dependent variable; second, we use MSME loans or MSMECap. However, since we use time-invariant variables, such as distance, and spill-over (spill), the fixed effect does not fit with the model (Pesaran and Zhou, 2014); hence, we use random effect (RE).

In order to see the consistency, the results are divided into two groups, model 1, 2, 3, 4, 5 and 6 show the results without adding the time trend and the robust standard error option into the model, while model 7, 8, 9, 10, 11 and 12 present the results by adding the time trend and the robust standard error. For clarity purposes, the discussion will be presented after the presentation of the empirical results.

Table 3- 5. The influence of RGDP (per capita) on Lending (RDBs vs non-RDBs)

	(1) LoanCap	(2) LoanCap	(3) LoanCap	(4) MSMECap	(5) MSMECap	(6) MSMECap	(7) LoanCap	(8) LoanCap	(9) LoanCap	(10) MSMECap	(11) MSMECap	(12) MSMECap
rdb	-2.242*	-2.242**	5.575***	-0.921***	-0.921***	0.109	-2.242*	-2.242*	5.576*	-0.921***	-0.921***	0.109
	[1.328]	[1.134]	[0.980]	[0.314]	[0.268]	[0.274]	[1.317]	[1.170]	[3.206]	[0.311]	[0.264]	[0.241]
RGDPcap		0.463***	0.892***		0.051***	0.112***		0.476	0.904**		0.062	0.122**
		[0.026]	[0.030]		[0.011]	[0.014]		[0.366]	[0.434]		[0.045]	[0.056]
RGDPcap#rdb			-0.859***			-0.113***			-0.859**			-0.113**
			[0.042]			[0.019]			[0.393]			[0.048]
Constant	2.516***	-1.696**	-5.598***	0.975***	0.507**	-0.052	-168.069**	17.929	13.634	0.934	25.244	25.866
	[0.939]	[0.836]	[0.693]	[0.222]	[0.214]	[0.194]	[68.634]	[97.683]	[77.722]	[8.417]	[26.934]	[24.473]
Observations	780	780	780	780	780	780	780	780	780	780	780	780
No. of regions	52	52	52	52	52	52	52	52	52	52	52	52
R-squared	0.049	0.318	0.575	0.117	0.303	0.500	0.0551	0.317	0.574	0.117	0.312	0.504

The regression equation is estimated with a random effect (RE) model. The dependent variable is LoanCap or loans per capita and MSME loans (per capita) or $MSME\_cap$. Models 1, 2, 3, 4, 5, and 6 show the impact of variable rdb in its interaction with the variable RGDPcap without time trend added and the robust standard error option. Models 7, 8, 9, 10, 11, and 12 present the results with the time trend added and the robust standard error. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (regional/provincial data) from the years 2002–2016. Standard errors are in parentheses.

* Denotes $p < 0.1$.
** Denotes $p < 0.5$.
*** Denotes $p < 0.01$

Table 3- 6. Bank lending and geographical distance (RDBs vs non-RDBs)

	(1) LoanCap	(2) LoanCap	(3) LoanCap	(4) MSMECap	(5) MSMECap	(6) MSMECap	(7) LoanCap	(8) LoanCap	(9) LoanCap	(10) MSMECap	(11) MSMECap	(12) MSMECap
rdb	-2.242*	-2.242**	-27.338***	-0.921***	-0.921***	-6.728***	-2.242*	-2.242**	-27.338***	-0.921***	-0.921***	-6.728***
	[1.328]	[1.060]	[3.006]	[0.314]	[0.253]	[0.753]	[1.317]	[1.041]	[6.690]	[0.311]	[0.249]	[1.588]
distance		-4.396***	-8.804***		-1.018***	-2.039***		-4.396	-8.804***		-1.018	-2.039***
		[0.810]	[0.728]		[0.194]	[0.182]		[3.122]	[2.208]		[0.729]	[0.525]
rdb#distance			8.817***			2.040***			8.817***			2.040***
			[1.029]			[0.258]			[2.209]			[0.525]
Constant	2.516***	15.029***	27.577***	0.975***	3.874***	6.778***	-168.069**	-155.556**	-143.008**	0.934	3.833	6.737
	[0.939]	[2.424]	[2.125]	[0.222]	[0.580]	[0.532]	[68.634]	[61.698]	[63.898]	[8.417]	[9.985]	[9.574]
Observations	780	780	780	780	780	780	780	780	780	780	780	780
No. of regions	52	52	52	52	52	52	52	52	52	52	52	52
R-squared	0.0497	0.377	0.707	0.117	0.362	0.607	0.0551	0.383	0.712	0.117	0.362	0.607

The regression equation is estimated with a random effect (RE) model. The dependent variable is LoanCap or loans per capita and MSME loans (per capita) or $MSME\_cap$. Models 1, 2, 3, 4, 5, and 6 show the impact of variable rdb in its interaction with the variable distance without time trend added and the robust standard error option into the model. Models 7, 8, 9, 10, 11, and 12 present the results by adding the time trend and the robust standard error. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (provincial data) from the years 2002–2016. Standard errors are in parentheses.

* Denotes $p < 0.1$.
** Denotes $p < 0.5$.
*** Denotes $p < 0.01$

Table 3- 7. Bank Lending and Spatial Dependence (RDBs vs non-RDBs) – version 1

	(1) LoanCap	(2) LoanCap	(3) LoanCap	(4) MSMECap	(5) MSMECap	(6) MSMECap	(7) LoanCap	(8) LoanCap	(9) LoanCap	(10) MSMECap	(11) MSMECap	(12) MSMECap
rdb	-2.242*	-2.648*	-11.525**	-0.921***	-1.023***	-4.639**	-2.242*	-2.648*	-11.331*	-0.921	-1.023***	-4.640
	[1.328]	[1.587]	[5.773]	[0.314]	[0.372]	[1.941]	[1.317]	[1.593]	[6.845]	[0.796]	[0.365]	[3.922]
spill1		-1.474	-3.017**		-0.686**	-1.309***		-0.922	-2.438		-0.695	-1.318
		[0.951]	[1.337]		[0.330]	[0.458]		[0.680]	[1.502]		[0.634]	[1.239]
rdb#spill1			3.017			1.229*			2.951			1.229
			[1.891]			[0.648]			[1.849]			[1.220]
Constant	2.516***	7.254**	11.791***	0.975***	3.092***	4.925***	-168.069**	-179.011**	-174.445**	0.934	8.498	10.353
	[0.939]	[3.016]	[4.082]	[0.222]	[1.006]	[1.372]	[68.634]	[82.108]	[80.498]	[26.600]	[13.803]	[15.719]
Observations	780	630	630	780	630	630	780	630	630	780	630	630
No. of regions	52	42	42	52	42	42	52	42	42	52	42	42
R-squared	0.0497	0.108	0.162	0.117	0.178	0.232	0.0551	0.0962	0.149	0.117	0.179	0.232

The regression equation is estimated with a random effect (RE) model. The dependent variable is LoanCap or loans per capita and MSME loans (per capita) or MSME_cap. Models 1, 2, 3, 4, 5, and 6 show the impact of variable rdb in its interaction with the variable spill1 without adding the time trend and the robust standard error option into the model. Models 7, 8, 9, 10, 11, and 12 present the results by adding the time trend and the robust standard error. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (provincial data) from the years 2002-2016. Standard errors are in parentheses.

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table 3- 8. Bank Lending and Spatial Dependence (RDBs vs non-RDBs) - version 2

	(1) LoanCap	(2) LoanCap	(3) LoanCap	(4) MSMECap	(5) MSMECap	(6) MSMECap	(7) LoanCap	(8) LoanCap	(9) LoanCap	(10) MSMECap	(11) MSMECap	(12) MSMECap
rdb	-2.242*	-2.648*	-4.131**	-2.296**	-2.633**	-4.627***	-2.242*	-2.648	-4.110**	-0.921***	-1.023***	-1.482**
	[1.328]	[1.591]	[1.774]	[0.899]	[1.068]	[1.214]	[1.317]	[1.622]	[2.050]	[0.311]	[0.370]	[0.674]
spill2		-0.541**	-0.988***		-0.644***	-1.241***		-0.007	-0.451***		-0.170	-0.311
		[0.259]	[0.366]		[0.192]	[0.270]		[0.194]	[0.155]		[0.126]	[0.226]
rdb#spill2			0.883*			1.188***			0.871***			0.274
			[0.518]			[0.382]			[0.323]			[0.196]
Constant	2.516***	3.823***	4.574***	2.413***	3.826***	4.828***	-168.069**	-183.946**	-182.880**	0.934	11.119	11.513
	[0.939]	[1.206]	[1.255]	[0.636]	[0.821]	[0.859]	[68.634]	[90.059]	[89.921]	[8.417]	[14.852]	[15.264]
Observations	780	630	630	780	630	630	780	630	630	780	630	630
No. of regions	52	42	42	52	42	42	52	42	42	52	42	42
R-squared	0.049	0.099	0.140	0.105	0.173	0.231	0.055	0.062	0.096	0.117	0.161	0.198

The regression equation is estimated with random effect (RE) model. The dependent variable is LoanCap or loans per capita and MSME loans (per capita) or MSME_cap. Models 1, 2, 3, 4, 5, and 6 show the impact of variable rdb in its interaction with the variable spill2 without adding the time trend and the robust standard error option into the model. Models 7, 8, 9, 10, 11, and 12 present the results by adding the time trend and the robust standard error. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (provincial data) from the years 2002–2016. Standard errors are in parentheses.

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Comparing the two models (with and without time trend and robust option), some of the models improve, showing in their R-squared, yet it seems to be not statistically significant. Generally, the coefficient of variable rdb shows a negative coefficient, which states that the non-RDBs' lending is higher compared to the RDBs. However, the sign of variable rdb changed when we interacted with variable RGDPcap. This means the lending proportion provided by these two banks is not fixed for all the observations (or the main effect is not applied for all the observation), because it depends on the moderator variable RGDPcap. Once the interaction variable shows a significant result, it means the main effect becomes meaningless (Hays, 1983; Hayes, 2005; Jaccard et al., 1990). Hence, the interpretation of the main effect is a part of the interaction model (Mitchell, 2012). Variable RGDPcap shows a positive impact on lending and consistent significance when we interact with variable rdb, yet it becomes not significant in models 7 and 10 as the standard error increases after we apply the model with robust option and time trend, albeit the coefficient is still positive.

The first hypothesis is whether the RDBs provide loans disproportionally regarding the level of the endowment that the regions have. The interaction model enables us to get the answer, which can be seen on the coefficient of the interaction variable of RGDP with rdb, or RGDPcap#rdb. Moreover, these coefficients show a negative and significant coefficient for all models, for both dependent variables, LoanCap or $MSME$_cap. This result indicates RDBs are superior in providing loans in low-income regions, while the non-RDBs tend to locate their lending in high-income regions.

As we apply the interaction model, then we must carefully explain the meaning of the coefficient. Using two different methods, the coefficient of RGDPcap#rdb is similar for models 3 and 9 for the aggregate lending (e.g. b=-0.859), and model 6 with model 12 for the MSME lending (b=-0.113). If we refer to the equation, $\mathrm{LoanCap}_{j,i,t} = a + b_1\mathrm{rdb}_i + b_2\mathrm{RGDPcap}_{i,t} + b_3\mathrm{RGDPcap}_{i,t}\#\mathrm{rdb}_i$, then we have two predictive margins in this equation, for RDBs and non-RDBs. As we have set dummy variable the two types of bank (1 for RDBs and 0 for non-RDBs), the influence of RGDPcap as a moderator variable will be different for the RDBs and the non-RDBs. For non-RDBs, the impact of RGDP_Cap on lending is b_2, since $\mathrm{LoanCap}_{j,i,t} = a + b_1 x0 + b_2\mathrm{RGDPcap}_{i,t} + b_3\mathrm{RGDPcap}_{i,t}x0_i$; while for the RDBs, the impact will be: $a + b_1 x1 + b_2\mathrm{RGDPcap}_{i,t} + b_3\mathrm{RGDPcap}_{i,t}x1$. Then, does the level of the endowment influence the lending difference by type of group? Yes, it does, as the b_3 shows significant results. Then, the b_2 (or 0.892 in model 3 or 0.904 in model 9) shows the response of the non-RDBs towards lending related to the change of RGDPCap, and 0.113 and 0.122 for the MSME lending; while b_2 and b_3, (or 0.892-0.859=0.033 for model 3 and 0.904-0.859=0.045 for model 9) are showing the responses of RDBs' towards lending related to the average increase of the RGDPCap. For the change for the RDBs' MSME lending is -0.001 (or 0.112-0.113) if we use model 6, and 0.009(0.122-0.113) when we use model 12, while b_1 shows the related factors of the RDBs that are affecting the loans.

Examining the attitude of the RDBs and non-RDBs regarding the distance, this study tests whether the pattern of RDBs loans changes when the regions' locations are not economically beneficial for them. Observing the regression results once we interact variable rdb with variable distance, again, it shows the negative coefficients on variable rdb, and it is consistently negative for all observations, albeit that models 8 and 11 are not statistically significant, which simply implies that as the distance gets further, the lending decreases. Moreover, as the interaction variable rdb#distance is significant for all models, it means the prior statement is not applying for all the observations, or we can say that the effect of variable distance on lending depends on which type of bank is observing. The positive and significant coefficient is showing in the interaction variables for all models, for both dependent variables, aggregate lending and MSME lending, strongly specifies that the non-RDBs are more dominant in providing loans for regions located next to the financial centre, Jakarta, while the RDBs are superior in providing funds for remote areas. This confirm the visual pattern seen in picture 3-6, as it shows that the proportion of lending of the non-RDBs are higher in the regions located in Java, or around the capital city, Jakarta. For instance, referring to the equation, the average responses of the non-RDBs related to the increase of the distance(log) will be -8.804 (b2) for the aggregate lending, and -2.039 (b2) for the MSME lending, while the RDBs' response will be 0.013($b2 + b3$) for the aggregate lending and 0.001 ($b2 + b3$) for the MSME lending. These confirm the hypothesis stated that the non-RDBs give a negative response regarding distance, while non-RDBs show a positive response.

Concerning the possibility of preventing capital drain from the poor regions, the table 3-7 and 3-8 show the responses of the RDBs and non-RDBs regarding spill-over. As has been explained, we set two types of variable spill-over in this section. We create variable spill based on the equations 3-8 and 3-9, where it measures the relative wealth of the neighbouring regions compared to the home regions and indicates their influences based on the proximity to the home regions. The neighbouring regions have been chosen within 500km from the home regions as a feedback from the simulation. Variable spill1 is created based on the assumption that if some home regions have more than one neighbouring region, the impact of each neighbouring region will follow the proximity of their distance towards the home regions, while variable spill2 is set with the assumption that the neighbouring regions have an equal chance to affect the home regions since their location is within 500km.

As we emphasise on the interaction variables, follow the method of spill1, the results show that the impact of having a rich neighbouring region and/or a poor neighbouring region has a mix response regarding the distribution of lending as an aggregate (see the coefficient of spill1#rdb). The coefficients of the interaction variables are positive but rarely significant, especially when we use a robust option and time trend in the model (see models 7, 8, 9, 10, 11 and 12), while variable rdb keep showing a negative and significant coefficient, as with the previous findings. Variable spill1 shows a negative coefficient for all models, and only models 3, 5, and 6 show a significant result. However, the coefficients are still similar when we use variable spill2, yet the coefficient estimation reduces when we add the robust option and the time trend option; the results suggest that the higher the endowment that the neighbouring regions have, the more negative an association it has with the lending in the home region.

Using variable spill2, we found that except model 12, all the interaction variables (rdb#spill2) are positive and significant in affecting lending, which implies that the higher the endowment that the neighbours have, the less the lending the non-RDBs disburse in their home regions than the RDBs. This suggests that there is an indication of a spill-over occurring in the non-RDBs rather than in the RDBs. This might relate to the fact that the non-RDBs are not tied to the regions, while the RDBs have a special calling to develop their owned region. Compared to the significant result found in model 6, we found insignificant result in model 12 might as we add the time trend and robust option. No significant impact of spill2 on MSME lending may relate to the fact that the MSME lending is specific lending that is encouraged by the government of Indonesia to distribute in each region in order to encourage the local economy. Thus, a spillover might have a small effect on the MSME lending.

Using the same method as before, we can calculate the response of the non-RDBs regarding the increase of the neighbours' economy (we use the spill2 result as a reference), which is -0.988 in model 3 and -0.451 in model 9; regarding the MSME lending, it shows -1.241(b2) in model 6 and -0.311 (b2) in model 12. The average response of the RDBs regarding the spill-over change has two different figures: for aggregate lending it is -0.105(-0.988+0.833) for model 3 and 0.42(-0.451+0.871) for model 9; and for MSME lending it is -0.053(-1.241+1.188) for model 6 and -0.037(-0.311+0.274) for model 12 (albeit model 12 is not significant). Without robust option and time trend, the response of the RDBs is negative, yet it is quite small; while using the complete model (robust and time trend), it shows a positive coefficient, which indicates that if the neighbours' economy changed, the RDBs' lending may reduce to a small extent, might be statistically not significant, or even not cause any affect at all, which can imply two things – that the lending is still distributed as usual or is even increased.

Albeit that we have manually counted the average coefficient for the RDBs and the non-RDBs as an aggregate, using the predictive margin, the table 3-9 shows the summary of these banks' responses towards lending due to the change of the geographical factors. Taking benefits of the function of the predictive margin enables us to see the significance of the responses of each bank. The average predictive margin is counted using the robust model adding with the time trend; however, the results are closely similar with the manual counting.

Table 3-9. The average responses of the RDBs and non-RDBs towards lending regarding the change of the geographical factors

		Banks	dy/dx	Standard error	p-value	95% confidence interval	
RGDP_cap	1	RDB	0.045	0.055	0.410	-0.062	0.153
		Non-RDBs	0.904	0.434	0.037	0.053	1.755
	2	RDB	0.008	0.009	0.371	-0.010	0.027
		Non-RDBs	0.121	0.055	0.029	0.012	0.230
distance	1	RDB	0.012	0.035	0.726	-0.056	0.080
		Non-RDBs	-8.804	2.208	0.000	-13.133	-4.475
	2	RDB	0.001	0.005	0.738	-0.008	0.011
		Non-RDBs	-2.038	0.524	0.000	-3.066	-1.011
spill2	1	RDB	0.419	0.301	0.164	-0.171	1.011
		Non-RDBs	-0.450	0.155	0.004	-0.754	-0.147
	2	RDB	-0.037	0.034	0.284	-0.105	0.030
		Non-RDBs	-0.310	0.226	0.169	-0.754	0.132

Note: This table shows the average predictive margin of the RDBs and non RDBs on lending if the geographical factors (RGDP_cap, distance, spill2) change. The results based on the complete model (after adding the time trend and the robust option). Number 1 is when the dependent variable is the aggregate lending, while number 2 is when the dependent variable is the MSME lending.

Examining the average predictive margin in table 3-9, in the three geographical indicators the non-RDBs show aggressive responses with statistical significance. For instance, all things being equal, the aggregate lending of the non-RDBs when the RGDP increases 1% is 0.904 (per capita), while for RDBs it is 0.045(per capita); whereas the MSME lending increases 0.121(per capita) for non-RDBs, and 0.008(per capita) for the RDBs. Furthermore, the increase in the RDBs' lending is very small, or lower than the change of the non-RDBs' lending, which showing not statistically significant. This suggests that the RDBs lending seems to be flat, or irresponsive, or disproportional regarding the change of the RGDP(per capita), while the non-RDBs' lending is proportionally changed and statistically significant.

Continuing to examine the other factors, the predictive margin of the non-RDBs regarding the distance is negative and significant, which opposite from the RDBs', showing a positive significant and again not statistically significant, which confirms the prior findings, that the focus of the non-RDBs' lending (including the MSME lending) is on the areas near the capital city. Using variable spill2, the non-RDBs' aggregate lending shows that a negative and significant change, while we are not finding any significant results when we use MSME lending as a dependent variable. Observing the RDBs' predictive, we found none of the predictive margins is statistically significant, meaning that the lending (including the MSME lending) in the RDBs, statistically not affected by the neighbouring regions' wealth, while the non-RDBs' lending is affected by the relative wealth of the neighbouring regions. However, to make the interaction visible, the following figure depicts the predictive margins for lending responses of the RDBs and non-RDBs by the level of regional GDP (RGDPCap), the level of distance, and the level of spill-over.

Figure 3- 7. The predictive margin of aggregate loans and MSME loans is related to the changes in RGDP (per capita) RDBs vs non-RDBs

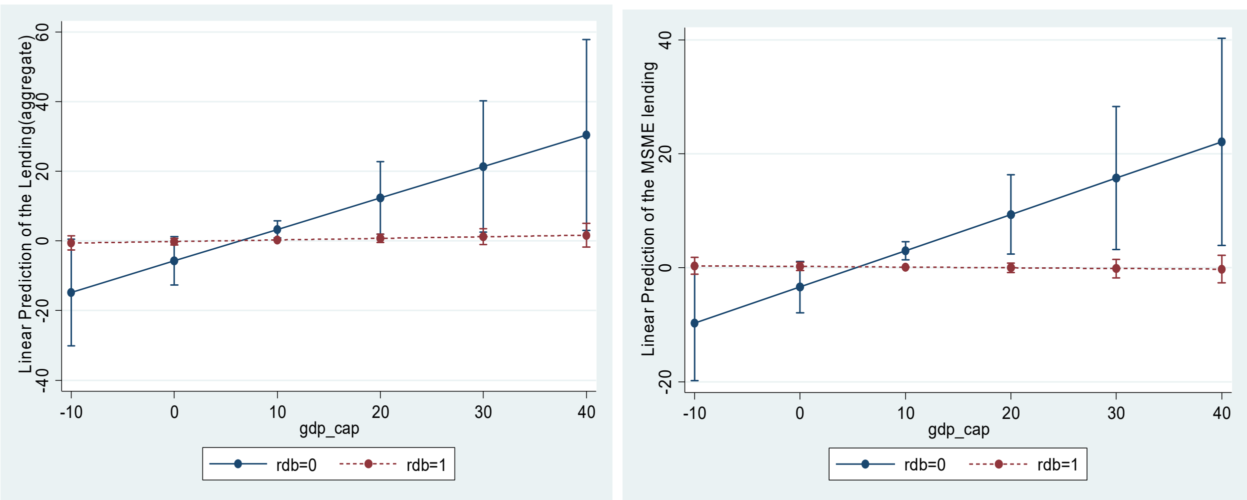
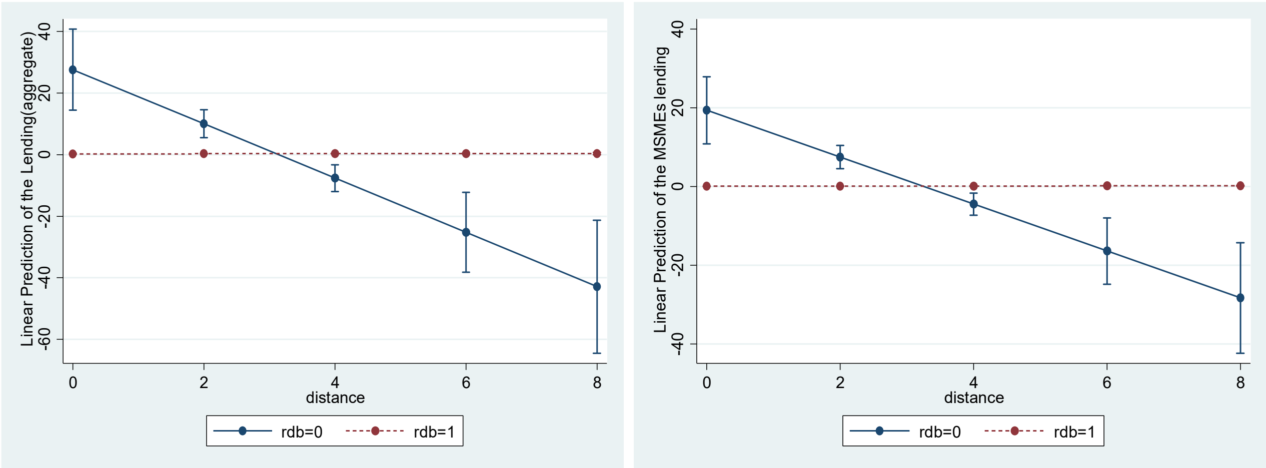
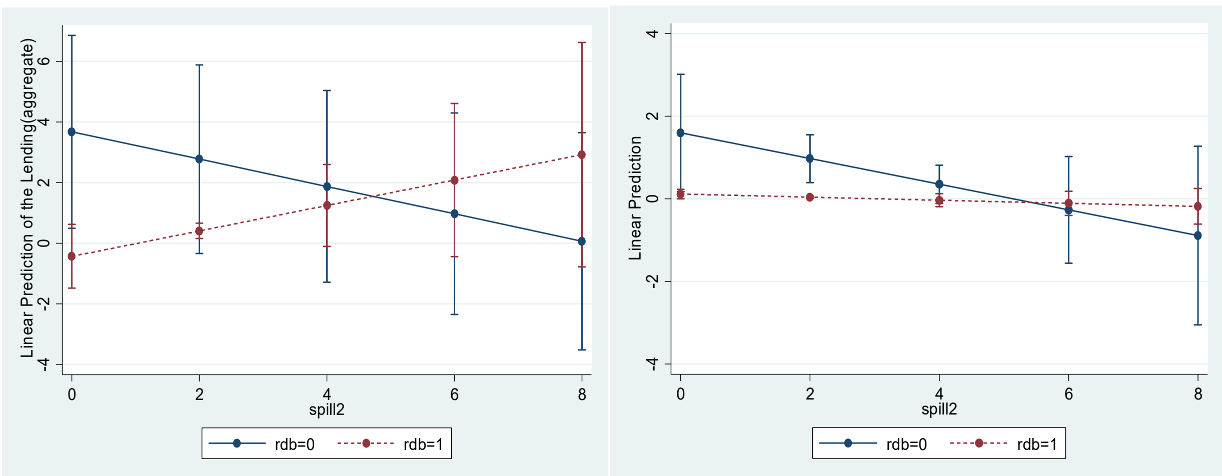


Figure 3- 8. The predictive margin of aggregate loans and MSME loans is related to the changes in distance —RDBs vs non-RDBs



Generally, the two graphs are in line with the prior coefficients showing in the previous table. As shown in the figure 3-7, the non-RDBs are more responsive in increasing their lending consistent with the increasing of the RGDP_cap, while the RDBs' pattern is also positive, although the change is quite small and statistically not significant if we refer to the result of the predictive margin in table 3-9. Compared with the MSME lending, the similar pattern is also showing, which suggest that the level of the endowment in a region is important factor for the non-RDBs in providing loans, and this confirms the idea of Condrad et al. (2008) and Hakenes and Schnabel (2006), as they state that non-RDBs or interregional banks are more interested in investing their funds in regions with potential or rich regions. Below the intersection point, the response of non-RDBs is quite pessimistic, the lending becoming smaller, even negative, and therefore the lending (including the MSME lending) of the RDBs becomes superior in this point.

Figure 3- 9. The predictive margin of aggregate loans and MSME loans is related to the impact of the economic changes in neighbouring regions —RDBs vs non-RDBs



Regarding the variable distance, again, the pattern of the aggregate lending and the MSME lending of these two banks showing a different direction, which is similar to the previous findings. The non-RDBs have a negative slope, while the RDBs seem to be flat, or disproportional across the point of distance(log). The non-RDBs are very enthusiastic to provide loans in the regions close to Jakarta but dramatically change their lending when the distance gets further. This implies that not only the level of endowment is important for the non-RDBs, but a strategic location is also crucial in allocating their lending. As a developed market, the centre of the Indonesian financial activities, which may have many prospective depositors, borrowers, or clients, the potential of getting increasing return to scale is higher if the non-RDBs placing their funds in Jakarta or regions near Jakarta as it line with the idea of Davis & Weinstein (2002) and Krugman (1999).

Going to the third geographical factor, spill-over, the graphs are referring to the variable spill2, as this variable is significant when we interact with variable rdb. In general, the responses of the RDBs and the non-RDBs related to the variable spill-over confirms the previous outputs; these two banks have different responses (especially in aggregate lending), as has been shown in figure 3-9, and table 3-8. The non-RDBs have a negative slope, while the RDBs have a positive slope (and statistically not significant), which indicates the capital flight in the non-RDBs' lending, while RDBs seem to have a constant support to their home regions, albeit their neighbours look likely to experience good economic development. The non-RDBs seem to be very opportunistic in allocating their funds, especially if the neighbouring regions are getting wealthier, and might be offering a good return compared to the home regions; they move their lending from the home regions, while the RDBs show an opposite direction. The different responses of the RDBs and non-RDBs might be related to the fact that the non-RDBs are located across regions and not tied with certain areas. With many branches in many locations, the non-RDBs have a flexibility to move their money from one regions to another. In contrast, the RDBs are tied with their own regions, and with their mandate to encourage the growth in their regions, they might try to stick with their regions. While regarding the MSME lending, statistically we found no evidence of having spill-over in both banks, however, examining the graph, the responses of the non-RDBs seem to specify the spill-over attitude as the lending in the home regions decreasing when the economy of the neighbouring regions increasing, yet, statistically not significant.

Furthermore, the variables, spill1 and spill2 that have been created have a limited capacity to observe the impact of the neighbouring regions as it emphasises only on the relative wealth referring to the RGDP (per capita) of neighbouring regions over the home regions. We can create other spill-over variables using different measurements, such as unemployment rate, percentage of poor people, human development index, etc., to see the responses of RDBs and non-RDBs regarding lending, yet it might not be efficient to analyse as we need to check one by one for each factor. Hence, we apply spatial panel analysis, that enables us to analyse the potential of having spill-over and examine what factors affect the spill-over occurring, which type of bank is significantly affected by the spill-over, and what factors trigger the spill-over in the particular bank. This spatial analysis can also be our robustness check regarding the potential influence of the neighbouring regions on these two banks.

3.5.2 Spatial Model Analysis

As has shown in the previous model, we have detected the spill-over by applying equations 3-8 and 3-9. Yet, this is limited in terms of observing the influence of the neighbouring regions on the home regions since it is emphasised only based on the relative wealth between them. There are in principle three types of spatial dependence: the first type is a spatial lag model or Spatial Autoregressive Model (SAR), in which the dependent variable, loans per capita (or MSME loans per capita), in region i is affected by the loans per capita (or MSME loans per capita) in state j. Loosely speaking, this specification captures spatial spill-overs; in other words, the lending in one place predicts an increased/decreased likelihood of similar events in neighbouring places. The second type of spatial dependence involves a spatial lag of the dependent variable and a spatial lag of the explanatory variables; this is referred to as a Spatial Durbin Model (SDM). In this case, it is assumed that there is not only spatial dependence within the dependent variable but the determinants of lending, such as the portraits of the poverty level, with the social conditions directly affected by neighbouring regions. The third type of spatial dependence is spatial error in which the error terms across different spatial units are correlated (SEM). With spatial error in an ordinary least squares regression, the assumption of uncorrelated (independently distributed) errors is violated and, as a result, the estimates are inefficient. Spatial error is indicative of omitted variables that, if left unattended, may affect inference. We applied a random effect model in the previous linear regression due to the conditions wherein we have time invariant variables that cancel out the results if we use a fixed effect model. However, in this spatial panel model, we assume that the region-level individual effects are correlated with the explanatory variables, and therefore our primary focus will be on the FE estimation procedure. We specify a fixed effects model to control for possible endogenous characteristics of the individual regions within the study – these are characteristics that do not change (or change very little) over time such as unobservable geographic characteristics. The time-period effects control for time-specific shocks that may affect per capita lending distribution (MSME lending distribution) in all regions, such as recessions, and government policies applicable to all regions. We introduce spatial effects into the model by using a standard (pre-specified and non-negative) spatial weighting matrix, WN, as an (N × N) positive matrix where the rows and columns correspond to the cross-sectional observations (contiguous 26 regions). An element of the weighting matrix, w_{ij}, expresses the prior strength of interaction between region i and region j.

The concept of spatial spill-over in regional economy has been explained by Hakenes and Schnabel (2006) theoretically, yet is has been a challenge to prove it empirically. Studying the regional banks and connecting with the regional mandate that they have, we suspect that the lending of the RDBs should not be affected by the conditions of neighbouring regions since they are tied with the regional mandate, while, using non-RDBs as a counter party, we suspect that the spill-over effect may lead to negative consequences in the area of origin (as it suffers from favourable conditions in the neighbouring regions).

Table 3-10 shows the results of three models – the Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM) – to observe the spatial dependence effect on the non-RDBs' lending.

Table 3- 10. Estimated results of the Spatial Dependence Estimators on non-RDBs lending

NON-RDBs	(1) Loan_cap	(2) Loan_cap	(3) Loan_cap	(4) MSME_cap	(5) MSME_cap	(6) MSME_cap
RGDP	1.014***	0.978***	0.999***	0.091	0.096	0.096
	[0.165]	[0.150]	[0.158]	[0.100]	[0.098]	[0.101]
electric	-3.907***	-3.255***	-3.785***	1.169	1.341	1.312
	[0.531]	[0.931]	[0.769]	[0.883]	[1.028]	[0.916]
p1	-0.183	7.368	0.557	-6.176***	-5.595**	-4.811***
	[8.880]	[8.445]	[8.732]	[2.204]	[2.697]	[1.718]
rice	-1.365	-1.788	-0.936	2.321**	-0.040	2.126
	[1.221]	[2.277]	[1.090]	[1.112]	[1.316]	[1.431]
old	-9.342*	-5.666	-8.466	-2.600	-3.943	-3.262
	[5.036]	[3.961]	[5.260]	[3.626]	[3.039]	[3.204]
educ	-9.721***	-10.562***	-8.679***	-2.528**	-1.833	-1.938
	[1.950]	[2.786]	[2.042]	[1.253]	[1.125]	[1.365]
branch	0.423**	0.255	0.371*	-0.718**	-0.782**	-0.895**
	[0.207]	[0.261]	[0.201]	[0.335]	[0.329]	[0.371]
W*RGDP		0.339*			-0.030	
		[0.188]			[0.057]	
W*electric		-5.846*			-1.638	
		[3.356]			[1.385]	
W*p1		-14.553			-10.752	
		[9.085]			[7.328]	
W*rice		6.884**			2.911*	
		[3.018]			[1.569]	
W*old		20.566			-0.532	
		[15.303]			[8.271]	
W*educ		7.868***			-5.777***	
		[2.659]			[1.583]	
W* branch		-1.201*			1.229**	
		[0.727]			[0.500]	
Observations	390	390	390	390	390	390
Number of regions	26	26	26	26	26	26
R^2-within	0.626	0.668	0.623	0.141	0.251	0.110
Spatial effect						
rho(spatial lag)	-0.137***	-0.225***		0.329***	0.226***	
	[0.036]	[0.056]		[0.052]	[0.066]	
Lambda (spatial error)			-0.167**			0.351***
			[0.064]			[0.069]
Model diagnostics						
AIC	1270.594	1227.557	1271.932	931.390	895.438	935.170

Note: All the models are in the fixed effects model, clustered in year. The estimates above are based on the following models: (1) Spatial Autoregressive Model (SAR), (2) Spatial Durbin Model (SDM), (3) Spatial Error Model (SEM). Spatial effect has spatial lag(rho) and spatial error(lamda) is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest AIC is preferred.

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Observing the results for all models, the spatial lag effects (rho) and spatial error (lamda) are statistically significant for all models. The significance at 1% significance level strongly rejects the null hypothesis, which is, there is no spatially lagged dependent variable. However, we detect a different coefficient of the spatial lag effects (rho) and spatial error (lamda) in each dependent variable. The negative coefficient found in model 1, 2 and 3 suggests that lending distributions (an aggregate) in neighbouring regions, on average, are associated with a decreasing lending in the home regions or vice versa, or we can say that if the average lending (per capita) distributed by non-RDBs in neighbouring regions increases by 1%, then the lending (per capita) disbursed by non-RDBs in the particular region decreases by around 0.14 up to 0.25 (per capita; in millions). However, we found a positive and significant coefficient for MSME lending, meaning that, if the non-RDBs' loans in neighbouring regions increase by 1%, the non-RDBs' loans in the home region increases by 0.23 up to 0.35 per capita (in millions). Similar to the spatial lag effects, the spatial error effects (lamda) also shows a negative coefficient and is statistically significant; it suggests that there may be variables that contribute to region-level lending distribution but are not included in the analysis. Furthermore, with different type of lending, it generates a different result of the spill-over outcome, which refer to Hakenes and Schnabel (2006), their paper only explains about the possibility of having a capital drain if the spill-over exists which confirms the negative coefficient found when the dependent variable is the aggregate lending, while a positive spill-over gave another perspective. This may relate to the situation that currently this MSME lending is being promoted by the government, either national or regional government through the banks with certain regulation, and as the fact stated that this sector is one of the fastest growing sector in Indonesia, it is possible that the growth of the lending in the home regions/ the neighbouring regions may flowing out/ flowing in to the neighbours/the home regions as they may share the loans.

However, comparing the three different models individually, the Spatial Durbin Panel seems to outperform compared to the other methods, even considering the AIC levels. In addition, spatial lag and spatial error models have to restrict the magnitude of the spatial effect to ensure a positive definite variance-covariance matrix for successful model estimation (LeSage & Pace, 2009), which can lead to biased coefficient estimates if the spatial interaction effect is misclassified. (J. LeSage & Pace, 2009) stated that the Spatial Durbin Model is the only means of producing unbiased coefficient estimates regardless of the true spatial processes underlying the observed data. Table 3-11 shows the results of three models – SAR, SDM and SEM – to observe the spatial dependence effect on the RDBs lending.

Table 3- 11. Estimated results of the Spatial Dependence Estimators on RDBs lending

RDBs	(1) Loan_cap	(2) Loan_cap	(3) Loan_cap	(4) MSME_cap	(5) MSME_cap	(6) MSME_cap
RGDP	0.006	0.009*	0.007	0.002	0.004*	0.002
	[0.005]	[0.005]	[0.005]	[0.002]	[0.002]	[0.002]
electric	-0.386***	-0.382***	-0.387***	-0.032	-0.034	-0.032
	[0.120]	[0.139]	[0.120]	[0.037]	[0.042]	[0.038]
p1	-3.043***	-2.667***	-2.909***	-0.389	-0.490	-0.392
	[0.613]	[0.756]	[0.628]	[0.319]	[0.301]	[0.319]
rice	0.467***	0.482***	0.494***	0.108*	0.056	0.111*
	[0.139]	[0.149]	[0.151]	[0.062]	[0.063]	[0.063]
old	-0.220	-0.031	-0.115	0.486*	0.492**	0.489**
	[0.478]	[0.438]	[0.452]	[0.251]	[0.244]	[0.247]
educ	-0.134	-0.196	-0.125	-0.114	-0.090*	-0.119
	[0.158]	[0.192]	[0.158]	[0.075]	[0.053]	[0.079]
branch	0.107***	0.113***	0.106***	-0.001	0.001	-0.001
	[0.022]	[0.027]	[0.023]	[0.006]	[0.007]	[0.006]
W*RGDP		-0.003			-0.003	
		[0.005]			[0.002]	
W*electric		-0.002			0.060	
		[0.130]			[0.061]	
W*p1		-1.171			0.262	
		[0.770]			[0.342]	
W*rice		-0.225*			0.011	
		[0.132]			[0.096]	
W*old		-0.938			0.318	
		[0.580]			[0.281]	
W*educ		-0.197			-0.275***	
		[0.262]			[0.054]	
W* branch		0.033			0.040**	
		[0.036]			[0.016]	
Observations	390	390	390	390	390	390
No.of regions	26	26	26	26	26	26
	0.547	0.575	0.548	0.551	0.112	0.163
Spatial effect						
rho(spatial lag)	0.051	0.118***		0.063	-0.006	
	[0.047]	[0.043]		[0.077]	[0.076]	
lambda(spatial error)			0.151***			0.012
			[0.041]			[0.086]
Model diagnostics						
AIC	-693.033	-750.579	-736.071	-1345.384	-1361.127	-1344.677

Note: All the models are in fixed effects model, clustered in year. The estimates above are based on the following models: (1) Spatial Autoregressive Model (SAR), (2) Spatial Durbin Model (SDM), (3) Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest AIC is preferred.

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Examining the results of the three models, the Spatial Durbin Model is still superior based on the AIC criterion. Surprisingly, it is rare to find an indication of the spatial dependence of the RDBs, especially when the dependent variable is the MSME loans. With SDM, we found a positive spatial lagged effect. The significance of the spatial lag (rho) suggests that the increasing lending distributions (as an aggregate) in neighbouring regions have a positive association with the increasing lending in the home regions, or vice versa; or in this case, we can say that with 1% increase of neighbouring lending (per capita), the lending of the home regions increases by about 0.12 up to 0.15 per capita(in million). Furthermore, we could not find any spatial effects on SAR, SDM and SEM models when we used MSME lending as a dependent variable, which is in line with what we found with the regression model. It implies that the changing of the MSME lending in the neighbouring regions is irrelevant in explaining the increasing lending in the home regions.

Furthermore, these results confirm the previous findings, that the spill-over tends to occur in the non-RDBs, as it shows a negative and significant predictive margin, which is similar to the results of rho and lamda in non-RDBs' lending, while it shows a positive predictive margin on the RDBs, which is again similar with the rho and lamda found in the spatial panel model, and yet rarely significant, which is similar to the previous findings as well.

Hence, based on the individual comparison between the three spatial models, the Spatial Durbin Model fits the data better than the spatial lag model does, and hence we use the Spatial Durbin Panel to demonstrate the potential of having spill-over in the RDBs and non-RDBs. The following table shows a decomposing of the Spatial Durbin Panel model, which consists of the direct and indirect effects of each covariate.

Table 3- 12. Decomposition estimates of the direct and indirect effects

		(1) Loan_cap		(2) MSME_cap		(3) Loan_cap		(3) MSME_cap	
RGDP	Direct	0.972***	[0.156]	0.096	[0.100]	0.009*	[0.005]	0.004*	[0.002]
	Indirect	0.084	[0.114]	-0.008	[0.062]	-0.002	[0.005]	-0.002	[0.002]
	Total	1.056***	[0.132]	0.088	[0.144]	0.007	[0.008]	0.002	[0.002]
electric	Direct	-2.976***	[1.110]	1.256	[1.108]	-0.383***	[0.139]	-0.034	[0.042]
	Indirect	-3.646	[2.370]	-1.308	[1.519]	-0.042	[0.111]	0.048	[0.050]
	Total	-6.622***	[1.557]	-0.052	[2.483]	-0.425**	[0.179]	0.014	[0.035]
p1	Direct	8.254	[8.351]	-6.358**	[2.774]	-2.714***	[0.763]	-0.490	[0.301]
	Indirect	-11.571*	[7.049]	-11.776*	[6.738]	-1.314*	[0.681]	-1.314*	[0.278]
	Total	-3.317	[9.870]	-18.134**	[8.533]	-4.028***	[1.008]	-0.277	[0.449]
rice	Direct	-2.186	[2.453]	0.145	[1.255]	0.476***	[0.146]	0.056	[0.063]
	Indirect	5.199**	[2.507]	2.844**	[1.307]	-0.148	[0.100]	-0.148	[0.078]
	Total	3.014***	[0.572]	2.989***	[1.021]	0.328***	[0.118]	0.065	[0.081]
old	Direct	-6.859**	[3.615]	-4.033	[3.365]	-0.118	[0.401]	0.492**	[0.247]
	Indirect	15.587	[10.495]	-1.394	[8.580]	-0.833	[0.532]	-0.833	[0.233]
	Total	8.728	[12.191]	-5.428	[11.061]	-0.893	[0.876]	0.745**	[0.352]
educ	Direct	-11.122***	[2.888]	-2.226**	[1.088]	-0.231	[0.192]	-0.089*	[0.053]
	Indirect	7.316***	[2.292]	-6.067***	[1.157]	-0.195	[0.224]	-0.221***	[0.044]
	Total	-3.806**	[1.742]	-8.293***	[1.326]	-0.398	[0.250]	-0.310***	[0.068]
branch	Direct	0.323	[0.289]	-0.715**	[0.319]	0.115***	[0.026]	0.001	[0.007]
	Indirect	-0.898	[0.561]	1.031**	[0.446]	0.041	[0.029]	0.032**	[0.014]
	Total	-0.575*	[0.349]	-0.907*	[0.481]	0.156***	[0.035]	0.033**	[0.015]

Note: All the models are in fixed effects model, clustered in year. The estimates above are based on Spatial Durbin Model (SDM). Model 1 and 2 show the spatial impact in the non-RDBs based on the certain variables, while model 3 and 4 show the spatial influence in the RDBs based on the certain variables.

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

The Spatial Durbin Model includes both the spatially lagged dependent and independent variables, and the endogeneity of the model makes the interpretations of the estimates richer. Specifically, the Spatial Durbin Model allows researchers to separate the direct (within a region) impact of an independent variable on the dependent variable from the indirect (to/from neighbouring regions) impact (LeSage & Pace, 2009). We present the results for both non-RDBs in models 1 and 2, and RDBs in models 3 and 4. The significant indirect effects provided strong evidence to support our argument that the features of surrounding regions are important determinants of lending. Observing the direct impact and indirect impact on the lending, it shows a quite similar result for the aggregate lending and MSME lending in non-RDBs. The level of RGDP (per capita) affects the lending in a positive way (albeit it is not significant in affecting the MSME lending), and accounts for more than 90% (0.972/1.056) for the aggregate lending which confirms that the level of wealth of the regions is an important factor for this bank to distribute its funds, while the level of the adjacent regions seems to not significantly affect the distribution of the aggregate lending (including the MSME lending) in the home regions. However, the variable electric shows a negative and significant effect towards lending, which seems to contradict the hypothesis stated: the lending is cut when the percentage access of the electricity in the region is higher. Furthermore, this might relate to the condition that there are certain provinces, such as some provinces in Java, which happen to be the agglomerated regions, as most of the provinces in Java have the highest population across Indonesia (leading to having the big income discrepancies in these areas); however, regarding the infrastructure, these regions are included in areas that have access to electricity that is high enough, or above ninety per cent (90%). So, the negative coefficient might account for these areas, as they have a good infrastructure but with a low level of GDP[1]. Observing the influence of the neighbouring regions, the variable electric shows a negative coefficient but not statistically significant, both for aggregate and MSME lending, which implies that the spill-over lending caused by changing the accessibility of the electricity infrastructure in the neighbouring regions has a small or insignificant effect to the non-RDBs lending in the home regions.

The next indicator is the poverty gap index or p1, which is a measure of the average disparity in spending of each poor person under the poverty line. The higher the index value, the greater the average spending of the population under the poverty line. Regarding the outcome in the non-RDBs' lending, p1 has no significant influence on lending within the regions (while it does have a negative effect on the MSME lending). There is no certain explanation for this result; the possibility is that it might be because this factor plays a small role in the decision of the non-RDBs' lending (as an aggregate). The p1 does affect the non-RDBs lending indirectly as it shows a negative and significant coefficient, not only for the aggregate lending but also for the MSME lending, which suggests that the increase of the neighbouring regions' poverty index has the connection with the decreasing of the lending within the regions. Observing the direct impact and indirect impact of p1 in MSME lending, both shows a negative and significant result, which suggests that the lending within region does not only affected by the

[1] Refer to the descriptive analysis, the RGDP per capital level in these regions even relatively similar with some of the eastern regions in Indonesia, such as Maluku, which mostly knows as a unfavourable region due to their lack of natural resources.

poverty gap inside the regions, but also the neighbouring regions, it may give a sign about the increasing risk related lending that banks need to be aware of.

Regarding variable rice, we found an insignificant impact of this variable in affecting the lending within the regions, but the indirect effect shows a positive and significant coefficient (both for the aggregate lending and the MSME lending). It means that an increase of the price of rice within the regions is associated with the increase of the non-RDBs' lending in the neighbouring regions or vice versa (or an increase of the price of rice of the neighbouring regions being associated with the increase of the non-RDBs' lending within the regions). The increasing price of rice indicates the neighbouring regions may have a difficult time as it may reflect a high level of inflation and may lead to having a decreasing in income and an increase in the non-performing loans, and therefore the lending in the home region increases as they may try to avoid the risk by not to share their lending to their neighbours. While in another side, when the neighbours experience a low level of inflation it has a positive correlation with the lower level of loans distributed in the home regions because non-RDBs may try to get a higher probability of a positive income by placing their fund to somewhere safe.

The variable old accounts for the impact of having a proportion of elderly people in the regions. Both the aggregate lending and the MSME lending shows a negative coefficient in the direct effect, while it found significant only when the dependent variable is the aggregate lending, meaning that the non-RDBs are paying attention to the growing regions when distributing their aggregate lending. They are more focused on providing lending for the regions that have a higher proportion of productive people, while the proportion of older people in the immediate regions does not affect their lending within the region.

About variable educ, we found a negative and significant aspect mostly in the direct effect and indirect effect (both for aggregate lending and the MSME lending), except the impact of the neighbouring regions on the aggregate lending, or indirect effect showing a positive coefficient. As this variable educ represents the percentage of the number of school-age children who have attended school at up to the high school level. Examining the impact of variable educ on the aggregate lending, we found that as this number increases, the lending decreases, while the increase of the people that can access the education up to the high school in the neighbouring regions have associated with the increased lending within the region. Refer to the hypothesis stated, we expect a negative coefficient between variable educ and lending, as it shows that with a good education, people may be able to access a well-paid job and this might give them a financial security better than without having any job and being dependent to their parents or families. In addition, it may affect the families' income if one of the family members be able to generate income. Furthermore, the positive sign in the indirect impact may connect with several possibilities. First, it may relate to the motive to pursue a higher degree, in the university, and thus increase the demand for lending. But this is only possible, if the students from the neighbouring regions move to the home regions to access the education and therefore apply for funds or soft loans or scholarship in the home regions and increase the credit distributed by the non-RDBs. Second, as they have enough education, the people may move to the home regions to find a job or open a new business, which they may need a certain amount of funds as a starting-up in the new place. It means, in this case, the home region should have better education universities or better jobs availability than the neighbouring regions (so therefore the direct effect is negative as the students from within the region may have access to the job and reduce their dependency on loans). Compare to the MSME lending, both coefficients found negative and significant, meaning that MSME lending within regions is determined by the level of the education people inside and outside the regions (neighbouring regions). It may suggest that the lending within regions may be affected as it may spill to the neighbouring regions, which is showing in the negative coefficient in the indirect effect, and the remaining loan facilities may not be much to be lent to the people within regions; or with a good education, the people be able to create a job for themselves, and reduce their demands for lending, or if they apply as an employee in the MSME business, an educated worker may give a good impact on the MSMEs' business as they may more effective and productive and effect to their income, hence the demand for loans reduce, therefore, the MSME lending may be spilled to the neighbouring regions.

Examine the influence of having of the banks' size, observed through the total branches they have, it shows the size does not affect the aggregate lending either through direct or indirect effect, while non-RDBs lending seems to increase when the size of the bank decreases, while the increase of the non-RDBs' branches in the neighbouring regions increase the lending within the regions. The different results may occur as the neighbouring regions may spill their lending outside their regions, and therefore it lowers the lending distribution in the home region.

Studying the spatial impact on the RDBs, we capture a different pattern compared to the non-RDBs. Examining the direct effect, variable RGDP_cap, electric, p1, rice, and branch have a significant influence on the RDBs' lending. Variable RGDP_cap have a positive influence, albeit it is only significant at 10% level. Regarding the variable electric, it shows that the direct effect is more dominant, which is negative and significant in affecting lending in the RDBs for both aggregate lending and MSME lending. It means the increase of the electric access within the regions reduces the lending distributed by the RDBs. As has been said before, this may occur related to the condition that most of the highest percentage of electricity infrastructure is on the island of Java, while this is the island where the disparity of income is the highest as well; hence, it might affect the distribution of the RDBs' lending. Another explanation is as most of the developed regions are on Java and the concentration of the banks (especially non-RDBs) is on Java and it might difficult for the RDBs to find their market if most of the customers have been taken by the non-RDBs.

Observing variable p1, it indicates an impact of the neighbouring regions in determining the home region's lending(aggregate). The sign of the coefficient is similar to what we found in the non-RDBs' lending. In addition, this variable is also affecting the MSME lending of the RDBs in the home region through the neighbours and becomes one and the only variable that affected the RDBs indirectly. This implies that the poverty gap is quite vital to determine the RDBs' lending, both, aggregate lending and MSME lending. The higher the poverty gap in the neighbouring regions has the connection with the lower lending disbursed by the RDBs in the home regions. However, the indirect effect seems to not dominant (the indirect effect accounts less than 40% than the total effect, or -1.314/-4.028), the poverty gap within region plays the major influence on the RDBs aggregate lending. Studying this variable, there is an expectation that p1 and lending should have a positive relationship as we assume that the RDBs may try to reduce the disparity in the regions through their lending, yet a negative coefficient may indicate that the bank may not willing to take further risk as the disparity increases as it will affect their non-performing level.

Testing the increasing price of rice, this shows a positive and significant impact of the direct effect of influencing the aggregate lending in the RDBs, which is opposite from the non-RDBs' direct effect. The accounting of the dominant influence for the direct effect suggests that RDBs seem to be the tools to reduce the effects of the increasing price of important foods for

Indonesian, such as rice. This increasing price can lead to inflation, which will impair the regional economy's growth. Because RDBs are tied to their regional governments, they used to be a tool to lower fluctuation by distributing special aid from the regional government. Additionally, size has a significant influence on the distribution of loans in RDBs – the bigger the banks, the greater the increase in the number of loans.

Regarding MSME lending, we found only certain variables that affecting the lending. The regional economic growth, the percentage of the elderlies, the percentage of the school participation are affecting the MSME lending within the region. The regional economy still plays the crucial factor in affecting MSME lending in the RDBs (at 10% significance level), but we did not find a significant influence of neighbouring regions' economy on lending in RDBs. Similar to aggregate lending, the poverty gap of the neighbouring regions, or p1, seems to crucially affect lending in the home region, which confirms that this factor is quite important to bank when lending. The percentage of elderly (old) people has a positive and significant influence in affecting RDBs' lending, whereas the opposite is true for non-RDBs.

Connecting with the variable old, the proportion of old people has an impact on MSME lending, which suggests that they may start a small business after retiring. However, we have no information about the type of work that elderly people do in each region. Regarding to the variable educ, both direct and indirect effects are negative and significant in affecting RDB lending in the home region; this is similar to what we found for non-RDBs. MSME lending in the home region is associated with the percentage of the school participation rate in the home region as well as in the neighbouring regions. Like in the case of non-RDBs, we suspect that lending may be spilled over to the neighbouring regions because the people within the regions may reduce their demand for MSME lending. Regarding the variable branch, there is an indication that MSME lending will spill over to the neighbouring regions as the number of branches in the home regions increases.

3.5.3 Robustness Check

To prove the consistency in the previous findings, we conduct several robustness checks. First, we add several control variables to see the consistency of the coefficients; second, we are aware of having the endogeneity problem in some of the models. Especially, when we use RGDPCap as our main variable and interact with variable rdb, there is a possibility that there may be a simultaneous relationship between the RGDPCap and the lending; hence, we conduct the 2SLS model to check the robustness of the result. We focus on the first two geographical models to test the consistency of the interaction model between rdb with RGDPCap and the interaction model between rdb with variable distance as we have applied the spatial panel analysis to test the indication of spill-over generated from equations 3-8 and 3-9; thus, we do not to do any more tests about the spill-over indication.

3.5.3.1 Adding the control variables

Although we have controlled the possibilities of having the unobserved variables within regions that tend to have technical progress using time trend option, adding control variables at a regional level might help to improve the model and test the consistency of the results. We put the full empirical results at the appendix.

After adding the control variables, generally, the results of the interaction models are not changed; they remain consistent as significant for all models. Surprisingly, the R-squared is not significantly improved compared to the models without the control variables. Variable RGDPcap#rdb keeps showing a negative and is significant in affecting the dependent variables, the aggregate lending and the MSME lending. Interaction between rdb and distance continues to have a positive and significant coefficient, while variable spill1 does not show any significant indication, just as the previous results, and variable spill2 does affect the behaviour of the RDBs and the non-RDBs regarding their lending.

According to the influence of the control variables, we found negativity and significance in terms of the variable electric affecting the lending, which means the higher the electricity accessibility, the lower the lending distributed by the both banks. The negative and significant coefficient is mostly found in table A3-1, while tables A3-2, A3-3, A3-4, A3-5, A3-6, A3-7 and A3-8 keep showing a negative coefficient, albeit statistically not significant, which may relate to the fact that there are two types of data that we use in this paper, RDBs and non-RDBs, and these two types of bank may provide a different response regarding the changes of the covariates. Moreover, these results have a similarity with the Spatial Durbin Panel Model; this might seem to be contradictory with the hypothesis, as the high accessibility of this type of infrastructure usually leads to having an economic growth as it enables the people to expand their working hours, investing in high technology machines that will push the efficiency factor and lead to experience a positive economic growth. As has been explained before, the conditions on Java may affect the results, due to the fact that this island has a high electricity percentage but also a high number of poor people.

In the poverty gap index, or variable p1, generally, most of the models are showing a negative coefficient in affecting lending and MSME lending, while models 19 and 21 show positive coefficients. A similar pattern is seen in the variables rice, old, educ and branch. Observing the variable rice seems to show a significant result when the dependent variable is MSME lending. The positive coefficient suggests that the tendency of increasing price affects the lending for this sector, which may connect with the effort to enable the MSMEs to keep producing and working; as this a small business, they may have a very tight budget, and price fluctuation can significantly affect the operational aspect if there is no back-up financially. Concerning the impact of the proportion of the elderlies in the region, it is rare to find a significant result for the variable old, which might also suggest mix responses of the both banks, or this variable may not have any impact to the lending distribution. Observing the implication of having a higher percentage of school enrolment rate, it shows a negative relationship between the dependent variables on table A3-1, A3-2, A3-3 and A3-6. Just as we found in the spatial panel result, the negative coefficient might imply that as the people can access the school, they may be able to get a better job and become financially independent; therefore, it reduces the demand for loans. The last variable is the variable branch, which is to control the impact of the banks' size. The results are again mixed, which may imply the different responses of the different banks. The mixed results may associate with the different behaviour of these two banks, as has been explained. Another thing is, since we have controlled the progressive factor that might occur within the regions with time trend, this may affect the significance of these control variables.

3.5.3.2 Applying Two-Stage Least Squares (2SLS)

As we employ the variable RGDP (per capita) as our main variable to explain the different responses regarding the aggregate lending and MSME lending between RDBs and non-RDBs, we are aware of the potential endogeneity problem between RGDP (per capita) and Loans (per capita) and/or MSME loans (per capita). The increase of the economic wealth might trigger the demand for lending, which, on the other hand, with the financial back-up from the bank enables people to invest and do their business activities, and thus cause a growth in the economy. Therefore, to find a robust model, we will run the models with two-stage least squares (2SLS) by using the instrument variables that satisfy certain properties, uncorrelated with the error but correlated with the endogenous variable. We use the first difference of variable $rgdp$, the total area of rice fields per province (log), and first difference of the health spending cost and as our instrument variables. After running the model, we conducted several tests: a weak instrument test to see the correlation between the instrument variables; and an overidentification test to test that the instrument set is valid, and the model is correctly specified. The weak-instruments problem arises when the correlations between the endogenous regressors and the excluded instruments are non-zero but small (Baum et al., 2010). Regarding the weak-instrument test, the null hypothesis is that the instruments do not suffer from the specified bias, while using an F-test we found that we cannot reject the null hypothesis at conventional levels for all models since the p-value is above 5% significance level. The test statistic is based on the rejection rate r (5%, 10%, 20%). Sargan tests are used to indicate whether the additional instruments are valid. The null hypothesis is that the instrument set is valid, and the model is correctly specified.

Observing the results of the 2SLS (see the appendix, table A3-9 and A3-10), the interaction between the rdb and RGDPCap is kept consistently significant, for all models, for both dependent variables, the aggregate lending and the MSME lending, which strongly confirms that the non-RDBs' lending (including MSME lending) is distributed in line with the increasing of the region's wealth, while the RDBs have an opposite direction, which implies their calling as a regional bank.

Regarding the interaction with variable distance, this variable is considered not to have a simultaneous response towards the dependent variables, which is loans and MSMEs loans. The further the distance may affect the lending distribution, but the lending distribution would not affect the distance. However, for the sake of clarity, we will run the 2sls test for this model (interaction between rdb and distance) with control variables. The 2sls is used to provide an efficient model since we include regional poverty gap as one of the control variables. The increase of the poverty gap may lower the lending distribution, but the loans withdrawal might hinder the potential growth and enlarge the poverty gap. Referred to table A3-11, the coefficients of variable rdb#distance were consistent positive and significant in affecting loans (per capita) and MSMEs loans (per capita). Simply strengthen the previous findings that the role of the RDBs is important to support the remote regions when most of the non-RDBs might avoid lending to these areas.

Studying the impact of the control variables, we found a mixing coefficient sign mostly in all control variables. The different findings may connect with the Sargan test as some of the models have a low p-value, below 5% (but still above 1% significance level), and this may cause the coefficient sign since the Sargan test relates to the validity of the instrumental variables. However, since we put together these two banks, this may capture the mix conditions between these two banks.

3.6 Conclusion

This paper focuses on how RDBs implement their mandate by allocating credit despite the differences in regional geography. There are three main geographical factors that we employ in order to test the implication of the geographical factors in affecting the lending: RGDPCap, Distance, and Spill. To provide a clear comparison, we test the RDBs' responses towards lending with the non-RDBs' responses. The idea is, these two banks have different characteristics: the RDBs are regional public banks that have been created to support their region, while the non-RDBs consist of national public banks and private banks, which do not have ties with a particular region and they have their branches over many regions, leading us to suspect that these non-RDBs (or interregional banks) may have a potential to direct their funds to the locations that they assume to be favourable.

To see their behaviour regarding the three indicators, first, we run a linear regression with the interaction model; this method enables us to see the different pattern between the RDBs and the non-RDBs. Employing the predictive margin helps us to see the pattern of these two banks clearly with a graph. Generally, we found that the non-RDBs' lending, either the aggregate lending or the MSME lending, increases in line with the increasing of the region's wealth, while the RDBs' lending seems to be disproportional regarding the changing of the regions' wealth, which confirms our hypothesis. This disproportional lending leads to the fact that the RDBs lending is dominant (or higher than the non-RDBs) in the regions that have the low level of income (RGDP per capita). However, regarding the lending behaviour towards the distance, the interaction model shows that the non-RDBs are attracted to provide lending near the strategic locations, in this case, Jakarta, as a capital city of Indonesia. Their lending is gradually decreasing when the distance gets further, and even negative when it reaches the remote regions. Moreover, the lending in the RDBs tend to be stable over all observations; hence, it makes the RDBs' lending appears to be higher than the non-RDBs' lending in the remote locations. Concerning the possibility of having the impact of the neighbours' economy and social conditions, we introduce two variables, spill1 and spill2. Yet, spill1 does not show any significant impact for all the models, while spill2 shows a significant impact on the interaction variable, implying that the neighbouring regions, however how many they are, have an equal effect on the home region's lending (including the MSME lending).

The positive and significant results that we found indicate that the non-RDBs tend to have a spill-over on their lending compared to the RDBs. To elucidate the potential spill-over in the regions, we run another spill-over test by employing the spatial panel model. The Spatial Durbin Model is used to analyse the direct impact and the indirect impact of the covariates chosen based on the certain criteria. Yet, the results confirm the prior findings that the non-RDBs are detected to have the spatial effect (based on the significant results on the spatial lag and the spatial error for SAR, SDM, and SEM models), while the spatial effect is rarely found in the RDBs – it is only detected when we use lending as a dependent variable. Applying SDM, we found that the non-RDBs' increased lending (including MSME lending) in the neighbouring regions has an association with the non-RDBs' decreased lending (including MSME lending) in the home regions, which indicates the condition of the capital drain stated by Hakenes and Schnabel (2006), while the RDBs show an opposite response – the increased lending in the home regions has a connection with the increased lending in the neighbouring regions and vice versa, while for MSME lending, we found an insignificant result. Observing the spatial effect on explanatory variables, the indirect effect of variable p1 shows negative and significant for all models, for both dependent variables and both banks, which implies that the disparity gap in the neighbouring regions is a crucial factor in affecting the response' of the both banks within the region.

The results of these findings are consistently significant, and the coefficients are not changed after we add the control variables, using the 2SLS IV method to find a robust model due to the awareness of having an endogeneity problem in the model.

Appendix

Table A3- 1. The influence of RGDP (per capita) on Lending

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap
rdb	5.576*	5.584*	5.590*	5.597*	5.604*	5.620*	5.623*
	[3.206]	[3.138]	[3.147]	[3.153]	[3.151]	[3.004]	[2.999]
RGDPcap	0.904**	0.901**	0.903**	0.902**	0.901**	0.905**	0.904**
	[0.434]	[0.427]	[0.427]	[0.428]	[0.426]	[0.409]	[0.409]
RGDPcap#rdb	-0.859**	-0.860**	-0.861**	-0.861**	-0.862**	-0.864**	-0.864**
	[0.393]	[0.387]	[0.387]	[0.388]	[0.387]	[0.372]	[0.371]
electric		-2.624*	-2.689*	-2.702*	-2.742*	-1.655	-1.788*
		[1.522]	[1.506]	[1.506]	[1.514]	[1.095]	[1.077]
pi			-2.498	-2.247	-1.463	-0.609	-0.071
			[3.410]	[3.349]	[3.467]	[3.601]	[3.519]
rice				0.988	0.836	-0.672	-0.616
				[0.614]	[0.569]	[0.919]	[0.909]
old					-5.585	-4.333	-4.117
					[4.686]	[3.966]	[3.899]
educ						-5.165*	-5.073*
						[2.752]	[2.735]
branch							0.269
							[0.246]
Constant	13.634	-55.763	-49.662	35.045	12.646	-242.778	-214.804
	[77.722]	[78.114]	[79.255]	[97.469]	[94.086]	[152.326]	[151.841]
Observations	780	780	780	780	780	780	780
No.of regions	52	52	52	52	52	52	52
R-squared	0.574	0.565	0.565	0.565	0.560	0.570	0.568

The regression equation is estimated with a random effect (RE) model, with the time trend added. The dependent variable is LoanCap or loans per capita. The models show the impact of variable rdb in its interaction with the variable RGDPcap. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes $p < 0.1$

** Denotes $p < 0.5$

*** Denotes $p < 0.01$

Table A3- 2. The influence of RGDP (per capita) on MSMEs Lending

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap
rdb	0.109	0.110	0.106	0.098	0.095	0.090	0.087
	[0.241]	[0.247]	[0.248]	[0.245]	[0.243]	[0.218]	[0.221]
RGDPcap	0.122**	0.121**	0.120**	0.116**	0.115**	0.117**	0.118**
	[0.056]	[0.055]	[0.055]	[0.054]	[0.053]	[0.050]	[0.051]
RGDPcap#rdb	-0.113**	-0.113**	-0.113**	-0.112**	-0.112**	-0.111**	-0.111**
	[0.048]	[0.048]	[0.048]	[0.048]	[0.048]	[0.044]	[0.044]
electric		0.375	0.235	0.252	0.254	0.584	0.738
		[0.533]	[0.496]	[0.507]	[0.522]	[0.610]	[0.787]
pi			-4.426**	-3.908**	-3.866***	-3.473**	-3.988**
			[1.872]	[1.543]	[1.473]	[1.445]	[1.860]
rice				2.179***	2.169***	1.703***	1.659***
				[0.771]	[0.748]	[0.654]	[0.601]
old					-0.366	-0.098	-0.203
					[1.532]	[1.525]	[1.593]
educ						-1.692***	-1.826***
						[0.434]	[0.555]
branch							-0.265
							[0.322]
Constant	25.866	35.363	44.162	232.133**	230.704**	148.701*	121.722**
	[24.473]	[36.779]	[38.652]	[101.802]	[98.372]	[84.197]	[53.202]
Observations	780	780	780	780	780	780	780
No.of regions	52	52	52	52	52	52	52
R-squared	0.504	0.510	0.510	0.506	0.505	0.514	0.514

The regression equation is estimated with a random effect (RE) model, with the time trend added. The dependent variable is MSME_cap or MSME lending per capita. The models show the impact of variable rdb in its interaction with the variable RGDPcap. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes $p < 0.1$

** Denotes $p < 0.5$

*** Denotes $p < 0.01$

Table A3- 3. Bank lending and geographical distance (RDBs vs non-RDBs)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap
rdb	-27.338***	-27.338***	-27.338***	-27.338***	-27.338***	-27.338***	-27.338***
	[6.690]	[6.513]	[6.509]	[6.477]	[6.335]	[6.548]	[6.572]
distance	-8.804***	-9.111***	-9.130***	-9.126***	-9.169***	-9.107***	-9.108***
	[2.208]	[2.372]	[2.410]	[2.397]	[2.376]	[2.379]	[2.385]
distance#rdb	8.817***	8.817***	8.817***	8.817***	8.817***	8.817***	8.817***
	[2.209]	[2.149]	[2.147]	[2.137]	[2.088]	[2.158]	[2.165]
electric		-3.381	-3.312	-3.313	-3.292	-2.371	-2.548
		[2.649]	[2.502]	[2.500]	[2.473]	[1.497]	[1.588]
pi			2.747	3.267	4.535	5.377	6.018
			[6.151]	[6.450]	[7.480]	[8.204]	[8.554]
rice				2.094**	1.804**	0.550	0.603
				[1.031]	[0.828]	[0.755]	[0.720]
old					-9.433	-8.525	-8.299
					[7.490]	[6.533]	[6.447]
educ						-4.438	-4.315
						[4.664]	[4.582]
branch							0.323
							[0.265]
Constant	-143.008**	-229.754*	-235.826*	-54.253	-91.873	-309.569	-276.913
	[63.898]	[129.917]	[142.361]	[67.625]	[92.766]	[316.014]	[294.287]
Observations	780	780	780	780	780	780	780
No.of regions	52	52	52	52	52	52	52
R-squared	0.712	0.714	0.714	0.716	0.721	0.708	0.707

The regression equation is estimated with a random effect (RE) model, with the time trend added. The dependent variable is loan_cap or lending per capita. The models show the impact of variable rdb in its interaction with the variable distance. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes p < 0.1

** Denotes p < 0.5

*** Denotes p < 0.01

Table A3- 4. MSMEs loans and geographical distance (RDBs vs non-RDBs)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap
rdb	-6.728***	-6.728***	-6.728***	-6.728***	-6.728***	-6.728***	-6.728***
	[1.588]	[1.589]	[1.600]	[1.561]	[1.525]	[1.581]	[1.578]
distance	-2.039***	-2.038***	-2.014***	-2.005***	-2.013***	-1.997***	-1.994***
	[0.525]	[0.510]	[0.511]	[0.495]	[0.487]	[0.499]	[0.495]
distance#rdb	2.040***	2.040***	2.040***	2.040***	2.040***	2.040***	2.040***
	[0.525]	[0.525]	[0.529]	[0.516]	[0.504]	[0.522]	[0.521]
electric		0.007	-0.095	-0.051	-0.002	0.246	0.380
		[0.275]	[0.266]	[0.274]	[0.308]	[0.400]	[0.540]
pi			-3.511**	-2.909**	-2.596**	-2.305**	-2.697**
			[1.534]	[1.190]	[1.116]	[1.115]	[1.177]
rice				2.390***	2.292***	1.976***	1.954***
				[0.870]	[0.810]	[0.689]	[0.659]
old					-2.490	-2.378	-2.403
					[2.328]	[2.318]	[2.340]
educ						-1.224**	-1.352**
						[0.541]	[0.669]
branch							-0.200
							[0.259]
Constant	6.737	6.912	14.322	222.687**	212.115***	154.167**	134.092***
	[9.574]	[15.020]	[15.817]	[88.724]	[82.027]	[62.175]	[40.614]
Observations	780	780	780	780	780	780	780
No.of regions	52	52	52	52	52	52	52
R-squared	0.607	0.607	0.608	0.618	0.623	0.614	0.610

The regression equation is estimated with a random effect (RE) model with the time trend added. The dependent variable is MSME_cap or MSME lending per capita. The models show the impact of variable rdb in its interaction with variable distance. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes $p < 0.1$

** Denotes $p < 0.5$

*** Denotes $p < 0.01$

Table A3- 5. Bank Lending and Spatial Dependence (RDBs vs non-RDBs) – version 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap
rdb	-11.331*	-11.307	-11.344	-11.256	-11.267	-11.109	-11.115
	[6.845]	[7.028]	[7.072]	[6.960]	[6.916]	[6.942]	[7.110]
spill1	-2.438	-2.685	-2.648	-2.573	-2.656	-3.583	-3.452
	[1.502]	[1.707]	[1.642]	[1.571]	[1.634]	[2.445]	[2.381]
spill1#rdb	2.951	2.943	2.955	2.926	2.929	2.876	2.878
	[1.849]	[1.902]	[1.911]	[1.876]	[1.860]	[1.908]	[1.968]
electric		-4.042	-3.890	-3.930	-3.877	-2.643	-2.887
		[3.458]	[3.174]	[3.197]	[3.132]	[1.960]	[2.108]
pi			6.906	9.656	13.326	11.999	12.172
			[14.052]	[15.649]	[18.990]	[17.439]	[17.427]
rice				2.339	2.103*	0.357	0.393
				[1.474]	[1.266]	[0.782]	[0.763]
old					-9.857	-8.747	-7.962
					[9.584]	[8.381]	[7.831]
educ						-6.228	-6.024
						[5.780]	[5.638]
branch							0.336
							[0.316]
Constant	-174.445**	-275.186*	-288.113	-89.765	-125.495	-411.015	-379.075
	[80.498]	[163.424]	[187.472]	[78.212]	[107.549]	[369.239]	[344.392]
Observations	630	630	630	630	630	630	630
No.of regions	42	42	42	42	42	42	42
R-squared	0.149	0.108	0.102	0.101	0.101	0.123	0.121

The regression equation is estimated with a random effect (RE) model with the time trend added. The dependent variable is loan_cap or lending per capita. The models show the impact of variable rdb in its interaction with the variable spill1. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes $p < 0.1$

** Denotes $p < 0.5$

*** Denotes $p < 0.01$

Table A3- 6. MSMEs loans and Spatial Dependence (RDBs vs non-RDBs) – version 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap
rdb	-4.640	-4.654	-4.669	-4.624	-4.629	-4.588	-4.566
	[3.922]	[3.911]	[3.837]	[3.791]	[3.793]	[3.747]	[3.694]
spill1	-1.318	-1.296	-1.306	-1.247	-1.246	-1.529	-1.680
	[1.239]	[1.210]	[1.184]	[1.149]	[1.146]	[1.229]	[1.356]
spill1#rdb	1.229	1.234	1.239	1.224	1.226	1.212	1.204
	[1.220]	[1.217]	[1.195]	[1.178]	[1.178]	[1.167]	[1.149]
electric		0.471	0.256	0.225	0.259	0.712	1.109
		[0.523]	[0.458]	[0.460]	[0.502]	[0.705]	[1.065]
pi			-10.995**	-7.970**	-7.088**	-7.350**	-7.921**
			[4.437]	[3.443]	[3.181]	[3.294]	[3.559]
rice				2.496**	2.440**	1.808**	1.751***
				[1.059]	[1.008]	[0.731]	[0.664]
old					-2.194	-1.727	-2.505
					[2.772]	[2.550]	[3.142]
educ						-2.321**	-2.651**
						[1.025]	[1.335]
branch							-0.463
							[0.464]
Constant	10.353	22.135	43.065	254.914**	246.979**	141.174**	97.549***
	[15.719]	[26.847]	[31.615]	[119.180]	[111.591]	[69.367]	[35.141]
Observations	630	630	630	630	630	630	630
No.of regions	42	42	42	42	42	42	42
R-squared	0.232	0.243	0.261	0.261	0.260	0.265	0.255

The regression equation is estimated with a random effect (RE) model with the time trend added. The dependent variable is MSME_cap or MSME lending per capita. The models show the impact of variable rdb in its interaction with the variable spill1 by adding the time trend and the robust standard error. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes $p < 0.1$

** Denotes $p < 0.5$

*** Denotes $p < 0.01$

Table A3- 7. Bank Lending and Spatial Dependence (RDBs vs non-RDBs) – version 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap
rdb	-4.110**	-4.110*	-4.115*	-4.105*	-4.103*	-4.087**	-4.090*
	[2.050]	[2.110]	[2.120]	[2.112]	[2.100]	[2.078]	[2.097]
Spill2	-0.451***	-0.461***	-0.460***	-0.431***	-0.465***	-0.708**	-0.631**
	[0.155]	[0.165]	[0.160]	[0.158]	[0.143]	[0.292]	[0.252]
Spill2#rdb	0.871***	0.871**	0.874**	0.868**	0.867***	0.857**	0.859**
	[0.323]	[0.351]	[0.349]	[0.351]	[0.335]	[0.349]	[0.354]
electric		-3.922	-3.747	-3.794	-3.738	-2.497	-2.782
		[3.339]	[3.043]	[3.073]	[3.010]	[1.831]	[2.018]
pi			8.193	10.962	14.566	14.160	14.219
			[14.575]	[16.318]	[19.582]	[18.882]	[18.847]
rice				2.383	2.149	0.493	0.563
				[1.537]	[1.329]	[0.668]	[0.637]
old					-9.498	-8.646	-7.695
					[9.081]	[8.171]	[7.469]
educ						-5.788	-5.519
						[5.398]	[5.195]
branch							0.365
							[0.339]
Constant	-182.880**	-281.618*	-296.900	-95.520	-129.628	-393.055	-356.758
	[89.921]	[170.547]	[196.018]	[79.300]	[107.616]	[350.415]	[319.952]
Observations	630	630	630	630	630	630	630
No.of regions	42	42	42	42	42	42	42
R-squared	0.0969	0.0576	0.0519	0.0519	0.0548	0.0667	0.0624

The regression equation is estimated with a random effect (RE) model with time trend added. The dependent variable is loan_cap or lending per capita. The models show the impact of variable rdb in its interaction with the variable spill2. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes $p < 0.1$

** Denotes $p < 0.5$

*** Denotes $p < 0.01$

Table A3- 8. MSMEs loans and Spatial Dependence (RDBs vs non-RDBs) – version 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap
rdb	-1.482**	-1.488**	-1.492**	-1.481**	-1.480**	-1.470**	-1.466**
	[0.674]	[0.674]	[0.665]	[0.655]	[0.656]	[0.639]	[0.626]
spill2	-0.311	-0.312	-0.309	-0.280	-0.282	-0.364	-0.474
	[0.226]	[0.226]	[0.221]	[0.204]	[0.206]	[0.231]	[0.327]
spill2#rdb	0.274	0.277	0.280	0.273	0.272	0.267	0.264
	[0.196]	[0.199]	[0.200]	[0.189]	[0.190]	[0.186]	[0.184]
electric		0.547	0.339	0.303	0.336	0.803	1.283
		[0.588]	[0.522]	[0.518]	[0.560]	[0.762]	[1.181]
pi			-10.720**	-7.710**	-6.769**	-6.840**	-7.335**
			[4.220]	[3.245]	[2.986]	[3.068]	[3.158]
rice				2.494**	2.435**	1.819**	1.709***
				[1.069]	[1.014]	[0.754]	[0.639]
old					-2.322	-1.940	-2.873
					[2.920]	[2.754]	[3.429]
educ						-2.222**	-2.668**
						[0.947]	[1.347]
branch							-0.518
							[0.502]
Constant	11.513	25.321	45.556	256.495**	248.058**	147.884**	96.701***
	[15.264]	[28.413]	[33.233]	[121.324]	[113.212]	[74.828]	[34.292]
Observations	630	630	630	630	630	630	630
No.of regions	42	42	42	42	42	42	42
R-squared	0.198	0.214	0.238	0.236	0.235	0.236	0.233

The regression equation is estimated with a random effect (RE) model with the time trend added. The dependent variable is MSME_cap or MSME lending per capita. The models show the impact of variable rdb in interacting with the variable spill2. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes $p < 0.1$

** Denotes $p < 0.5$

*** Denotes $p < 0.01$

Table A3- 9. The influence of RGDP (per capita) on Lending (2sls method)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap	loan_cap
rdb	7.260***	7.473***	7.091***	7.114***	7.036***	7.766***	7.112***
	(0.655)	(0.658)	(0.609)	(0.611)	(0.613)	(0.670)	(0.572)
RGDPcap	1.051***	1.077***	1.050***	1.053***	1.114***	1.231***	1.152***
	(0.0580)	(0.0593)	(0.0550)	(0.0552)	(0.0616)	(0.0690)	(0.0552)
RGDPcap#rdb	-1.042***	-1.065***	-1.023***	-1.026***	-1.017***	-1.097***	-1.026***
	(0.0635)	(0.0634)	(0.0579)	(0.0581)	(0.0581)	(0.0638)	(0.0528)
electric		-0.729	1.105	1.264	-4.143***	-3.177**	-1.605
		(1.052)	(1.086)	(1.104)	(1.485)	(1.615)	(1.477)
pi			30.09***	28.73***	29.89***	44.90***	40.25***
			(9.637)	(9.796)	(9.947)	(11.06)	(10.10)
rice				-0.693	0.499	3.684***	4.578***
				(0.818)	(0.845)	(1.104)	(1.093)
old					58.99***	72.57***	66.36***
					(9.865)	(10.87)	(9.632)
educ						-11.19***	-12.19***
						(2.211)	(2.125)
branch							-0.844***
							(0.258)
Constant	-7.059***	-6.709***	-8.735***	-5.787	-11.44***	-21.88***	-22.97***
	(0.574)	(0.861)	(1.125)	(3.658)	(3.849)	(4.608)	(4.355)
Observations	728	728	728	728	728	728	728
R-squared	0.387	0.360	0.398	0.395	0.381	0.282	0.376
Sargan	5.947	3.539	5.690	5.388	5.022	1.773	1.540
p-value	[0.051]	[0.170]	[0.058]	[0.067]	[0.081]	[0.412]	[0.463]
Wald F-stat	58.423	60.586	70.804	70.383	64.353	59.483	88.949
(critical value at 5%)	[13.910]	[13.910]	[13.910]	[13.910]	[13.910]	[13.910]	[13.910]

The regression equation is estimated with the dependent variable loan_cap or total loans per capita with time trend added. The models show the impact of variable rdb in its interaction with the variable RGDP_cap. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks Wald F-statistic is a weak identification test, with 5% critical value. Sargan test is a test of overidentifying restrictions. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes $p < 0.1$

** Denotes $p < 0.5$

*** Denotes $p < 0.01$

Table A3- 10. The influence of RGDP (per capita) on MSMEs lending (2sls method)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap	MSME_cap
rdb	4.248***	4.231***	4.045***	4.050***	4.003***	4.496***	4.045***
	(0.446)	(0.415)	(0.277)	(0.388)	(0.389)	(0.426)	(0.362)
RGDPcap	0.721***	0.719***	0.705***	0.706***	0.744***	0.823***	0.768***
	(0.0405)	(0.0374)	(0.0372)	(0.0351)	(0.0391)	(0.0439)	(0.0349)
RGDPcap#rdb	-0.720***	-0.719***	-0.698***	-0.699***	-0.694***	-0.747***	-0.698***
	(0.0438)	(0.0400)	(0.0367)	(0.0369)	(0.0369)	(0.0406)	(0.0334)
electric		0.0125	0.825*	0.859	-2.497***	-1.843*	-0.756
		(0.664)	(0.489)	(0.702)	(0.943)	(1.028)	(0.934)
pi			13.11***	12.82**	13.55**	23.71***	20.50***
			(4.928)	(6.226)	(6.319)	(7.037)	(6.390)
rice				-0.145	0.595	2.752***	3.370***
				(0.520)	(0.537)	(0.702)	(0.692)
old					36.61***	45.81***	41.52***
					(6.266)	(6.914)	(6.093)
educ						-7.582***	-8.274***
						(1.407)	(1.344)
branch							-0.584***
							(0.163)
Constant	-4.134***	-4.127***	-5.000***	-4.382*	-7.892***	-14.96***	-15.72***
	(0.397)	(0.543)	(0.611)	(2.325)	(2.445)	(2.932)	(2.755)
Observations	728	728	728	728	728	728	728
R-squared	0.484	0.487	0.509	0.508	0.497	0.414	0.497
Sargan	4.932	4.962	6.727	6.645	6.207	2.269	2.026
p-value	[0.084]	[0.083]	[0.034]	[0.036]	[0.044]	[0.321]	[0.363]
Wald F-stat	48.371	60.586	70.804	70.383	64.353	59.483	88.949
(critical value at 5%)	[13.910]	[13.910]	[13.910]	[13.910]	[13.910]	[13.910]	[13.910]

The regression equation is estimated with the dependent variable MSME_cap or MSME lending per capita with the time trend added. The models show the impact of variable rdb in its interaction with the variable RGDP_cap. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks Wald F-statistic is a weak identification test, with 5% critical value. Sargan test is a test of overidentifying restrictions. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes $p < 0.1$

** Denotes $p < 0.5$

*** Denotes $p < 0.01$

Table A3- 11. Bank lending and geographical distance (2sls method)

	(1) loan_cap	(2) MSME_cap
rdb	-2.315***	-0.949***
	(0.323)	(0.085)
distance	-0.061***	-0.014***
	(0.005)	(0.001)
distance#rdb	0.017***	0.004***
	(0.001)	(0.0003)
electric	0.127	0.556
	(1.658)	(0.437)
pi	-95.870***	-25.290***
	(16.820)	(4.436)
rice	-2.488**	-0.921***
	(1.175)	(0.310)
old	-17.77**	-4.714**
	(8.810)	(2.323)
educ	5.003**	0.424
	(2.255)	(0.595)
branch	-0.302	-0.143*
	(0.281)	(0.0740)
Constant	22.28***	7.329***
	(5.003)	(1.319)
Observations	728	728
R-squared	0.285	0.304
Sargan	1.416	2.213
p-value	[0.492]	[0.330]
Wald F-stat	22.300	22.300
(critical value at 5%)	[13.910]	[13.910]

The regression equation is estimated with the dependent variable loan_cap or loans per capita and MSME_cap or MSME lending per capita with time trend added. The models show the impact of variable rdb in its interaction with the variable distance. Variable rdb is a dummy variable, 1 is for RDB banks and 0 for non-RDB banks Wald F-statistic is a weak identification test, with 5% critical value. Sargan test is a test of overidentifying restrictions. The data is regional data (regional/provincial data) from the years 2002–2016. The robust standard error is applied. Standard errors are in parentheses.

* Denotes p < 0.1

** Denotes p < 0.5

*** Denotes p < 0.01

Table A3- 12. Multi-collinearity test with LoanCap as the Dependent Variable

LoanCap	**VIF**	**1/VIF**
Model 1.1		
rdb	192.76	0.005
RGDPcap	8.39	0.119
RGDPcap#rdb	5.12	0.195
distance	30.81	0.032
distance#rdb	3.39	0.294
spill1	96.50	0.010
spill1#rdb	3.45	0.289
Mean VIF		
Model 1.2		
LoanCap	**VIF**	**1/VIF**
rdb	41.01	0.024
RGDPcap	4.99	0.200
RGDPcap#rdb	3.09	0.323
distance	32.34	0.030
distance#rdb	3.09	0.323
Mean VIF	16.90	
Model 2.1		
LoanCap	**VIF**	**1/VIF**
rdb	63.68	0.016
RGDPcap	9.08	0.110
RGDPcap#rdb	5.54	0.180
distance	30.27	0.033
distance#rdb	3.33	0.300
spill2	9.87	0.101
spill2#rdb	3.81	0.262
Mean VIF	17.94	
Model 2.2		
LoanCap	**VIF**	**1/VIF**
rdb	41.01	0.024
RGDPcap	4.99	0.200
RGDPcap#rdb	3.09	0.323
distance	32.34	0.030
distance#rdb	3.09	0.323
Mean VIF	16.90	

Table A3- 13. Multi-collinearity test with MSMECap as the Dependent Variable

MSMECap	**VIF**	**1/VIF**
Model 1.1		
rdb	192.76	0.005
RGDPcap	8.39	0.119
RGDPcap#rdb	5.12	0.195
distance	30.81	0.032
distance#rdb	3.39	0.294
spill1	96.50	0.010
spill1#rdb	3.45	0.289
Mean VIF	48.63	
Model 1.2		
MSMECap	**VIF**	**1/VIF**
rdb	41.01	0.024
RGDPcap	4.99	0.200
RGDPcap#rdb	3.09	0.323
distance	32.34	0.030
distance#rdb	3.09	0.323
Mean VIF	16.90	
Model 2.1		
MSMECap	**VIF**	**1/VIF**
rdb	63.68	0.016
RGDPcap	5.57	0.179
RGDPcap#rdb	9.08	0.110
distance	30.27	0.033
distance#rdb	3.34	0.299
spill2	9.87	0.101
spill2#rdb	3.81	0.262
Mean VIF	15.83	
Model 2.2		
MSMECap	**VIF**	**1/VIF**
rdb	41.01	0.024
RGDPcap	4.99	0.200
RGDPcap#rdb	3.09	0.323
distance	32.34	0.030
distance#rdb	3.09	0.323
Mean VIF	16.90	

Table A3- 14.The matrix of the neighbouring regions

ID	Provinces	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	Aceh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2	North Sumatera	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
3	Riau	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4	West Sumatera	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
5	Jambi	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	1
6	Bengkulu	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	1
7	South Sumatera	0	1	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Lampung	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
9	West Kalimantan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Central Kalimantan	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
11	South Kalimantan	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	East Kalimantan	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
13	DKI Jakarta	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0
14	West Java	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Central Java	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
16	D.I Yogyakarta	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
17	East Java	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
18	Bali	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
19	West Nusa Tenggara	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	East Nusa Tenggara	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	South Sulawesi	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
22	Central Sulawesi	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
23	Southeast Sulawesi	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
24	North Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Maluku	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Papua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Chapter Four

The Regional Development Banks (RDBs) and Micro and Small Medium Enterprises (MSMEs)

4.1 Introduction

Many shreds of evidence proved the finance/growth nexus (King and Levine, 1993; Beck, Levine and Loayza, 2000; Levine, 2005), while recent studies shown that the development of small and medium enterprises, as well as micro, small, and medium enterprises (MSME), is closely linked to economic growth. Ayyagari, Beck, and Demirguc-Kunt (2007) found that MSMEs contribute roughly 50% of GDP on average. Dietrich (2012) states that MSMEs with fewer than 250 employees represent two thirds of the formal workforce, yet MSMEs still face obstacles related to growth, due to a lack of external finance. The opaqueness is one of the main issues that prevent banks from providing loans to this sector (De la Torre, Martínez Pería, and Schmukler, 2010). Adding to this opacity, lack of collateral, small cash flows, high-risk premiums, underdeveloped bank-borrower relationships, and high transaction costs augment problems for MSMEs. These unfavourable conditions may undermine the performance of the lender, and as a result may affect the attitude of banks (as lenders) towards MSMEs. Ardic, Mylenko and Saltane (2011) add that the opaqueness related to inadequate credit history, and difficulty proving creditworthiness as the 'conventional wisdom' claimed that the solution is to have soft information, which is more accessible by small and niche banks (see also Berger et al.1995; Strahan & Weston, 1998; Berger et al., 2005; Beck et al., 2011).

This chapter focuses on how the lending to micro, small and medium enterprises (MSMEs) contributes to the economy at a regional level. The research is firstly motivated by the study of Hakenes et al. (2015). They address the contribution of small banks at a regional level in promoting economic growth, particularly in regions that have lower initial endowments.[1] Yet, this study does not examine how the support of small banks through the issuing of loans to the small business sector contributes to the regional economy. The second motivation comes from the works of Beck et al. (2005) and Karnani (2007). They found that the growth of MSMEs has a significant impact on creating jobs but cannot lower the poverty gap. Moreover, their

[1] Using data from the European region, Hakenes et al. (2015) showed that a combination of regional knowledge and better diversification programmes organised by central entities see small banks that operate at the regional level experience a competitive advantage that can boost the regional economy.

studies do not consider the contribution of the banking sector in elucidating the relationship between MSMEs and the economy; however, Bhaumik & Piesse (2008) argued that this sector is extremely dependent on banking support. Despite many reasons for the unimprovement in the poverty gap referred to by Karnani (2007), such as the low level of wages, the size of households, the incomes of other household members or the productivity rate of MSMEs, it is likely that a lack of information (or difficulty in retrieving information) might connect with the banks' attitude towards delivering loans to this sector. The banks need to sustain their business by achieving the maximum returns possible and this may create preferential lending for MSMEs and lead to a further market failure due to the opaqueness issue.

This study will enrich the literature by examining how public banks at a regional level may play a role in improving the regional economy by supporting MSMEs in their region through the provision of loans. Studying the contribution of MSME loans with the assistance of RDBs is important. The reason for this is because RDBs are labelled as public banks and they are expected to provide the services needed for fulfilling their social and development goals in their region. In particular, as regional banks, they have a competitive advantage in terms of retrieving regional knowledge, compared to interregional banks or private banks (Williams & Gardener, 2003; Hakenes et al., 2015; Zhang et al., 2016)[2] which may lower the possibility of credit rationing due to the opaqueness issue. By employing regional data, this study aims to address this gap in the literature by presenting the implications of MSME credit not only on the regional economy but also on the unemployment level and poverty gap.

To study the impact of MSME loans on the regional economy, we consider three factors that might amplify the influence of these loans on the economy. First is the quality of the intermediation, second is banking market concentration, and third is spatial dependence. Wachtel (2003) stated that the high mobilisation of the funds will not impact the economy if the banking sector does not allocate effectively. Koivo (2002) explains that a qualitative improvement of intermediaries' abilities should increase the liquidity of investment, while

[2] Zhang et al. (2016) found that pre-existing information built through long-term relationships enables small banks or regional banks to easily access information, and even during bad situations, the disbursement of the credit is less compared to the big banks. Furthermore, diseconomies of scale might cause the bigger banks difficulty in lending to the MSME sector (Berger, Kashyap, Scalise, Gertler, and Benjamin, 1995), for instance, the complex structure of banks results in them having complicated procedures (Zhang et al., 2016) and vulnerability with regard to agency costs and asymmetric information (Berger and Udell, 2002).

Demetriades and Hook Law (2006) found that financial development has greater effects on economic growth when the financial system is embedded within a sound institutional framework, as it reflects that better intermediaries help to reduce slack in the financial system and foster capital productivity through investing in appropriate projects. Hasan, Koetter and Wedow (2009) and Hasan et al. (2009) indicate how the quality of banks can amplify the impact of the loans in affecting an improvement in regional incomes by connecting the quantity of loans and the quality of loans in affecting the economy[3]. Following the ideas from Hasan et al. (2009) and Hakenes et al. (2015), we will test if the quantity and quality of financial intermediation be able to boost the regional economy through MSMEs loans. Testing these two variables with MSMEs loans might shed some light on how public banks deal with a sector that may have a social impact but is risky. Nevertheless, Hasan et al. (2009) suggest that it is possible that a bank's efficiency and credit effect will offset each other. A high-efficiency bank may indicate that banks excessively scrutinise their supply of loans, and for example, avoid lending to opaque small businesses that might bear future loan write-offs given difficult and costly assessments.

In the second factor, examining the banks at regional level, it is crucial to consider the difference in regional endowment across regions in explaining the impact on MSME loans on the regional economy. Following Hakenes et al. (2015), we interpret the theory according to the position of the regional bank. Since certain regions may be inherited with better endowments, and as a result attract more people, businesses and even banks to open their business/branches there (De Young, Klier & McMillen, 2004). As such, the size of RDBs may erode as the market is occupied by a large number of banks, particularly bigger banks. Contrastingly, in worse-endowed regions, regional banks may have a bigger market share in proportion to commercial banks. In addition, RDBs in poor regions may have more choices in terms of dependable potential target borrowers, while RDBs in wealthy regions may find it difficult to provide loans, as the best options in terms of dependable potential borrowers are taken by larger banks. Hence, MSME lending, as distributed by RDBs within a less concentrated market, may be able to significantly boost the regional economy, contribute to job creation, lower the poverty gap and be able to control their non-performing loans (NPLs).

[3] Belke, Haskamp and Setzer (2016) tested the influence of better intermediation quality on regional growth during 'bad' and 'good' times and concluded that more efficient banks promote growth under both of these conditions.

Third, the spatial dependence is also an important factor that should be considered when we connect MSME loans and the economy of the region. The different levels of endowment might play a role in directing capital out from the home region. However, referring to the theory of Hakenes and Schnabel (2006), if RDBs obey their mandate, spatial dependence will have a lower impact on the influence of lending distributed in the home region and it might lower the potential for capital flight from a region, caused by a disadvantaged location surrounded by wealthy regions.

Taking advantage of the geographical features of Indonesia, this paper contributes to the literature by studying 26 RDBs and corresponding regional statistics from the period 2001 to 2016. Focusing on one country may serve as a solution to the mixed results that generally occur in MSMEs studies, as in Beck et al. (2005). This sector is important to the economy of Indonesia, as among all businesses in Indonesia, 99% are MSMEs, and these contribute significantly to revenue (Irjayanti and Azis, 2012; Damayanti and Adam, 2015). This represents more than 50% of Indonesia's total GDP, and represents up to 97% of workers (Irjayanti and Azis, 2012; Damayanti and Adam, 2015). MSMEs helped Indonesia when it experienced the impact of the Asian crisis, which impacted Indonesia in 1997. Berry, Rodriguez and Sandee (2010) found that large and medium firms significantly declined in 1998 compared to 1997, decreasing by 5.4% and 27.2%, respectively. Contrarily, small firms performed well, and grew by 34.9% in 1998. Hence, the Government of Indonesia (GOI) concluded that support for this sector is relatively low (Mourougane, 2012), due to high transaction costs, the risk of loan default, and the lack of a small scale credit guarantee system. As a result, Bank Indonesia [BI] circular letter No.15/35/DPAU, dated 29 August 2013 (concerning Lending or Financing by Commercial Banks for the Development of Micro, Small and Medium Enterprises), Bank Indonesia (BI) stated detailed procedures for the imposition of sanctions on banks that are unable to meet the credit or financing ratio of MSMEs, according to the stages specified, and that have NPL (non-performing loans) of higher than 5%[4].

[4] In addition, in regulation No. 17/12/PBI/2015, dated 25 June 2015 (as an amendment of BI Regulation No. 14/22/PBI/2012, dated 21 December 2012), regarding the Granting of Credit or Financing by Conventional Banks and Technical Assistance in the Framework of Micro-, Small- and Middle-Scale Business Development, BI informed administrative sanctions for banks that failed to fulfil the required credit ratio.

To present a complete picture of MSMEs' contributions to the regional economy, this paper will not only observe MSMEs loans with the regional economy as an aggregate, but will also observe loans in the agricultural sector, as well as in the low-income regions. The agricultural sector has the highest prevalence of MSMEs loans in Indonesia (Curtis, 2016), but also presents a number of risks (Curtis, 2016). Testing the impact of MSMEs loans on low-income classes helped us to capture whether MSME loans benefitted all income classes in the economy or it might connect with the disparity across regions. In addition, to understand the issue of the poverty gap within the region, we added two variables: percentage of poor people in rural areas, and those in urban areas. Including these variables will provide a clear indication of the specific parts of regions that are impacted most by MSME lending, and how this will eventually affect the poverty gap. Lastly, to gain a comprehensive picture of the situation at hand, we will add a fourth variable, i.e. banks' income variables, which will enable us to understand the motive for the specific attitudes related to MSME lending, and how it is linked to regional economy indicators.

The remainder of this paper is organised as follows. Section 4.2 reviews the related literature. Section. 4.3 formulates the hypotheses. Section 4.4 discusses the methodology and data set. Section 4.5 presents the empirical results. Section 4.6 concludes.

4.2 Literature

4.2.1 MSMEs and its contribution to the economy

The notion about the positive link between the contribution of MSMEs and economy growth has been documented by many scholars across countries, in developed and developing economies. The role of MSMEs has become crucial, as it relates to the improvement of gross domestic product and is able to address employment issues.

Using 76 countries, Ayyagari, Beck and Demirgüç-Kunt (2007) state that formal MSMEs contribute 50 percent of GDP on average in high income countries. Using Asian countries, and employing data from the Chinese National Bureau of Statistics, (Wellalage & Locke, 2017) state that this sector contributes more than 50% of China's GDP, and 50% of Bangladesh's industrial GDP (Wellalage & Locke, 2017). In India, the Ministry of MSME reported that up to year 2014, the MSME sector accounted for more than 95% of industrial units, and contributed 45% of the manufacturing outputs and 40% of exports (Nikaido, Pais & Sarma, 2015). In terms of employment, Ayyagari, Beck and Demirgüç-Kunt (2007) state that jobs in small and medium enterprises account for more than half of all formal employment worldwide, and 45% of formal employment in developing countries. Labour intensity may be one reason for MSMEs providing more jobs, in OECD countries roughly 70% of jobs on average, and 45% in emerging economies.

Despite the above facts, Beck et al. (2005) failed to reject the hypothesis that MSMEs do not exert a causal impact on growth and poverty, a confounding factor they suspect as a result of cross-country analysis. In addition, they found that the development of MSMEs does not reduce this disparity. In Bangladesh specifically, Bauchet and Morduch (2013) found that the impact of MSMEs is mostly enjoyed my males, since most of the women in Bangladesh are not in the labour market. Using India, Karnani (2007) states that the declining of unemployment does not followed by the poverty, and stated that it might connect with the level of wages, size of households and income of other household members. Wages and productivity share a close relationship and as such, Karnani (2007) claims that lower levels of productivity in India having fewer than one tenth the number of comparable firms in other emerging economies may give rise to this problem. In addition, Karnani (2007) argued that the borrowers living above the poverty line and the borrowers living below the poverty line give different response regarding in utilizing the credit. The borrowers that have more income have confidence to invest in new technologies, that will most likely increase income flows, instead the low-income borrowers tend to be more conservative.

In terms of credit constraint, this problem has been identified as a primary issue for sustaining MSMEs (Zhang et al., 2016), which may be related to firm performance (Zhang et al., 2016), opaqueness (De la Torre, Martínez Pería & Schmukler, 2010), and a lack of collateral (Stein, Ardic & Hommes, 2013; Zhang, Song & Zhong, 2016; Wellalage & Locke, 2017). Without proper historical financial reporting, the difficulty of obtaining funds from banks may eventually hinder the MSMEs growth. These issues raise the price of lending, because collecting information is costly and takes time.

Accordingly, some researchers claim that small banks may be more favourable, compared to larger banks, as the small banks comparative advantages in terms of relationship lending. Berger, Kashyap, Scalise, Gertler and Benjamin (1995) show that larger banks, because of diseconomies of scale, provide fewer loans to MSMEs, compared to small banks. Strahan and Weston (1998), and Berger, Miller, Petersen, Rajan and Stein (2005), obtain similar findings, but also find that support for MSMEs decreased following mergers and acquisitions. Contrasting results were obtained by (Zhang et al., 2016), who used data related to mergers involving savings banks in Germany to show that support for MSMEs remained consistent, even after mergers. Existing information from established, pre-existing relationships will enable small banks to access soft information more easily than larger banks, both in normal and abnormal situations, e.g. a time of crisis (Zhang et al., 2016). Furthermore, Zhang et al. (2016) also added, the simple structure of small banks enables them to verify information, while larger banks face dealing with more complicated procedures. Agency costs and asymmetric information may also be problematic for large banks; this is because the larger the bank, the larger the potential for agency conflicts to be increased. Berger and Udell (2002) discovered that relationship lending creates agency problems between companies and bank credit officers, between credit officers and upper managers, and between management teams and shareholders.

Theoretically, Hakenes et al. (2015), provide evidence that small banks at the regional level are vital for promoting the regional economy, and that banking efficiency is an important factor for explaining the economic improvements. An efficient bank means the banks be able to allocate the scarce resources efficiently when providing their products and services (Motta, 2004). Cost and profit efficiency definitions correspond, respectively, to two important economic objectives: cost minimisation and profit maximisation. Cost efficiency is the ratio between the minimum cost at which it is possible to attain a given volume of production and the cost actually incurred. Profit efficiency is a broader concept than cost efficiency since it takes into account the effects of the choice of a certain vector of production both on costs and on revenues. The cost efficiency might not work parallel with the profit efficiency as Rogers (1998) explained that the differences might occur because profit efficiency is more likely driven by revenues rather than costs.

Hakenes et al. (2015) surmised that the improvement of small banks' quality enables them to contribute to the output of the economy (GDP), wage level will likely increase. To prove their theory, Hakenes et al. (2015) used the GMM model to analyse 457 savings banks, as well as regional and bank market share information pertaining to 440 administrative districts, from 1995 to 2004 in Germany. They found that small banks' development, in terms of efficiency level, significantly spur the regional economy; furthermore, they also found that small banks are also able to prevent capital drain from wealthy regions. While(BI & LPPI, 2015)found that not only is the quality of banks important, or the quantity of loans provided, but that a combination of these two factors are important for affecting the economy.

4.2.2 MSME in Indonesia

The definition of the MSME varies globally. Additionally, there is a lack of consistent, standardised, and reliable data on the MSME segment. Even when data are available, it can be difficult – if not impossible – to make cross-country comparisons, as definitions of what constitutes a micro, small, or medium-sized enterprise are largely dependent on local context. In reference to the Law of the Republic of Indonesia no. 20, year 2008, micro, small, and medium enterprises are defined as follows: micro firms are those with net assets of maximum IDR 50 million (land and buildings excluded), or with total annual sales from IDR 300 million. Small firms are enterprises with net assets from IDR 50 million to IDR 500 million (land and buildings excluded), or with total annual sales from IDR 300 million to IDR 2.5 billion. Medium-sized firms are enterprises with net assets from IDR 500 million to IDR 10 billion (land and buildings excluded), or with total annual sales from IDR 2.5 to IDR 50 billion.

The contribution of MSMEs to national GDP, according to the current price, in 2011 amounted to IDR 4,321.8 trillion, or 58.05%, while in 2012, this amounted to IDR 4,869.5 trillion, or 59.08% (BI & LPPI, 2015). Based on the proportion of business units, the agricultural sector, which comprises agriculture, animal husbandry, forestry, and fisheries, is the largest GDP contributor at 48,85%, followed by the trade, hotel, and restaurant industries at 28.83% (BI & LPPI, 2015). Furthermore, the MSME sector has also helped to absorb employment in the country. In reference to a report published by CNN Indonesia (2016), workforce absorption in the MSME sector grew from 96.99% to 97.22% over the past five years[5]. MSMEs have been the main contributors to employment growth in Indonesia in recent years. One reason for this positive performance may be the low reliance of micro and small firms on formal markets and credit, which allows them to respond more quickly to sudden shocks, compared to large firms (Berry, Rodriguez & Henry, 2002). MSMEs, as opposed to large firms, are able to indicate their ability to face an economic crisis. Using Indonesia as an example, (Bhaumik & Piesse, 2008) found that small firms performed well, growing by 34.9% in 1998, in opposite, the large- and medium-sized firms significantly declined in 1998, compared to 1997, respectively, by

[5]. "Kontribusi UMKM Terhadap PDB Tembus Lebih Dari 60 Persen" [The MSMEs' Contribution to Indonesian GDP is more than 60 percent], CNN Indonesia, 21 November 2016.

5.4% and 27.2%. This happened because MSMEs are less dependent on foreign debt, export orientation, and relying on domestic inputs.

Accordingly, based on experience, the Indonesian Government (central bank) issued a regulation related to the allocation of credit to micro and small businesses in 2012[6], which obligated commercial banks to distribute at least 20% of their loan portfolio to small business enterprises. This new regulation is a revision of previous regulations that required banks to allocate 20% of their loan portfolio to small businesses (Pakjan, 1990)[7]. Furthermore, this policy was changed in 1997 by the Decree of the BI Director no. 30/4/KEP/DIR, April 1997, which changed the minimum threshold to 22.5% of net loan expansion. This regulation was implemented up to year 2001, when the government issued another BI regulation, no. 3/2/PBI/2001 on small business finance, on 4 January. This rule saw the government permit banks to provide loans according to their ability. After 2001, commercial banks were no longer compelled to provide a minimum percentage of their portfolio to small businesses; however, the GOI forced banks to detail the percentage of MSME loans they distributed each year in their financial report. In 2012[8], the GOI obligated commercial banks to distribute at least 20% of their loan portfolio to micro, small, and medium-sized enterprises. With these supports from Indonesian banking, it is hoped that classic problems such as access to capital and to financial institutions can be overcome. According to an Indonesian Banking Statistics Report, published by OJK (Financial Services Authority)[9] in 2017, national public banks (Bank Persero) are the biggest contributors to MSMEs (compared to the other commercial banks) at 55.7%, followed by national private banks at 34.95%, RDBs at 7.53%, and joint venture banks and foreign banks at 1.8%. Whilst, the highest non-performing loans (NPL) for MSMEs lending was found in the case of RDBs at 10.62%, followed by foreign banks and joint venture banks at 6.02%, private

[6] BI regulation no. 14/22/PBI/2012, 21 December 2012, regarding commercial banks' loans or financing for MSMEs, and technical assistance for the development of MSMSs.

[7] On 29 January 1990, the Indonesian Government issued a policy package known as Pakjan. This package is a continuation of a previous packet in the banking sector, which aims to mobilise funds, improve efficiency of the banks and reducing subsidies provided by Bank Indonesia. The most important purpose of this package was to increase the supply of funds for small businesses (SBs), by providing at least 20% of the bank's financing to SBs.

[8] BI regulation No. 14/22/PBI/2012 on 21 December 2012 regarding commercial banks' loans or financing for MSMEs [Micro Small and Medium Enterprises] and technical assistance for the development of MSMSs. Banks are allowed to achieve the ratio of lending to SME/MSME up to the following 6 years with the stages as follows: until the end of 2013 and 2014, the ratio of MSMEs finance is tailored to the capabilities of the commercial banks; up to the end of 2015, the ratio of MSMEs finance should achieve at least 5%; 2016: 10%; 2017: 15%, and 2018: 20% (BI regulation no.14/22/PBI/2012 on 21 December 2012 regarding the commercial bank loans or finance to MSMEs and the technical assistance for the development of MSMEs).

[9] The full report can be accessed at https://www.ojk.go.id/id/kanal/perbankan/data-dan-statistik/statistik-perbankan-indonesia/Pages/Statistik-Perbankan-Indonesia---Desember-2017.aspx

banks at 3.49% and national public banks at 3.28%. Based on a report published in December 2016 (Indonesian Banking Statistics Report), Java island remains the favourite area in which to distribute MSMEs credit with a total of 57.7%, or half of the total credit for 34 provinces. Java comprises five provinces (regions), and the distribution statistics provided above may explain the poverty gap between regions, particularly between regions that are part of Java and those outside the island.

When dealing with MSMEs, banks may face a significant risk due to the uncertainty of regular cash inflows, or problems with liquidity. However, at the same time, the dependence on bank credit is higher for MSMEs than in larger organisations (International Finance Corporation, 2017). Although more than 40% of MSMEs in Indonesia are interested in applying to banks for credit, there exists at least a 19% MSMEs gap (compared to GDP) that cannot be fulfilled by banks (International Finance Corporation, 2017). This is higher than for Indonesia's neighbours, Malaysia (7%), Thailand (10%), and Vietnam (12%). This gap may be related to a lack of the proper collateral; based on a report by the Central Bureau of Statistics of Indonesia (BPS, 2017), this is the main reason why SMEs do not borrow from banks. According to the report, 56.89% of MSMEs in Indonesia did not borrow from banks (of total MSMEs surveyed), 18.43% stated collateral as being a barrier for them to accessing loans, 11.46% stated high interest rates is the reason for why they decided not to apply for loans, and 12.65% stated a too-complicated procedure as the reason for not applying for a loan.

4.3. Hypothesis Development

The objective of this study is to investigate the impact of MSME loans distributed by regional development banks (RDBs) on economic growth. Albeit many scholars have documented the significant impact of having MSMEs in the economy, credit rationing is still one of the major problems for MSMEs with regard to their opaqueness (De la Torre et al., 2010 ; Ardic, Mylenko & Saltane, 2011). Through certain rules (Decree of the BI Director no.30/4/KEP/DIR, April 1997; BI regulation, no.3/2/PBI/2001; BI regulation no.14/22/PBI/2012), the Government of Indonesia (GOI) has tried to mitigate the problem by officially setting a certain percentage of MSMEs loans that need to be disbursed by the commercial banks. Williams & Gardener (2003) and Hakenes, Schmidt and Xie (2009), and Zhang et al. (2016) stated that the regional banks have a competitive advantage with regard to collecting information as they are superior in local knowledge and their simple structure enables them to avoid complicated procedures. As we focus on RDBs, we suspect that their local knowledge and calling as social and development agencies could be a solution for the credit rationing problem and the issue of opaqueness of MSMEs.

Neverthless, Hasan, Koetter and Wedow, (2009) and Koetter and Wedow (2010) state that loans disbursement is not enough to solely affect economic growth, if it is not allocated properly, whereby they emphasise the importance of an efficient intermediary process. However, when using a different indicator i.e. the number of MSMEs, Beck et al. (2005) found no correlation between the increasing number of micro, small and medium enterprises and economic development. The insignificance found by Beck et al. (2005), possible happen since MSMEs may focus on a certain sector such as agriculture, and therefore, it will be fitting if we consider specific regional GDP when assessing their impact. Hence, this leads to the following hypotheses:

Hypothesis (1) : The quantity of MSME loans (distributed by the RDBs) and the quality of the capital allocation are important to boost the regional economy.

Hypothesis (1.1) : The MSME loans distributed by more efficient RDBs have a significant impact on the regional gross domestic product (regional GDP).

Hypothesis (1.2) : The MSME loans distributed by more efficient RDBs have a significant impact on the agriculture sector.

According to the characteristics of MSMEs, bank efficiency and the credit effect may offset each other. A high-efficiency bank may indicate that banks excessively scrutinise their supply of loans and for example, avoid lending to opaque small businesses that might bear future loan write-offs given difficult and costly assessments ((Zhang et al., 2016). Adding to the opaqueness, a lack of collateral, small cash flow, high risk premiums, underdeveloped bank–borrower relationships and high transaction costs augment the problems for MSMEs, and these unfavourable conditions may undermine the efficiency of the lender, and therefore affect the attitude of the banks as lenders, as high-efficiency banks may avoid lending to the MSME sector. Although RDBs are attached to a social and development mandate, and may have access to regional information, there is a chance that the opaqueness and lack of proper financial information may result in the banks choosing certain borrowers, or a certain sector based on pre-existing information (Zhang et al., 2016). Directing the loans given these unfavourable conditions may increase the risk of unpaid debt and hamper the performance of the banks. It could be argued that the two regulations set by the GOI on the requirements for lending to the

MSME sector and the simultaneous monitoring of the NPL level might trigger the potential for the moral hazard of the banks' managers. The banks may try to control their performance and as a consequence, the MSMEs have a positive connection with unemployment but not with the poverty level, which might explain the findings of Beck et al. (2005) and Karnani (2007) and lead to the following hypotheses:

Hypothesis (3) : The MSMEs loans distributed by the better RDBs have correlation with income inequalities.

Hypothesis (3.1) : The MSMEs loans distributed by the better RDBs have a significant impact with the poverty gap.

Hypothesis (3.2) : The MSME loans distributed by the better RDBs have a significant impact with the low-income regions or the poorest segment of the society.

Hypothesis (3.3) : The MSMEs loans distributed by the better RDBs have a significant impact with the percentage of poor people in urban area.

Hypothesis (3.4) : The MSMEs loans distributed by the better RDBs have a significant impact with the percentage of poor people in rural area.

Hypothesis (4) : The MSMEs loans distributed by the better RDBs have a significant relationship with the RDBs' income.

Hypothesis (4.1) : The MSMEs loans distributed by the better RDBs have a significant relationship with RDBs' price of lending.

Hypothesis (4.2) : The MSMEs loans distributed by the better RDBs have a significant relationship with RDBs' net interest income.

Hypothesis (4.3) : The MSMEs loans distributed by the better RDBs have a significant relationship with RDBs' non-performing loans.

With more assets or capital, the impact of the RDBs' existence may be significant in improving the regional economy, but we argue that this depends on the level of banking market concentration in each region. Regionally, an intensity of the banking concentrated market might occur due to the different endowment level that the regions have; people tend to move to the richer regions and hence pull the investors or banks to locate their business there due to the potential business location (Conrad et al., 2009; De Young et al., 2004; Gallup et al., 1999; Grinblatt & Keloharju, 2001). Although the size of the banks may be in line with the development of the economy, with high market concentration caused by agglomeration, it is possible that the size of the RDBs is proportionally smaller compared to other banks in the same region, although this might look bigger compared to other RDBs. The role of the RDBs may be different in richer regions compared to poorer regions, as the richer regions may have abundant MSME credits from many banks, while the poorer regions may have less credit offers due to the low endowment issue (Hakenes & Schnabel, 2006). If we assume that the private banks are more interested in allocating their capital to the high endowment regions, then the contribution of the RDBs become quite significant in a less concentrated market. Furthermore, we suspect that with a less concentrated or less competitive market, the RDBs may be able to target more good potential borrowers, while in the rich regions, they need to compete with the big banks. In the rich regions, the big banks, with more funds and technology may more easily attract potential good debtors while leaving the RDBs with limited borrowers that may not be qualified enough to get credit. On the contrary, the RDBs located in less favourable regional conditions may have to work hard to provide a service but at the same time be able to control their healthy financial indicators by having less NPLs and maintaining their income to sustain their business. With these objectives, they may have to direct their loans carefully and this might cause disparity within and across regions. Hence, this leads to the following hypotheses.

Hypothesis (5) : The impact of MSME loans may provide different outcomes to the regional economy in relation to the different banking market concentration.

Hypothesis (5.1) : The impact of the MSME loans (distributed by RDBs) on the regional GDP will be pronounced when the banks have more market share, or when the regions are less concentrated.

Hypothesis (5.2) : The impact of the MSME loans (distributed by RDBs) on the agriculture sector will be pronounced when the banks have more market share, or when the regions are less concentrated.

Hypothesis (6): The impact of the MSME loans (distributed by RDBs) on the unemployment level will be obvious when the banks have more market share, or when the regions are less concentrated or have credit rationing.

Hypothesis (7) : There is a correlation between income inequality and the MSME loans distributed in a different banking market concentration.

Hypothesis (7.1) : The impact of the MSME lending (distributed by RDBs) on the poverty gap will be pronounced when the banks have more market share, or when the regions are less concentrated.

Hypothesis (7.2) : The impact of the MSME loans (distributed by RDBs) on the low-income classes sector will be pronounced when the banks have more market share, or when the regions are less concentrated.

Hypothesis (7.3) : The impact of the MSME lending (distributed by RDBs) on poor people in urban areas will be pronounced when the banks have more market share, or when the regions are less concentrated.

Hypothesis (7.4) : The impact of the MSME lending (distributed by RDBs) on poor people in rural areas will be pronounced when the banks have more market share, or when the regions are less concentrated.

Hypothesis (8) : There is a significant relationship between the MSME lending and the RDBs' income when the banks have more market share, or when the regions are less concentrated.

Hypothesis (8.1) : There is a significant relationship between the MSME lending and the RDBs' price of lending when the banks have more market share, or when the regions are less concentrated.

Hypothesis (8.2) : There is a significant relationship between the MSME lending and the RDBs' net interest margin when the banks have more market share, or when the regions are less concentrated.

Hypothesis (8.3) : There is a significant relationship between the MSME lending and the RDBs' non-performing loans when the banks have more market share, or when the regions are less concentrated.

Concerning the effect of geographical issues on MSME loan distribution, we are aware of the possibility of capital flight due to the difference in endowments. Surrounded by less endowment and in order to maintain their performance, the RDBs may be tempted to find other regions that have a better endowment to lend. If RDBs obey their mandate, we expect that the neighbouring regions may have less of an impact on the distribution of MSME loans, which later influences the home region's economy. As stated by Hakenes and Schnabel (2006), the existence of RDBs is crucial to avert the potential of capital flight from a region caused by a disadvantageous location surrounded by wealthy regions, and thus it leads to following hypotheses:

Hypothesis (9) : If RDBs implement their mandate properly, MSME loan distributions, as well as the development of the quality of the intermediation, will affect the economy of the home regions as the spatial issue has less influence in affecting their MSME target.

Hypothesis (9.1) : The improvement of the quantity and the quality of MSME loan distributions have a significant influence on the regional GDP of the home regions as the spatial issue has less influence in affecting their MSME target.

Hypothesis (9.2) : The improvement of the quantity and the quality of MSME loans distributions have a significant influence on the agriculture sector of the home regions as the spatial issue has less influence in affecting their MSME target.

Hypothesis (10) : The improvement of the quantity and the quality of MSME loan distributions have a significant influence on the unemployment level of the home regions as the spatial issue has less influence in affecting their MSMEs target.

Hypothesis (11) : The spatial issue has less influence on the MSME borrowers' target, eventually affecting income inequality within a region.

Hypothesis (11.1) : The improvement of the quantity and the quality of MSME loan distributions have a significant influence on the poverty level of the home regions as the spatial issue has less influence in affecting their MSME target.

Hypothesis (11.2) : The improvement of the quantity and the quality of MSME loan distributions have a significant influence on the percentage of poor people in urban areas of the home regions as the spatial issue has less influence in affecting their MSME target.

Hypothesis (11.3) : The improvement of the quantity and the quality of MSME loan distributions have a significant influence on the percentage of poor people in rural areas of the home regions as the spatial issue has less influence in affecting their MSMEs target.

Hypothesis (12) : The improvement of the quantity and the quality of MSME loan distributions have a significant influence on RDBs' income in home regions as the spatial issue has less influence in affecting their MSMEs target.

Hypothesis (12.1) : The improvement of the quantity and the quality of MSME loan distributions have a significant relationship with the interest income generated by the RDBs in the home regions as the spatial issue has less influence in affecting their MSME target.

Hypothesis (12.2) : The improvement of the quantity and the quality of MSME loan distributions have a significant relationship with the net interest income generated by the RDBs in the home regions as the spatial issue has less influence in affecting their MSME target.

Hypothesis (12.3) : The improvement of the quantity and the quality of MSME loan distributions have a significant relationship with non-performing loans of the RDBs in the home regions as the spatial issue has less influence in affecting their MSME target.

4.4. Methodology and Data

This section explains the methodologies that will be applied in this paper. It will start by describing the techniques used to accommodate the causal effect in the econometric model, before continuing with a presentation of the variables used in this study.

4.4.1 Estimation of the impact the Small Business Enterprises on the economy

To examine the impact of the MSMEs' loans on the regional economy, we used several primary indicators that serve as the most important factors for why the MSMEs sector is encouraged in a number of countries, i.e. regional GDP, unemployment level, and the poverty gap. Furthermore, we considered three main conditions that may interacted with or amplify loans within the regional economy: the performance of banks, the level of banking concentration in the region, and the influence of spatial dependence.

To measure the performance of banks, we used two efficiency variables, cost efficiency ($cost\_eff$) and profit efficiency ($profit\_eff$). In order to generate the efficiency score, this paper employed the stochastic frontier model with translog-based estimation. The cost efficiency model has three outputs and two inputs, while profit efficiency model has three outputs and three inputs. The model specification for the cost function (equation 1) and alternative profit function (equation 4-2) are shown below in the following equations:

$$ln\left(\frac{C}{W_3}\right) = \beta_0 + \sum_{i=1}^{3}\beta_i lnQ_{it} + \sum_{i=1}^{2}\beta_i ln\left(\frac{w_i}{W_3}\right) + \frac{1}{2}\sum_{i=1}^{3}\sum_{j=1}^{3}\beta_{ij} lnQ_{ijt} lnQ_{ijt} + \frac{1}{2}\sum_{i=1}^{2}\sum_{j=1}^{2}\beta_{ij} ln\left(\frac{w_i}{W_3}\right) ln\left(\frac{w_i}{W_3}\right) + \sum_{i=1}^{3}\sum_{j=1}^{2}\beta_{ij} lnQ_{ijt} ln\left(\frac{w_i}{W_3}\right) + T + T^2 + (v_{it} + u_{it}) \text{.........Eq.4- 1}$$

$$ln(P) = \beta_0 + \sum_{i=1}^{3}\beta_i lnQ_{it} + \sum_{i=1}^{3}\beta_i lnw_{it} + \frac{1}{2}\sum_{i=1}^{3}\sum_{j=1}^{3}\beta_{ij} lnQ_{ijt} lnQ_{ijt} + \frac{1}{2}\sum_{i=1}^{3}\sum_{j=1}^{3}\beta_{ij} lnw_{it} lnw_{it} + \sum_{i=1}^{3}\sum_{j=1}^{3}\beta_{ij} lnQ_{ijt} lnw_{it} + T + T^2 + (v_{it} - u_{it}) \text{........... Eq.4- 2}$$

$i = 1, \ldots, N$ and $t = 1, \ldots, T$

Where[10]:

ln$C$ = natural logarithm of total cost (total operating costs, defined as the sum of interest expenses, salaries, and employee benefits, and other operating costs). This variable is normalised by the final input price (w_3);

ln$P$ = natural logarithm of operating profit, where a constant term, θ, is added if any bank reports an operating loss (θ is equal to the absolute of minimum profit plus one, so that the natural log is taken as a positive number);

lnQ_{it} = natural logarithm of bank outputs, such as[11]:

($\mathrm{Q_1} = \mathrm{Loans}; \mathrm{Q_2} = \mathrm{Deposits}; \mathrm{Q_3} = \mathrm{Securities}$)

lnW_{it}= Natural logarithm of bank inputs, such as

$$\left(\mathrm{W_1} = \frac{\text{Interest Paid}}{\text{Purchase funds}};\ \mathrm{W_2} = \frac{\text{Non Interest Expenses}}{\text{Fixed Assets}}; \mathrm{W_3}\ \frac{\text{Personnel Expenses}}{\text{Total Employees}}\right)$$

After generating the cost_eff score and profit_eff score, we ran the regression models. We use 1-year lagged term in order to avoid reverse causalities. When interacting with the efficient (cost_eff or profit_eff) variable, we observed that the impact of MSMEs loans (percentage of MSMEs distribution) interacted with the efficient variable in terms of affecting the dependent variables. The first dependent variable is the regional economy variable, which comprises regional GDP (RGDP_cap), the agricultural sector (agr), and the low-income class (RGDP_p25). The second dependent variable is unemployment (unemp). The third dependent variable is poverty level, which comprises the poverty gap (p1), the percentage of poor people in an urban area (urban), and the percentage of poor people in a rural area (rural). The fourth

[10] All nominal data were deflated using the 2000 regional GDP deflator.
[11] Securities is total funds placed on the Central Bank of Indonesia (BI), other banks, and securities.

dependent variable is banks' income, which comprises the interest income of RDBs (price), the net interest income of RDBs (nim), and non-performing loans of RDBs (NPL).

Model 1:

$RGDP\_cap_{i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$ Eq.4- 3

$agr_{i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$ Eq.4- 4

Model 2:

$unemp_{i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{j,i,t} + b_5 u_{it}$ Eq.4- 5

Model 3:

$p1_{i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$ Eq.4- 6

$RGDP\_p25_{i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$ Eq.4- 7

$urban_{i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$ Eq.4- 8

$rural_{i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$ Eq.4- 9

Model 4:

$price_{j,i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$ Eq.4- 10

$nim_{j,i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$ Eq.4- 11

$NPL_{j,i,t} = a + b_1 efficient_{j,i,t} + b_2 msme_{j,i,t} + b_3 efficient_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$ Eq.4- 12

Where:[12]

$efficient_{j,i,t}$	: consists of $cost\_eff_{j,i,t}$ and $profit\_eff_{j,i,t}$
$cost\_eff_{j,i,t}$	: The cost efficiency scores of RDB j at region i at time t;
$profit\_eff_{i,t}$	: The profit efficiency scores of RDB j at region i at time t;
$msme_{i,t}$	: Percentage of the micro small medium enterprises (MSME) of region i at time t;

[12] The RGDP_cap, agr, RGDP_p25 are deflated using a regional GDP deflator, based on the year 2000.

$\text{control}_{i,t}$: The control variables of RDB j at region i at time t; first is variable sanitation or the percentage of households with access to satisfactory sanitation, second is variable guest or the number of foreign visitors in a classified hotel per region (log), third is variable electric or the percentage of electricity access per region, fourth is variable rice or the price of staple food or rice (log), fifth is variable security or total funds of RDBs placing in securities, other banks and central banks (over total assets), and the sixth is variable branches or total number of branches of RDBs per region (log)

$\text{RGDP\_cap}_{i,t}$: Regional GDP per capita of region i at time t (log);

$\text{agr}_{i,t}$: The income of the agriculture sector per capita of region i at time t;

$\text{RGDP\_p25}_{i,t}$: Dummy variable; 1 if the RGDP_cap is below the 25th quantile of the RGDP_cap; 0 otherwise.

$\text{unemp}_{i,t}$: Unemployment level of region i at time t;

$\text{p1}_{i,t}$: The poverty gap of region i at time t;

$\text{urban}_{i,t}$: The percentage of poor people in urban area of region i at time t;

$\text{rural}_{i,t}$: The percentage of poor people in rural area of region i at time t;

$\text{price}_{j,i,t}$: The price[13] of loans of RDB j at region i at time t;

$\text{nim}_{j,i,t}$: The net interest margin of RDB j at region i at time t;

$\text{NPL}_{j.i,t}$: The non-performing loans of RDB j at region i at time t.

The second moderator variable used in this paper is RDBs' market share ($share$). This variable captured the market concentration in a region. Although RDB was expected to be the regional economy agent, there are certain conditions that may slow down the contribution of RDBs in terms of participating in MSMEs' development. The existence of interregional banks, which are mostly large banks such as national public banks and private banks, can sometimes crowd out the market, and take the majority of customers. Hence, the contribution of RDBs through MSMEs loans may not be effective in promoting the regional growth, as they may not have much choice in terms of qualified borrowers. Ideally, calculating market concentration can be done by using the Learner index and/or the Herfindahl-Hirshman Index (HHI). However, no data is available at the regional level, except for the total loans and deposits of the total number of commercial banks per region. As the RDB is included as a commercial bank (based on Indonesian banking architecture), we used the concentration ratio for RDBs to measure the market concentration in a region. Competition in the banking sector can be measured by banks' market share in the local credit market via deposits, loans, or the number of branches (Petersen et al., 1995; Degryse, Laeven & Ongena, 2009).

[13] We use an implicit price: price= interest income/total loans.

A lower banking concentration is generally linked with low endowment or unfavourable regional conditions, and can lead to severe credit rationing. Hakenes and Schnabel (2006) note that the poor region typically tends to have less funds for development, as private banks or non-RDBs are interested in locating their business in wealthy regions, but as a regional bank, RDBs are expected to support their region regardless the conditions within the regions. Therefore, we considered RDBs' concentration as a means for studying how the role of RDBs is implemented in different market concentrations.

The concentration ratio of RDBs is estimated as followings:

$$\mathrm{share}_{\mathrm{j,i,t}} = {\text{total loans of RDBs}_{\mathrm{j,i,t}}} \Big/ {\text{total loans of all Commercial Banks}_{\mathrm{j,i,t}}} \cdots\cdots\cdots \qquad \text{Eq.4- 13}$$

The second regression will be like followings:

Model 5:

$\mathrm{RGDP\_cap}_{\mathrm{i,t}} = \mathrm{a} + \mathrm{b}_1\mathrm{share}_{\mathrm{j,i,t}} + \mathrm{b}_2\mathrm{msme}_{\mathrm{j,i,t}} + \mathrm{b}_3\mathrm{share}_{\mathrm{j,i,t}}\#\mathrm{msme}_{\mathrm{j,i,t}} + \mathrm{b}_4\mathrm{control}_{\mathrm{i,t}} + \mathrm{b}_5\mathrm{u}_{\mathrm{it}}$…..Eq.4-14

$agr_{i,t} = a + b_1 share_{j,i,t} + b_2 msme_{j,i,t} + b_3 share_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$…..Eq.4-15

Model 6:

$unemp_{i,t} = a + b_1 share_{j,i,t} + b_2 msme_{j,i,t} + b_3 share_{j,i,t}\#msme_{j,i,t} + b_4 control_{j,i,t} + b_5 u_{it}$….Eq.4- 16

Model 7:

$p1_{i,t} = a + b_1 share_{j,i,t} + b_2 msme_{j,i,t} + b_3 share_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$….Eq.4- 17

$RGDP\_p25_{i,t} = a + b_1 share_{j,i,t} + b_2 msme_{j,i,t} + b_3 share_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$….Eq.4- 18

$urban_{i,t} = a + b_1 share_{j,i,t} + b_2 msme_{j,i,t} + b_3 share_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$…..Eq.4- 19

$rural_{i,t} = a + b_1 share_{j,i,t} + b_2 msme_{j,i,t} + b_3 share_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$……Eq.4- 20

Model 8:

$price_{j,i,t} = a + b_1 share_{j,i,t} + b_2 msme_{j,i,t} + b_3 share_{j,i,t}\#msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$…..Eq.4- 21

$nim_{j,i,t} = a + b_1 share_{j,i,t} + b_2 msme_{j,i,t} + b_3 share_{j,i,t} \# msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$……Eq.4- 22

$npl_{j,i,t} = a + b_1 share_{j,i,t} + b_2 msme_{j,i,t} + b_3 share_{j,i,t} \# msme_{j,i,t} + b_4 control_{i,t} + b_5 u_{it}$……Eq.4- 23

The third analysis aimed to test whether spatial dependence amplified MSMEs lending, as distributed by RDBs, in terms of affecting the regional economy. As explained in Chapter 3, [‘Does geography influence RDBs lending?’], there is a tendency for spillover to affect the distribution of RDBs’ lending (overall). However, in this study, we will observe whether spillover affects the contribution of the MSMEs’ lending on the regional economy. We will test which spatial panel estimation, i.e. the spatial autoregressive model (SAR), the spatial Durbin model (SDM), and the spatial error model (SEM), is preferred for running the model, based on AIC (Akaike information criterion) and BIC (Bayesian information criterion) estimation.

To control for other factors that may also contribute to variances within the dependent variables, we will employee two different variables. The first is geographical indicators, and the second is banking indicators. The geographical variables are, first, $sanitation$ or the percentage of households with access to satisfactory sanitation. The second is variable $guest$, or number of foreign visitors (log) in a classified hotel per region. The third is variable $electric$, or the percentage of electricity access per region. The fourth is variable $rice$, or the price of staple food, rice (log)[14]. The banking variables are first, variable $security$, or total funds of RDBs placing in the securities, other banks, and central banks (over total assets), and second, variable $branches$, or total number of branches of RDBs per region (log).

Regarding the relationship between the control variables and dependent variables, having satisfactory sanitation is important for improving the regional economy, as it lowers health costs and improves quality of life (ILO, 2009). A clean environment also attracts more investment, including bolstering the tourism sector, which should lead to the creation of new jobs, and lower the poverty gap. In addition, it affects the income of banks and lowers the non-performing loans, due to development of the regional economy. We chose the number of guests

[14] The price was deflated using regional GDP, with the basis year of 2000.

in a classified hotel per region as a variable because the tourism sector is one of world's fastest growing economic sectors, and one of its largest industries (World Travel and Tourism Council, 2015). As the largest archipelago country in the world, with a variety of cultures, languages, and beautiful tropical landscapes, Indonesia is aware of the advantages it has in this sector. Listed as a one of the countries in the world with a host of natural wonders, the Indonesian tourism sector has grown consistently, its contribution to GDP at roughly 9.3%, higher than the automotive manufacturing, education, banking, financial services, retail, and chemicals manufacturing sectors (World Travel and Tourism Council, 2015). In 2014, based on a report by the World Travel and Tourism Council, this sector sustained a total of 9.8 million jobs in Indonesia, employing more people than all sectors, except for education, retail, and agriculture. Aware of this significant contribution the tourism sector delivers, the Indonesian Government has launched a host of new projects such as 'Wonderful Indonesia'[15], and the country has participated in various world exhibitions with the objective of attracting more tourists to the country. Therefore, this variable indicates the development of the regional economy, and attracts more visitors to specific regions due to the implication of a growing economy, which may link to improvements in job creation, decreasing the poverty gap, and increasing RDBs' income, and a lower NPL risk.

The third variable is the percentage of electricity access. As in previous chapter [see Chapter 3, 'Does geography influence RDBs lending?'], this chapter captures regional conditions caused by infrastructure development. Regions that have less infrastructure development may experience slow growth (Dawe & Peter Timmer, 2012). Unemployment may also be higher, as lower infrastructure access, particularly access to electricity, exerts a negative impact on entrepreneurship, thereby constraining the creation of new businesses. Electricity shortages also impose a substantial negative impact on organisational productivity. We expect that higher electricity access will signal that higher incomes can be generated within a region, unemployment will be lower, the poverty gap will be smaller, and RDBs' income would be better, with lower NPL risk. The fourth variable is the price of staple food. Using the price of

[15] 'Wonderful Indonesia' has been the slogan since January 2011 of an international marketing campaign, directed by the Indonesian Ministry of Culture and Tourism, to promote tourism. The campaign replaced the previous 'Visit Indonesia Year' campaign, which had been used since 1991. The 'Wonderful Indonesia' concept highlights Indonesia's 'wonderful' nature, cultures, people, food, and value for money. After launching the campaign, Indonesia reported an increase in foreign visitors, from 7,002,944 in 2010, to 10,230,775 international visitor arrivals (roughly a rise from 6% to 8% per year) (Central Bureau of Statistics of Indonesia (BPS), 2016).

rice, this variable can be used to capture the potential inflation occurring in a region (Dawe & Peter Timmer, 2012). The relationship between the rice variable and regional GDP per capita may be negative, as it reduces the purchasing power of people. A higher level of inflation can also cause job losses, increase unemployment, and make the poverty gap bigger. In addition, it can also increase the risk of lending, and RDBs need to compensate for this by increasing the price of loans, which may lead to a rise in NPL.

The banking variables are the total branches that RDBs have, as well as the security variable. The former controls the impact of RDBs'size, while the security variable observes the behaviour of banks (as reported by the Central Bank of Indonesia), which includes investing their money in safe options, such as in central banks and other banks, or organisations that may offer high-interest incomes, e.g. government bonds or stocks. As such, a higher proportion of funds are placed in security, which means less funds are available for distribution to regions, which can affect the regional economy.

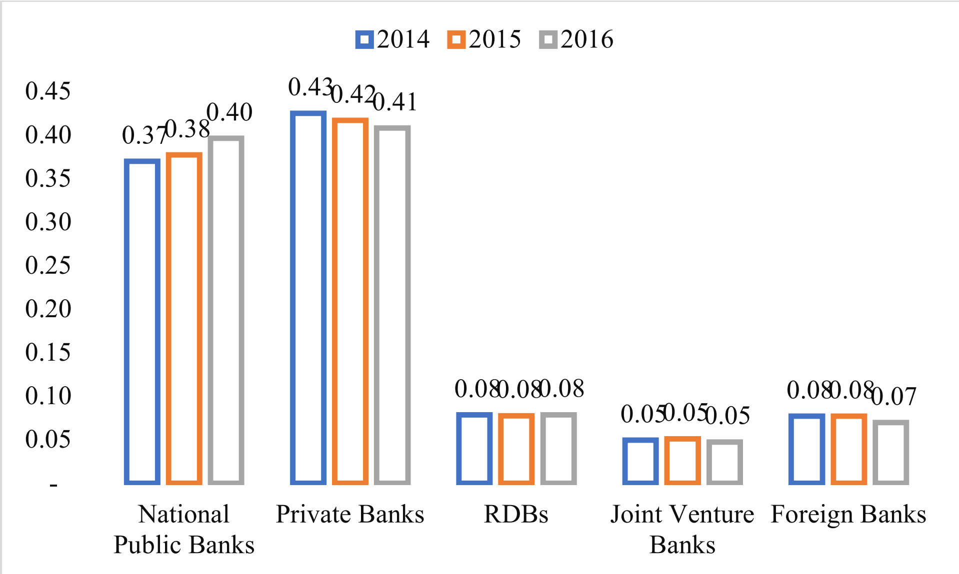
4.4.2 Exploratory Data Analysis

This research looks at how regional public banks' lending to MSMEs contributes to their region. We consider three additional variables that might amplify the impact and explain the inconsistent outcomes that have been found by many scholars. First, the influence of better capital allocation, which can be explored using cost efficiency and profit efficiency scores. To get the efficiency score of the RDBs, we need to employ all the banks' data in the Indonesian banking system, including national public banks, private banks, joint venture banks, and foreign banks.

We use two main data in this study, data from the financial reports of all commercial banks in Indonesia (other than the RDBs), such as national public banks, private banks, joint venture banks, and foreign banks; and geographical data at the national and provincial (regional) level. The sources of the data are from the Central Bank of Indonesia (BI), Financial Services Authority of Indonesia (OJK), and Central Bureau of Statistics Indonesia (BPS). Ideally, this research would unfold comprehensive information regarding the topic, if all the data were available at the regional level; unfortunately, only the RDBs regional data is accessible as the RDBs are the banks with a regional focus. Some big banks, including national public banks

(NPBs) – comprising four banks, namely Bank Rakyat Indonesia (BRI), Bank National Indonesia (BNI), Bank Mandiri, and Bank Tabungan Negara (BTN) – and some private banks, such as Bank Central Asia and Bank Bukopin, are interregional banks or operating nationally, and hence their size is proportionally bigger compared to other types of bank. Figure 4-1 shows the size of each type of bank for years 2014, 2015, and 2016

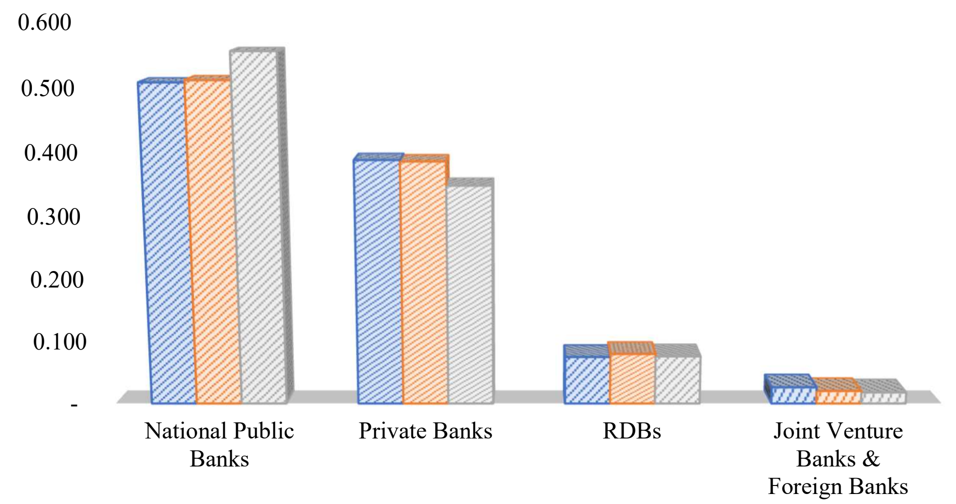
Figure 4- 1. The proportion of the assets of each type of bank in Indonesia



(Source: Indonesia Banking Statistic Report, own calculation)

Figure 4-1 shows, in year 2016 the national public banks which consists of four big banks hold around 40% of the total commercial banking assets in Indonesia, which is quite similar to the private banks (41% in 2016), consisting of 63 banks in 2016 based on the report of the Indonesian Banking Statistic Report, while the size of RDBs' assets were ranked third. Furthermore, the size of the assets is in line with the size of the contribution of the MSMEs lending. As shown in figure 4-2, the national public banks contribute more than 50% of the total outstanding MSME loans in the banking system, followed by the private banks, the RDBs, and the joint venture and foreign banks.

Figure 4- 2. The proportion of the MSMEs lending (over total outstanding MSMEs loans) of each type of bank.



	National Public Banks	Private Banks	RDBs	Joint Venture Banks & Foreign Banks
2014	0.507	0.388	0.075	0.026
2015	0.511	0.386	0.081	0.020
2016	0.555	0.348	0.077	0.018

(Source: Indonesia Banking Statistic Report, own calculation)

To investigate the impact of the MSME lending on the regional economy moderated by the efficiency factor, we run an efficiency analysis (Cost Efficient Frontier and Profit Efficient Frontier) using Stochastic Frontier Analysis (SFA). We apply several techniques to carry out the efficiency (Cost Efficient Frontier and Profit Efficient Frontier) measurement to see the consistency of the estimation seen in the cost efficiency and profit efficiency score. We use the half-normal distribution and exponential distribution for the inefficiency term. We also consider the geographical influence in affecting the cost efficiency and profit efficiency score, such as GDP (log) and log of population and run another estimation by adding these two geographical indicators. Applying different models, the relationship between different cost efficiency technique and profit efficiency estimation is quite high, seen from the correlation estimation [the correlation estimation is in the Appendix, table A4-1], meaning that scores of the cost efficiency using different models are similar; this applies also to the profit efficiency score. Yet the scores of the cost efficiency and profit efficiency seemed not to be working in-line. Rogers (1998) stated that the different focus of these two measurements make the outcomes different. Hence, we use the score estimated using half-normal distribution to be the proxy of cost efficiency and profit efficiency in this study. The details of the parameter outcomes from both indicators can be seen in the appendix, table A4-2 and table A4-3.

Furthermore, table 4-1 shows the descriptive statistics of the scores of the cost efficiency and profit efficiency.

Table 4- 1. Descriptive analysis of the cost efficiency and profit efficiency

type	variables	mean	sd	min	max	p25	p50	p75	N
1	msme_loans	0.454	0.342	0.001	1.000	0.156	0.344	0.812	386
	msme_bor	0.372	0.381	0.0004	1.000	0.091	0.191	0.959	270
	cost_eff	0.805	0.051	0.483	0.925	0.780	0.810	0.839	416
	profit_eff	0.904	0.057	0.712	0.991	0.874	0.915	0.946	416
2	msme_loans	0.443	0.312	0.044	0.980	0.186	0.309	0.813	64
	msme_bor	0.445	0.320	0.011	1.000	0.204	0.432	0.692	45
	cost_eff	0.833	0.038	0.742	0.897	0.809	0.840	0.863	64
	profit_eff	0.845	0.081	0.689	0.997	0.780	0.853	0.905	64
3	msme_loans	0.437	0.314	0.0001	1.000	0.158	0.374	0.697	1071
	msme_bor	0.577	0.386	0.0001	1.000	0.161	0.615	0.987	780
	cost_eff	0.762	0.105	0.387	0.947	0.701	0.786	0.837	1091
	profit_eff	0.917	0.053	0.630	0.988	0.894	0.933	0.954	1091
4	msme_loans	0.191	0.236	0.0001	0.997	0.029	0.091	0.256	118
	msme_bor	0.269	0.295	0.0001	1.000	0.004	0.110	0.515	90
	cost_eff	0.844	0.071	0.546	0.940	0.807	0.864	0.896	249
	profit_eff	0.916	0.047	0.672	0.978	0.899	0.933	0.947	249
5	msme_loans	0.103	0.148	0.0001	0.610	0.010	0.034	0.135	60
	msme_bor	0.202	0.315	0.0001	1.000	0.0005	0.031	0.260	48
	cost_eff	0.852	0.073	0.537	0.966	0.823	0.868	0.896	165
	profit_eff	0.915	0.035	0.807	0.979	0.899	0.922	0.939	165
Total	msme_loans	0.412	0.323	0.0001	1.000	0.130	0.324	0.678	1699
	msme_bor	0.490	0.393	0.0001	1.000	0.097	0.426	0.975	1233
	cost_eff	0.791	0.095	0.387	0.966	0.751	0.810	0.854	1985
	profit_eff	0.911	0.055	0.630	0.997	0.888	0.926	0.950	1985

Notes: These are all the commercial banks in Indonesia; for period of the observations started from 2001 up to 2016. There are five (5) types of bank. Type 1 is the RDBs, type 2 is the national public banks, type 3 is the private banks; type 4 is joint venture banks; and type 5 is foreign banks.

Referring to Table 4-1, the average of the MSME lending is 41.2% (of total lending), while it is distributed to around 49% debtors on average. The average of the cost efficiency is 79.1%, and 91.1% for profit efficiency. This means the average bank could reduce its costs by 20.9% and improve its profits by 8.9% to match its performance with the most efficient bank. Thus, the results show that, on average, banks experienced a much higher cost inefficiency than profit inefficiency. Observing the cost efficiency and profit efficiency of each type of bank, it was seen that the private banks have not only the greater cost inefficiency but also the highest profit efficiency, as they need to reduce their cost by 23.8%, and increase their profit by only 8.3% to match with the performance of the most efficient banks, although the profit efficiency across banks' type seems not to be significantly different. Furthermore, examining the cost efficiency and profit efficiency of the RDBs, it can be seen that RDBs need to lower their cost by 19.5% and improve their profit 9.6% in order to match the performance of the most efficient banks.

Observing each type of bank, the proportion of lending to MSMEs seemed to divide into two: the aggressive banks (in terms of the MSME lending) such as national public banks, private banks, and the RDBs and the less-aggressive banks, which are the joint venture banks and the foreign banks. The pattern follows the recommendation of the BI suggesting the public banks, specifically, implement their mandate as social and development banks. Comparing the proportion of the MSME lending distribution of each bank, it was varied across banks. Referring to Figure 4-3, before 2004, the RDBs seemed to provide the highest proportion of their lending to the MSME loans compared to the other four banks; however, the lending proportion is slightly lower after 2005, while the national public banks and private banks seemed to put more attention to this type of lending. For over 15 years, the joint venture banks and the foreign banks showed less response regarding MSME lending, albeit the joint venture banks seemed to increase their lending proportion around 30%, but the foreign banks are still below 15%.

Figure 4- 3. The average of the proportion of the MSME loans for each type of bank

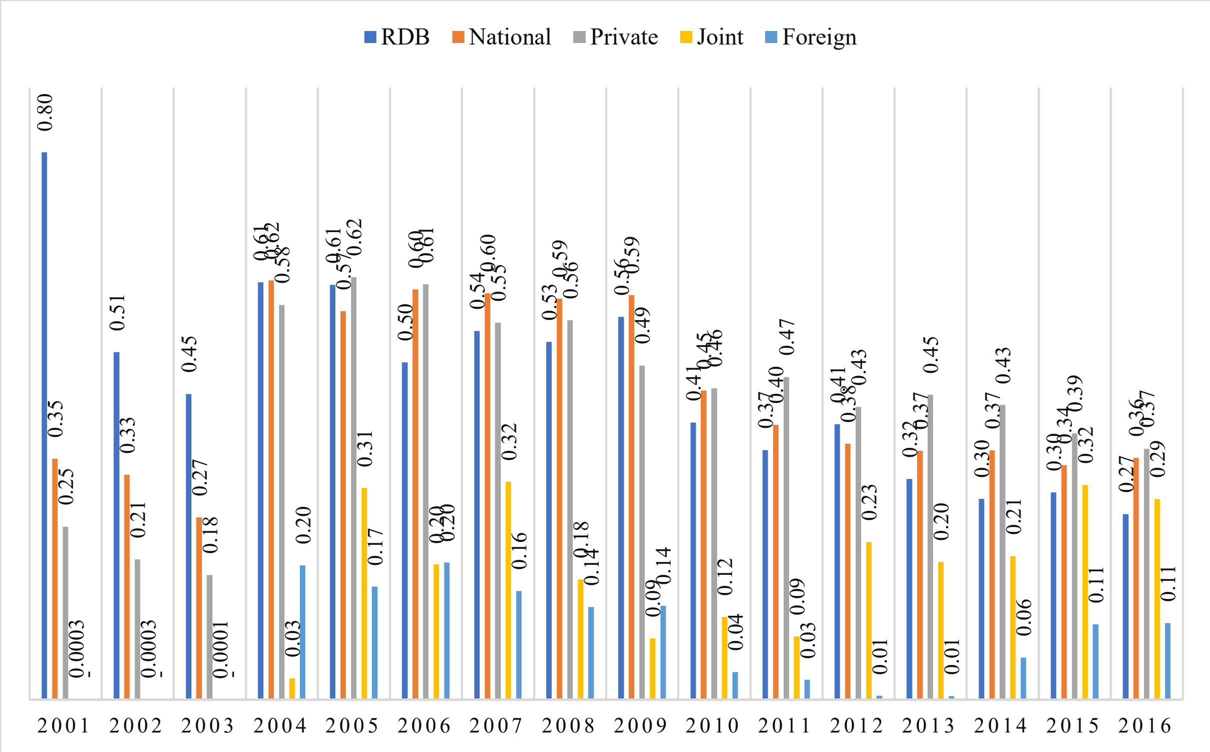
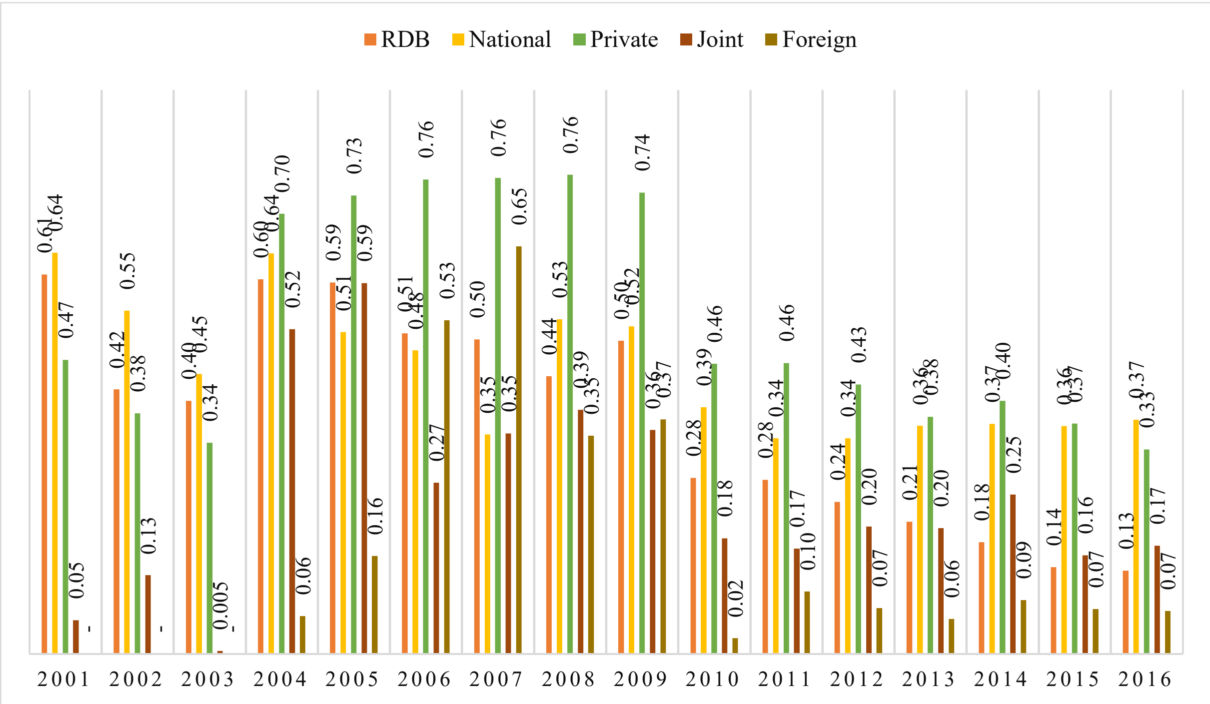


Figure 4- 4. The average of the proportion of the MSME borrowers for each type of bank



Matching the facts shown in Figure 4-3 with the patterns shown in Figure 4-4, it elucidates that the increase of the proportion of MSME lending distributed by the RDBs was not parallel with the improvement of the proportion of the debtors or the borrowers that received the loans. For instance, in 2001, 80% of loans were distributed to the MSMEs and the loans were given to around 61% of the debtors of the RDBs, while the national public banks gave 35% of their loans to MSMEs in 2001 and they were distributed to around 64% of the debtors, and private banks granted 47% of debtors (of their total debtors) from 25% of their total loans. Simply explained, the MSME lending of the RDBs might go to the same firms but with a bigger amount, while the opposite was the case in NPBs and private banks; the lending proportion seems to be smaller from the RDBs but distributed to double receivers. This might be related to the scope and assets that these two banks have. They have branches everywhere and it is easy for them to find prospective firms.

Referring to efficiency level, Figures 4-5 and 4-6 shows that the joint venture banks and the foreign banks generally have the lowest cost inefficiency and the highest profit efficiency for all the observation years. The lowest profit efficiency is in NPBs, followed by the RDBs. This might relate to its calling as a public bank: a focus on helping certain sectors and with a mission to mitigate market failure might erode their profit. Referring to the descriptive analysis, the cost efficiency and profit efficiency seem to not work in tandem, as (De Guevara & Maudos, 2002) explained that the differences might occur because profit efficiency is more likely driven by revenues rather than costs. Hence, the analysis of cost efficiency alone would offer only a partial view of bank efficiency, yet it is important to analyse profit efficiency as well (De Guevara & Maudos, 2002).

Figure 4- 5. Average of the cost efficiency for each type of bank

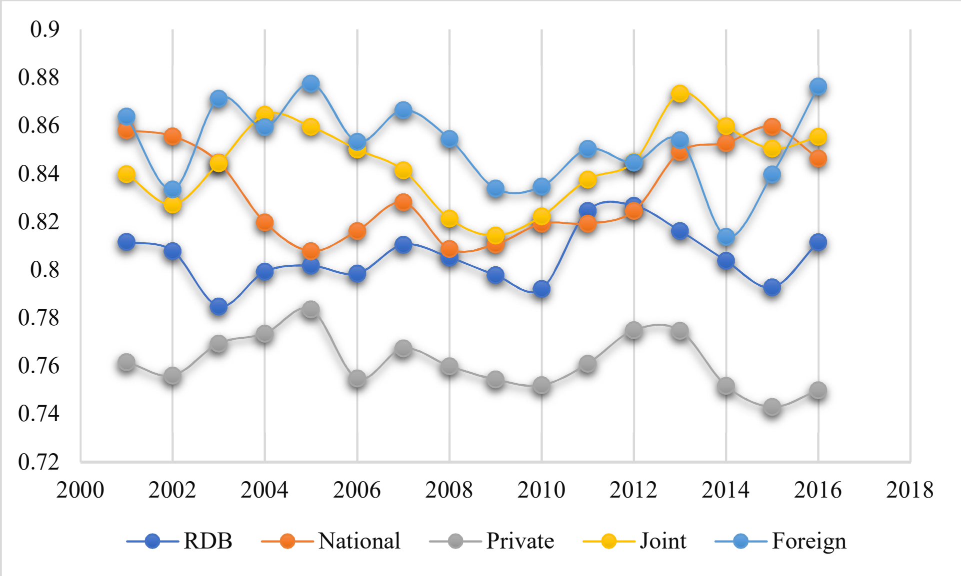
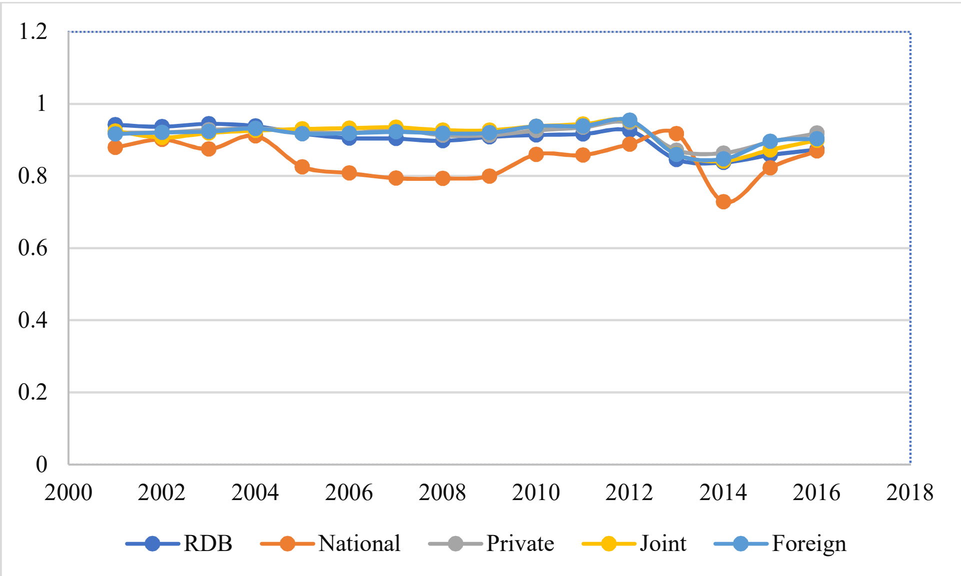


Figure 4- 6. Average of the profit efficiency for each type of bank



Regionally, observing the deployment of the MSME lending, Figure 4-7 shows the pattern of the MSME loans (the percentage of the MSME loans over total loans) distributed by the RDBs across Indonesia. Generally, it shows that the RDBs in Java distribute a bigger portion of MSME loans and distribute to more debtors compared to the RDBs outside Java.

Figure 4- 7. The pattern of MSME loans of the RDBs across provinces in Indonesia

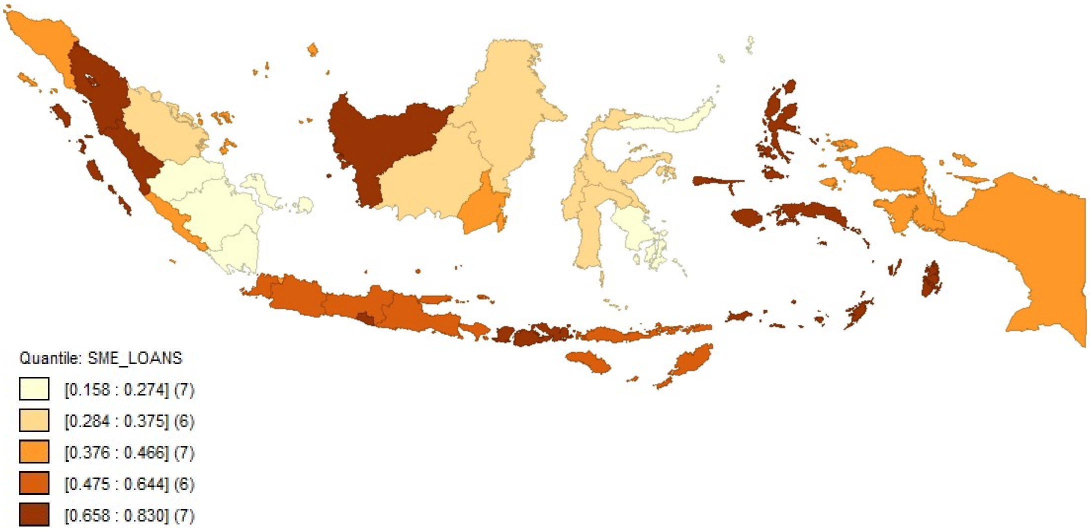


Figure 4- 8.The pattern of MSME debtors of the RDBs across provinces in Indonesia

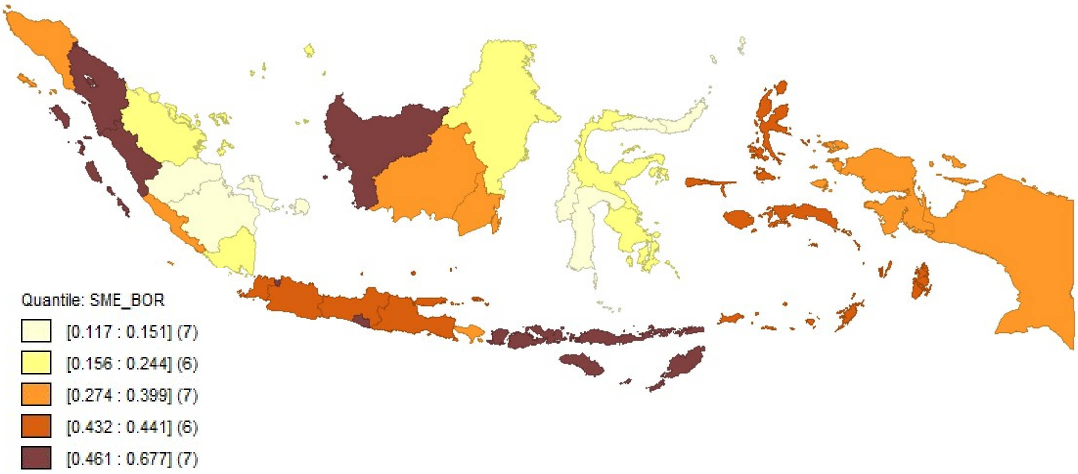


Table 4-2 shows the summary of the descriptive statistics for the geographical data, which consists of the regional data and national data.

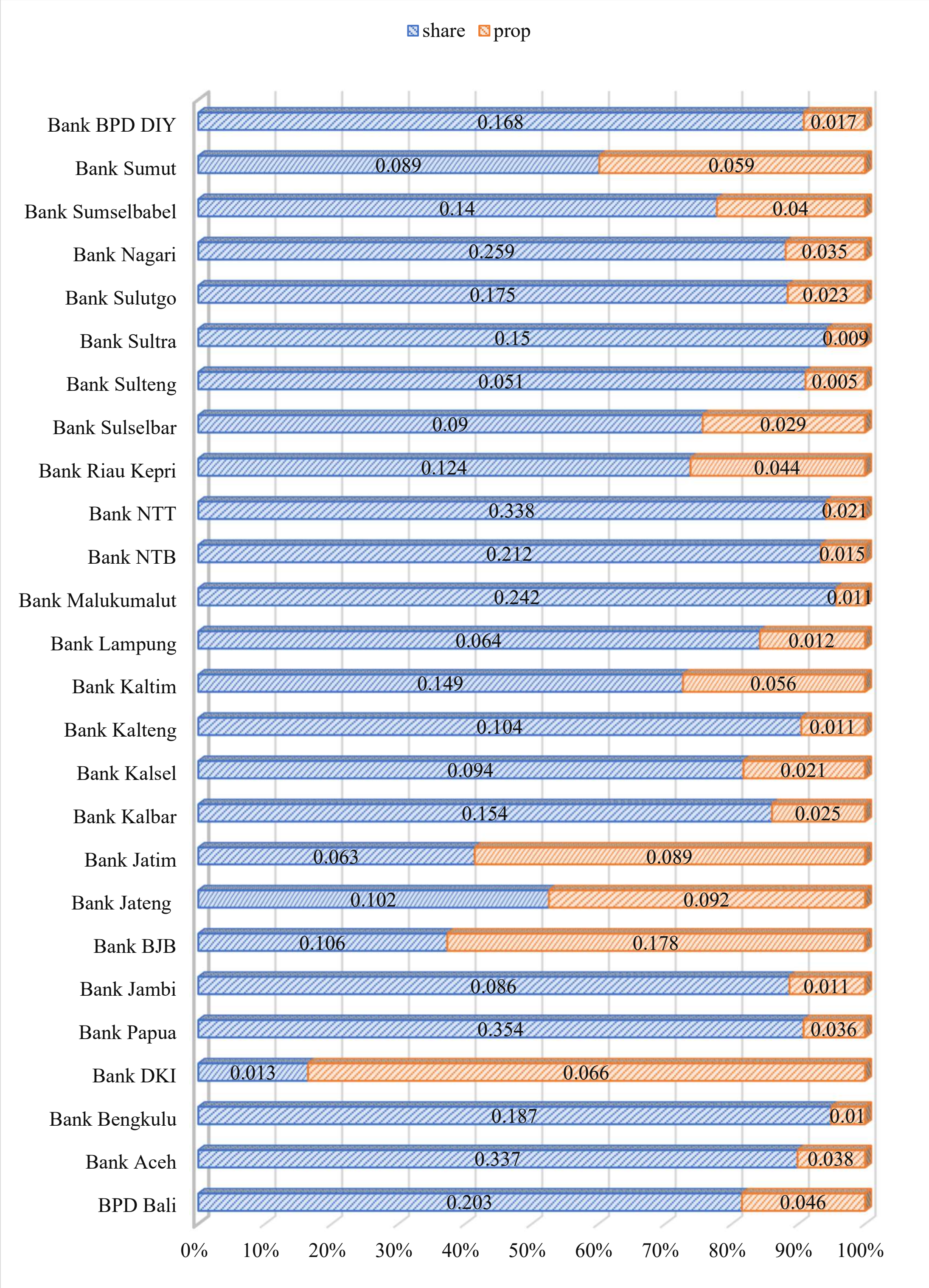
Table 4- 2. Descriptive statistics

	stats	RGDP_cap	agr	unemp	p1	rural	urban
Regional	mean	9.003	1.563	0.080	0.028	0.180	0.106
	min	0.783	0.023	0.056	0.003	0.138	0.077
	max	47.035	3.285	0.112	0.203	0.248	0.145
	p25	4.803	1.062	0.062	0.015	0.146	0.086
	sd	8.203	0.629	0.017	0.021	0.033	0.021
National	mean	9.821	1.254	0.080	0.022	1.254	0.180
	min	6.904	1.073	0.056	0.017	1.073	0.138
	max	16.347	1.477	0.112	0.030	1.477	0.248
	p25	7.842	1.153	0.062	0.018	1.153	0.146
	sd	2.641	0.118	0.017	0.004	0.118	0.033

The table presents the geographical data using regional basis and national basis. We use national population to estimate the national GDP per head, and regional population to count the regional GDP per head. The same denominator is employed to estimate the agriculture sector per head. The data is observed from 2001 up to 2016. The source of data is from Central Bureau of Statistics (Badan Pusat Statistik-BPS Indonesia).

Concerning the share of the RDBs in each region, Figure 4-9 shows the pattern of the RDBs' market share across Indonesia. The picture shows the aggregate share of the RDBs' market in each region. The $'share'$ variable shows the proportion of the RDBs' market, estimated using total loans of RDB region j divided by total commercial banks loans in region j. Referring to Figure 4-9, we see that Bank BJB is the RDB that provides the highest amount of lending (in proportion to the total loans for all regions); however, inside the region, the share of Bank BJB is only 10.6%, which is quite similar to the market share of Bank Jateng, but less than, for instance, Bank Papua, Bank, NTT, Bank NTB, and Bank Malukumaluta. These banks are the RDBs that are located in East Indonesia and generally have lower endowment level compared to the regions in Java [see the descriptive geographical data across regions in Indonesia in Chapter 3, 'Does geography influence RDBs lending?']. The bigger size of the RDBs in less developed regions follows the idea from Conrad et al. (2009), De Young, Klier and McMillen (2004) and Gallup, Sachs and Mellinger (1999). Generally, the commercial banks tend to concentrate their business in wealthy regions with a large potential market, or close to the financial centre, to reduce average operating costs and increase profitability.

Figure 4- 9. The share of the RDBs' market in each region



4.5 Results

4.5.1 Main Findings

This paper's objective is to observe whether MSME lending can improve regional economic growth. MSME lending is crucial for developing countries, particularly Indonesia, because these types of loans are claimed by GOI to be vital for the Indonesian economy. Inspired by research conducted by Hasan et al. (2009), Koetter and Wedow (2010), and Hakenes, Hasan, Molyneux and Xie (2015), this paper is the first paper that study the impact of the MSMEs loans distributed by the RDBs with the regional perspective. We observe the impact of MSME lending on RDBs by considering several conditions that can strengthen the impact of MSME loan distribution on economic growth: the efficiency of banks, the share of banks, and the spatial dependence across regions.

To test out hypothesis, we interact the main variables, $msme$, with the efficiency variables (profit_eff variable and cost_eff variable), and the $share$ variable. The interaction model allows us to determine whether the main effect of each independent variable is fixed for all observations. If the influence of the main variable is not consistently significant or if the interaction variable shows a significant result, it means the main effect is meaningless (Hays, 1983; Hayes, 2005; Jaccard et al., 1990). Hence, the interpretation of the main effect is a part of the interaction model (Mitchell, 2012), and depends on another variable, which we call a moderator variable. We conducted the Hausman test to verify whether the random effect or fixed effect was the preferred regression model; the results indicated the random effect model to be superior to the fixed effect model. The completed Hausman test results can be found in the Appendix (table A4-4) to this paper. The following section shows the regressions results, and for the purpose of clarity, the discussion will be conducted after the presentation of the empirical results.

Table 4- 3. Influence of the MSMEs loans (in relation to cost efficiency) on regional economy

	(1) RGDP_cap	(2) RGDP_cap	(3) RGDP_cap	(4) RGDP_cap	(5) agr	(6) agr	(7) agr	(8) agr
msme	0.005		0.005	-0.170	0.002		0.002	-0.689
	[0.016]		[0.016]	[0.399]	[0.026]		[0.025]	[0.542]
cost_eff		0.084	0.083	-0.021		-0.080	-0.080	-0.491
		[0.167]	[0.168]	[0.359]		[0.301]	[0.300]	[0.535]
msme#cost_eff				0.217				0.858
				[0.481]				[0.653]
sanitation	0.413***	0.405***	0.408***	0.398***	0.461***	0.463***	0.465***	0.443***
	[0.049]	[0.049]	[0.048]	[0.052]	[0.136]	[0.135]	[0.134]	[0.138]
guest	0.018	0.014	0.015	0.014	-0.086***	-0.084***	-0.084***	-0.082***
	[0.022]	[0.021]	[0.021]	[0.022]	[0.029]	[0.026]	[0.026]	[0.028]
electric	0.109	0.128**	0.129**	0.133***	0.790***	0.769***	0.772***	0.789***
	[0.067]	[0.050]	[0.051]	[0.048]	[0.213]	[0.189]	[0.190]	[0.191]
rice	0.354*	0.343*	0.346*	0.354*	0.371	0.378	0.378	0.417
	[0.182]	[0.183]	[0.182]	[0.193]	[0.229]	[0.239]	[0.239]	[0.256]
branch	-0.003	-0.005	-0.004	-0.004	-0.029	-0.028	-0.028	-0.025
	[0.021]	[0.019]	[0.019]	[0.019]	[0.036]	[0.034]	[0.035]	[0.035]
security	0.080	0.078	0.080	0.081	-0.185*	-0.187*	-0.187*	-0.178*
	[0.070]	[0.068]	[0.070]	[0.068]	[0.106]	[0.109]	[0.108]	[0.102]
Constant	0.074	0.067	0.045	0.095	-0.214	-0.170	-0.178	-0.029
	[0.728]	[0.714]	[0.702]	[0.687]	[1.018]	[1.030]	[1.034]	[0.990]
Observations	332	332	332	332	332	332	332	332
No.of regions	26	26	26	26	26	26	26	26
R^2-within	0.566	0.567	0.567	0.567	0.390	0.390	0.391	0.399
R^2-between	0.376	0.367	0.365	0.370	0.0602	0.061	0.063	0.055
R^2-overall	0.250	0.240	0.242	0.242	0.011	0.011	0.012	0.008

The regression equation is estimated using a random effect (RE) model with the time trend added. The dependent variables are RGDP_cap or regional GDP per capita and agr or regional income per capita from the agricultural sector. Models 1, 2, 3, and 4 show the impact of msme variable in its interaction with variable cost_eff while affecting the RGDP_cap. Models 5, 6, 7, and 8 show the impact of variable msme in its interaction with variable cost_eff while affecting variable agr. The data consist of RDBs data of all provinces from 2001 to 2016. Robust standard error is applied. Standard errors are in parentheses. * Denotes $p < 0.1$. ** Denotes $p < 0.5$. *** Denotes $p < 0.01$.

Table 4- 4. Influence of the MSMEs loans (in relation to profit efficiency) on regional economy

	(1) RGDP_cap	(2) RGDP_cap	(3) RGDP_cap	(4) RGDP_cap	(5) agr	(6) agr	(7) agr	(8) agr
msme	0.005		0.009	-0.478*	0.002		0.005	-0.831***
	[0.016]		[0.016]	[0.255]	[0.026]		[0.025]	[0.286]
profit_eff		0.427	0.431	0.178		0.280	0.283	-0.149
		[0.282]	[0.286]	[0.352]		[0.310]	[0.314]	[0.412]
msme#profit_eff				0.534*				0.916***
				[0.276]				[0.322]
sanitation	0.413***	0.364***	0.363***	0.368***	0.461***	0.435***	0.434***	0.446***
	[0.049]	[0.055]	[0.057]	[0.059]	[0.136]	[0.155]	[0.156]	[0.159]
guest	0.018	0.027	0.027	0.034**	-0.086***	-0.079***	-0.079***	-0.066***
	[0.022]	[0.019]	[0.019]	[0.017]	[0.029]	[0.024]	[0.024]	[0.021]
electric	0.109	0.153**	0.155**	0.140*	0.790***	0.822***	0.825***	0.804***
	[0.067]	[0.073]	[0.075]	[0.077]	[0.213]	[0.198]	[0.199]	[0.194]
rice	0.354*	0.317*	0.319*	0.337*	0.371	0.349	0.349	0.380*
	[0.182]	[0.179]	[0.178]	[0.183]	[0.229]	[0.227]	[0.227]	[0.229]
branch	-0.003	-0.020	-0.019	-0.017	-0.029	-0.040	-0.039	-0.037
	[0.021]	[0.021]	[0.022]	[0.021]	[0.036]	[0.033]	[0.034]	[0.033]
security	0.080	0.104	0.107	0.107	-0.185*	-0.168	-0.167	-0.168
	[0.070]	[0.070]	[0.072]	[0.073]	[0.106]	[0.115]	[0.115]	[0.113]
Constant	0.074	-0.212	-0.239	-0.097	-0.214	-0.423	-0.436	-0.196
	[0.728]	[0.774]	[0.766]	[0.750]	[1.018]	[1.087]	[1.088]	[1.132]
Observations	332	332	332	332	332	332	332	332
No.of regions	26	26	26	26	26	26	26	26
R^2-within	0.566	0.579	0.580	0.582	0.390	0.395	0.395	0.405
R^2-between	0.376	0.292	0.286	0.315	0.0602	0.0599	0.0618	0.0754
R^2-overall	0.250	0.213	0.212	0.232	0.0116	0.0123	0.0131	0.0174

The regression equation is estimated using a random effect (RE) model with the time trend added. The dependent variables are RGDP_cap or regional GDP per capita and agr or regional income per capita from the agricultural sector. Models 1, 2, 3, and 4 show the impact of variable msme in its interaction with variable profit_eff while affecting the RGDP_cap. Models 5, 6, 7, and 8 show the impact of variable msme in its interaction with variable profit_eff variable while affecting the agr. The data consist of RDB data of all provinces from 2001 to 2016. Robust standard error is applied. Standard errors are in parentheses. * Denotes $p < 0.1$. ** Denotes $p < 0.5$. *** Denotes $p < 0.01$.

Table 4- 5. Influence of the MSMEs loans (in relation to cost efficiency) on the regional inequalities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	unemp	unemp	unemp	unemp	p1	p1	p1	p1	RGDP_p25	RGDP_p25	RGDP_p25	RGDP_p25
msme	-0.008***		-0.008***	0.007	0.002*		0.002*	0.006	0.044		0.044	-0.340
	[0.003]		[0.003]	[0.021]	[0.001]		[0.001]	[0.010]	[0.052]		[0.052]	[0.841]
cost_eff		-0.001	-0.000	0.008		0.002	0.002	0.004		-0.047	-0.053	-0.253
		[0.011]	[0.011]	[0.018]		[0.005]	[0.005]	[0.008]		[0.223]	[0.222]	[0.537]
msme#cost_eff				-0.008				-0.004				0.480
				[0.027]				[0.011]				[1.046]
sanitation	-0.012	-0.015	-0.012	-0.011	-0.027***	-0.026***	-0.027***	-0.027***	-0.228	-0.218	-0.226	-0.270
	[0.022]	[0.023]	[0.023]	[0.023]	[0.004]	[0.004]	[0.004]	[0.004]	[0.246]	[0.248]	[0.246]	[0.226]
guest	0.003	0.003	0.003	0.003	-0.000	-0.000	-0.000	-0.000	0.072*	0.073*	0.073*	0.068*
	[0.002]	[0.002]	[0.002]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.041]	[0.042]	[0.041]	[0.040]
electric	0.044*	0.045*	0.044*	0.043*	-0.017***	-0.017***	-0.016***	-0.016***	-1.319***	-1.326***	-1.331***	-1.262***
	[0.025]	[0.023]	[0.025]	[0.024]	[0.006]	[0.005]	[0.006]	[0.006]	[0.190]	[0.187]	[0.192]	[0.186]
rice	-0.071**	-0.069**	-0.071**	-0.071**	0.001	0.001	0.001	0.001	-0.955***	-0.959***	-0.950***	-0.951***
	[0.028]	[0.029]	[0.028]	[0.029]	[0.007]	[0.007]	[0.007]	[0.007]	[0.166]	[0.162]	[0.165]	[0.164]
branch	0.005	0.005	0.005	0.005	-0.007***	-0.007***	-0.007***	-0.007***	-0.013	-0.015	-0.013	-0.024
	[0.006]	[0.006]	[0.006]	[0.006]	[0.002]	[0.002]	[0.002]	[0.002]	[0.065]	[0.065]	[0.065]	[0.060]
security	0.013	0.015	0.013	0.014	0.006	0.005	0.006	0.006	-0.115	-0.127	-0.115	-0.140
	[0.015]	[0.014]	[0.015]	[0.015]	[0.004]	[0.004]	[0.004]	[0.004]	[0.146]	[0.150]	[0.146]	[0.154]
Constant	0.339***	0.327***	0.339***	0.333***	0.065**	0.067**	0.064**	0.063**	4.929***	5.021***	4.953***	5.136***
	[0.123]	[0.126]	[0.123]	[0.123]	[0.028]	[0.029]	[0.030]	[0.030]	[0.718]	[0.736]	[0.754]	[0.859]
									332	332	332	332
Observations	332	332	332	332	331	331	331	331	26	26	26	26
No.of regions	26	26	26	26	26	26	26	26	0.239	0.238	0.240	0.239
R^2-within	0.675	0.665	0.675	0.675	0.542	0.538	0.542	0.542	0.246	0.235	0.241	0.259
R^2-between	0.225	0.202	0.225	0.232	0.196	0.185	0.194	0.194	0.245	0.237	0.242	0.254
R^2-overall	0.423	0.408	0.423	0.426	0.268	0.258	0.267	0.267	RGDP_p25	RGDP_p25	RGDP_p25	RGDP_p25

The regression equation is estimated with a random effect (RE) model, with time trend added. The dependent variables are unemp or unemployment level, p1 or poverty gap index, RGDP_p25 or low-income classes. Models 1, 2, 3, and 4 show the impact of variable $msme$ in its interaction with variable $cost\_eff$ while affecting the $unemp$. Models 5, 6, 7 and 8 show the impact of $msme$ in its interaction with the $cost\_eff$ while affecting the $p1$. Models 9, 10, 11 and 12 show the impact of variable $msme$ in its interaction with the $cost\_eff$ while affecting variable RGDP_25. The data consist of the RDBs of all provinces from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. * Denotes p < 0.1. ** Denotes p < 0.5. *** Denotes p < 0.01

Table 4-5. (Continued)

	(13) rural	(14) rural	(15) rural	(16) rural	(17) urban	(18) urban	(19) urban	(20) urban
msme	0.003		0.003	0.076*	0.009**		0.009**	0.044
	[0.003]		[0.003]	[0.040]	[0.004]		[0.004]	[0.051]
cost_eff		0.017	0.017	0.060*		0.001	0.000	0.023
		[0.021]	[0.021]	[0.034]		[0.029]	[0.028]	[0.048]
msme#cost_eff				-0.090*				-0.044
				[0.048]				[0.063]
sanitation	-0.099***	-0.098***	-0.099***	-0.097***	-0.075***	-0.071***	-0.074***	-0.074***
	[0.023]	[0.022]	[0.022]	[0.022]	[0.024]	[0.026]	[0.025]	[0.024]
guest	-0.010***	-0.010**	-0.010***	-0.010***	0.005	0.005	0.005	0.004
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.005]	[0.004]	[0.004]
electric	-0.011	-0.008	-0.007	-0.008	-0.098***	-0.100***	-0.100***	-0.095***
	[0.016]	[0.014]	[0.014]	[0.015]	[0.019]	[0.018]	[0.019]	[0.019]
rice	-0.045**	-0.047**	-0.046**	-0.050**	-0.055***	-0.057***	-0.055***	-0.059***
	[0.022]	[0.022]	[0.022]	[0.023]	[0.018]	[0.020]	[0.018]	[0.018]
branch	-0.006	-0.006	-0.006	-0.006	0.003	0.003	0.004	0.003
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]
security	0.021*	0.021*	0.021*	0.020*	-0.009	-0.010	-0.008	-0.010
	[0.011]	[0.011]	[0.011]	[0.011]	[0.010]	[0.009]	[0.009]	[0.010]
Constant	0.479***	0.476***	0.470***	0.455***	0.428***	0.441***	0.426***	0.424***
	[0.093]	[0.097]	[0.097]	[0.108]	[0.070]	[0.078]	[0.071]	[0.081]
Observations	319	319	319	319	332	332	332	332
No.of regions	25	25	25	25	26	26	26	26
R^2-within	0.745	0.745	0.746	0.748	0.670	0.662	0.670	0.669
R^2-between	0.108	0.0985	0.102	0.104	0.0162	0.0117	0.0148	0.0222
R^2-overall	0.186	0.179	0.181	0.183	0.107	0.0991	0.104	0.118

The regression equation is estimated with a random effect (RE) model, with time trend added. The dependent variables are $rural$ or percentage of poor people in rural area, and $urban$ or percentage of poor people in urban area. Models 13,14,15 and 16 show the impact of variable $msme$ in its interaction with the $cost\_eff$ while affecting variable rural. Models 17,18,19 and 20 show the impact of $msme$ in its interaction with the $cost\_eff$ while affecting variable urban. The data consist of the RDBs of all provinces from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. * Denotes p < 0.1. ** Denotes p < 0.5. *** Denotes p < 0.01

Table 4- 6. Influence of the MSMEs loans (in relation to profit efficiency) on the regional inequalities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	unemp	unemp	unemp	unemp	p1	p1	p1	p1	RGDP_p25	RGDP_p25	RGDP_p25	RGDP_p25
msme	-0.008***		-0.008***	0.115***	0.002*		0.002	-0.023	0.044		0.044	2.289***
	[0.003]		[0.003]	[0.040]	[0.001]		[0.002]	[0.017]	[0.052]		[0.052]	[0.873]
profit_eff		0.004	-0.000	0.064**		-0.037***	-0.036**	-0.049***		-0.024	-0.005	1.146***
		[0.018]	[0.017]	[0.032]		[0.014]	[0.015]	[0.016]		[0.244]	[0.244]	[0.369]
msme#profit_eff				-0.135***				0.027				-2.458***
				[0.044]				[0.018]				[0.949]
sanitation	-0.012	-0.015	-0.012	-0.013	-0.027***	-0.022***	-0.023***	-0.023***	-0.228	-0.215	-0.229	-0.256
	[0.022]	[0.022]	[0.022]	[0.021]	[0.004]	[0.004]	[0.004]	[0.004]	[0.246]	[0.263]	[0.261]	[0.241]
guest	0.003	0.003	0.003	0.002	-0.000	-0.001	-0.001	-0.001	0.072*	0.072	0.072*	0.051
	[0.002]	[0.002]	[0.003]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.041]	[0.044]	[0.043]	[0.050]
electric	0.044*	0.045**	0.044*	0.047**	-0.017***	-0.021***	-0.020***	-0.021***	-1.319***	-1.323***	-1.317***	-1.228***
	[0.025]	[0.022]	[0.024]	[0.024]	[0.006]	[0.006]	[0.007]	[0.007]	[0.190]	[0.189]	[0.193]	[0.187]
rice	-0.071**	-0.070**	-0.071**	-0.075**	0.001	0.004	0.004	0.005	-0.955***	-0.960***	-0.956***	-1.040***
	[0.028]	[0.029]	[0.029]	[0.030]	[0.007]	[0.006]	[0.006]	[0.006]	[0.166]	[0.160]	[0.164]	[0.187]
branch	0.005	0.005	0.005	0.004	-0.007***	-0.006**	-0.005**	-0.005**	-0.013	-0.014	-0.013	-0.026
	[0.006]	[0.006]	[0.006]	[0.006]	[0.002]	[0.002]	[0.002]	[0.002]	[0.065]	[0.063]	[0.062]	[0.057]
security	0.013	0.015	0.013	0.013	0.006	0.003	0.003	0.003	-0.115	-0.126	-0.117	-0.136
	[0.015]	[0.015]	[0.016]	[0.015]	[0.004]	[0.003]	[0.003]	[0.003]	[0.146]	[0.148]	[0.142]	[0.140]
Constant	0.339***	0.324***	0.340***	0.302**	0.065**	0.096***	0.092***	0.100***	4.929***	5.006***	4.937***	4.268***
	[0.123]	[0.124]	[0.123]	[0.117]	[0.028]	[0.030]	[0.032]	[0.034]	[0.718]	[0.796]	[0.807]	[0.776]
									332	332	332	332
Observations	332	332	332	332	331	331	331	331	26	26	26	26
No.of regions	26	26	26	26	26	26	26	26	0.239	0.237	0.239	0.261
R^2-within	0.675	0.665	0.675	0.687	0.542	0.562	0.565	0.568	0.246	0.236	0.247	0.308
R^2-between	0.225	0.197	0.223	0.204	0.196	0.211	0.220	0.216	0.245	0.238	0.245	0.294
R^2-overall	0.423	0.406	0.422	0.418	0.268	0.284	0.292	0.290	RGDP_p25	RGDP_p25	RGDP_p25	RGDP_p25

The regression equation is estimated with a random effect (RE) model, with time trend added. The dependent variables are unemp or unemployment level, p1 or poverty gap index, RGDP_p25 or low-income classes. Models 1, 2, 3, and 4 show the impact of variable $msme$ in its interaction with variable $profit\_eff$ while affecting the $unemp$. Models 5, 6, 7 and 8 show the impact of $msme$ in its interaction with the $profit\_eff$ while affecting the $p1$. Models 9, 10, 11 and 12 show the impact of variable $msme$ in its interaction with the $profit\_eff$ while affecting variable RGDP_25. The data consist of the RDBs of all provinces from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. * Denotes p < 0.1. ** Denotes p < 0.5. *** Denotes p < 0.01

Table 4.6 (Continued)

	(9) rural	(10) rural	(11) rural	(12) rural	(13) urban	(14) urban	(15) urban	(16) urban
msme	0.003		0.003	-0.111**	0.009**		0.008**	-0.016
	[0.003]		[0.003]	[0.054]	[0.004]		[0.004]	[0.054]
profit_eff		-0.044	-0.042	-0.104***		-0.117***	-0.112***	-0.125***
		[0.030]	[0.031]	[0.034]		[0.033]	[0.032]	[0.045]
msme#profit_eff				0.125**				0.026
				[0.060]				[0.059]
sanitation	-0.099***	-0.093***	-0.095***	-0.094***	-0.075***	-0.059***	-0.063***	-0.062***
	[0.023]	[0.023]	[0.024]	[0.024]	[0.024]	[0.022]	[0.022]	[0.022]
guest	-0.010***	-0.011***	-0.011***	-0.009***	0.005	0.002	0.002	0.002
	[0.004]	[0.003]	[0.003]	[0.003]	[0.004]	[0.005]	[0.004]	[0.004]
electric	-0.011	-0.018	-0.017	-0.025	-0.098***	-0.113***	-0.108***	-0.111***
	[0.016]	[0.014]	[0.014]	[0.017]	[0.019]	[0.022]	[0.021]	[0.022]
rice	-0.045**	-0.042**	-0.042**	-0.039*	-0.055***	-0.047***	-0.047***	-0.046***
	[0.022]	[0.020]	[0.020]	[0.021]	[0.018]	[0.018]	[0.017]	[0.017]
branch	-0.006	-0.004	-0.004	-0.003	0.003	0.007	0.007	0.008
	[0.005]	[0.005]	[0.004]	[0.004]	[0.005]	[0.006]	[0.006]	[0.006]
security	0.021*	0.018*	0.019*	0.019*	-0.009	-0.018*	-0.017*	-0.016*
	[0.011]	[0.011]	[0.011]	[0.012]	[0.010]	[0.009]	[0.010]	[0.010]
Constant	0.479***	0.520***	0.514***	0.554***	0.428***	0.528***	0.515***	0.521***
	[0.093]	[0.100]	[0.102]	[0.103]	[0.070]	[0.080]	[0.068]	[0.075]
Observations	319	319	319	319	332	332	332	332
No.of regions	25	25	25	25	26	26	26	26
R^2-within	0.745	0.747	0.747	0.751	0.670	0.694	0.700	0.701
R^2-between	0.108	0.120	0.123	0.125	0.016	0.004	0.007	0.006
R^2-overall	0.186	0.195	0.198	0.199	0.107	0.081	0.091	0.087

The regression equation is estimated with a random effect (RE) model, with time trend added. The dependent variables are $rural$ or percentage of poor people in rural area, and $urban$ or percentage of poor people in urban area. Models 13,14,15 and 16 show the impact of variable $msme$ in its interaction with the $profit\_eff$ while affecting variable rural. Models 17,18,19 and 20 show the impact of $msme$ in its interaction with the $profit\_eff$ while affecting variable urban. The data consist of the RDBs of all provinces from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. * Denotes p < 0.1. ** Denotes p < 0.5. *** Denotes p < 0.01

Table 4- 7. Influence of the MSMEs loans (in relation to cost efficiency) on RDBs' income

	(1) price	(2) price	(3) price	(4) price	(5) nim	(6) nim	(7) nim	(8) nim	(9) NPL	(10) NPL	(11) NPL	(12) NPL
msme	0.030***		0.030***	-0.195	-0.007		-0.007*	-0.014	0.000		0.000	0.074*
	[0.006]		[0.006]	[0.149]	[0.004]		[0.004]	[0.061]	[0.002]		[0.002]	[0.038]
cost_eff		-0.017	-0.018	-0.153		0.052*	0.053*	0.048		0.022	0.022	0.066*
		[0.061]	[0.056]	[0.095]		[0.029]	[0.029]	[0.041]		[0.024]	[0.024]	[0.038]
msme#cost_eff				0.280				0.009				-0.092*
				[0.189]				[0.075]				[0.049]
sanitation	-0.089**	-0.082**	-0.092**	-0.099**	0.000	-0.003	-0.001	-0.001	0.016	0.018	0.018	0.019
	[0.041]	[0.040]	[0.041]	[0.043]	[0.023]	[0.023]	[0.022]	[0.022]	[0.019]	[0.019]	[0.019]	[0.019]
guest	-0.002	-0.002	-0.002	-0.002	-0.007	-0.008	-0.008	-0.008	0.001	0.001	0.001	0.000
	[0.008]	[0.006]	[0.007]	[0.007]	[0.006]	[0.006]	[0.006]	[0.006]	[0.002]	[0.002]	[0.002]	[0.002]
electric	0.155***	0.149***	0.152***	0.158***	0.016	0.031*	0.032*	0.031*	-0.030**	-0.027**	-0.027**	-0.029**
	[0.035]	[0.034]	[0.037]	[0.042]	[0.019]	[0.017]	[0.017]	[0.017]	[0.012]	[0.012]	[0.012]	[0.013]
rice	-0.104	-0.104	-0.097	-0.086	0.091***	0.089***	0.088***	0.088***	-0.036**	-0.037**	-0.037**	-0.041**
	[0.126]	[0.132]	[0.128]	[0.118]	[0.023]	[0.022]	[0.022]	[0.023]	[0.017]	[0.018]	[0.018]	[0.017]
branch	-0.022**	-0.022**	-0.020**	-0.020**	0.016***	0.015***	0.015***	0.015***	-0.012*	-0.011	-0.011	-0.011*
	[0.011]	[0.009]	[0.010]	[0.010]	[0.005]	[0.005]	[0.004]	[0.005]	[0.007]	[0.007]	[0.007]	[0.007]
security	0.128***	0.123**	0.128***	0.131***	-0.061***	-0.059***	-0.060***	-0.060***	-0.027***	-0.025**	-0.025**	-0.027***
	[0.048]	[0.049]	[0.049]	[0.050]	[0.017]	[0.016]	[0.017]	[0.017]	[0.010]	[0.010]	[0.010]	[0.010]
Constant	0.504	0.540	0.489	0.546	-0.307***	-0.349***	-0.340***	-0.337***	0.215***	0.200***	0.200***	0.184***
	[0.522]	[0.524]	[0.511]	[0.517]	[0.098]	[0.105]	[0.105]	[0.105]	[0.058]	[0.062]	[0.062]	[0.059]
Observations	332	332	332	332	332	332	332	332	328	328	328	328
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26
R^2-within	0.425	0.400	0.425	0.434	0.204	0.204	0.212	0.212	0.108	0.112	0.112	0.125
R^2-between	0.035	0.044	0.038	0.031	0.029	0.068	0.083	0.081	0.005	0.002	0.002	0.001
R^2-overall	0.133	0.136	0.135	0.134	0.052	0.085	0.097	0.095	0.023	0.020	0.020	0.019

The regression equation is estimated with a random effect (RE) model, with time trend added. The dependent variables are price or price of loans, nim or net interest margin, and NPL or non-performing loans. Models 1, 2, 3, and 4 show the impact of variable $msme$ in its interaction with the $cost\_eff$ while affecting the $price$. Models 5, 6, 7 and 8 show the impact of variable $msme$ in its interaction with the $cost\_eff$ while affecting the nim. Models 9, 10, 11 and 12 show the impact of $msme$ variable in its interaction with the $cost\_eff$ while affecting the NPL. The data consist of the RDBs of all provinces from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. * Denotes p < 0.1. ** Denotes p < 0.5. *** Denotes p < 0.01

Table 4- 8. Influence of the MSMEs loans (in relation to profit efficiency) on RDBs' income

	(1) price	(2) price	(3) price	(4) price	(5) nim	(6) nim	(7) nim	(8) nim	(9) NPL	(10) NPL	(11) NPL	(12) NPL
msme	0.030***		0.030***	-0.080	-0.007		-0.006	-0.204***	0.000		0.000	-0.071**
	[0.006]		[0.006]	[0.106]	[0.004]		[0.004]	[0.063]	[0.002]		[0.002]	[0.035]
profit_eff		-0.066	-0.049	-0.106		0.069***	0.066**	-0.036		-0.006	-0.006	-0.042
		[0.066]	[0.063]	[0.096]		[0.026]	[0.027]	[0.034]		[0.033]	[0.033]	[0.038]
msme#profit_eff				0.121				0.217***				0.078**
				[0.112]				[0.068]				[0.037]
sanitation	-0.089**	-0.074*	-0.085**	-0.084**	0.000	-0.009	-0.006	-0.005	0.016	0.017	0.016	0.016
	[0.041]	[0.041]	[0.042]	[0.042]	[0.023]	[0.024]	[0.023]	[0.022]	[0.019]	[0.019]	[0.020]	[0.020]
guest	-0.002	-0.004	-0.004	-0.003	-0.007	-0.005	-0.005	-0.003	0.001	0.001	0.001	0.001
	[0.008]	[0.007]	[0.008]	[0.008]	[0.006]	[0.006]	[0.006]	[0.006]	[0.002]	[0.002]	[0.002]	[0.003]
electric	0.155***	0.147***	0.151***	0.148***	0.016	0.024	0.023	0.017	-0.030**	-0.030**	-0.030**	-0.031**
	[0.035]	[0.033]	[0.035]	[0.037]	[0.019]	[0.017]	[0.017]	[0.019]	[0.012]	[0.012]	[0.012]	[0.013]
rice	-0.104	-0.102	-0.099	-0.095	0.091***	0.088***	0.087***	0.093***	-0.036**	-0.035**	-0.035**	-0.033**
	[0.126]	[0.128]	[0.125]	[0.126]	[0.023]	[0.022]	[0.022]	[0.024]	[0.017]	[0.017]	[0.017]	[0.016]
branch	-0.022**	-0.021**	-0.020*	-0.020*	0.016***	0.013***	0.013***	0.014***	-0.012*	-0.011	-0.012*	-0.012*
	[0.011]	[0.010]	[0.011]	[0.011]	[0.005]	[0.005]	[0.005]	[0.005]	[0.007]	[0.007]	[0.007]	[0.007]
security	0.128***	0.118**	0.124***	0.124***	-0.061***	-0.055***	-0.056***	-0.056***	-0.027***	-0.028**	-0.028***	-0.029***
	[0.048]	[0.047]	[0.047]	[0.047]	[0.017]	[0.016]	[0.016]	[0.016]	[0.010]	[0.011]	[0.011]	[0.011]
Constant	0.504	0.589	0.537	0.572	-0.307***	-0.370***	-0.358***	-0.297***	0.215***	0.220***	0.221***	0.244***
	[0.522]	[0.551]	[0.539]	[0.539]	[0.098]	[0.103]	[0.101]	[0.092]	[0.058]	[0.068]	[0.067]	[0.070]
Observations	332	332	332	332	332	332	332	332	328	328	328	328
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26
R^2-within	0.425	0.401	0.425	0.426	0.204	0.214	0.220	0.248	0.108	0.108	0.108	0.116
R^2-between	0.035	0.065	0.052	0.061	0.029	0.009	0.012	0.030	0.004	0.005	0.004	0.002
R^2-overall	0.133	0.153	0.147	0.153	0.052	0.030	0.036	0.058	0.023	0.023	0.022	0.019

The regression equation is estimated with a random effect (RE) model, with time trend added. The dependent variables are price or price of loans, nim or net interest margin, and NPL or non-performing loans. Models 1, 2, 3, and 4 show the impact of variable $msme$ in its interaction with the profit_eff while affecting the $price$. Models 5, 6, 7 and 8 show the impact of variable $msme$ in its interaction with the profit_eff while affecting the variable nim. Models 9, 10, 11 and 12 show the impact of variable $msme$ in its interaction with the profit_eff while affecting the variable NPL. The data consist of the RDBs of all provinces from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. * Denotes p < 0.1. ** Denotes p < 0.5. *** Denotes p < 0.01

Table 4- 9. Influence of the MSMEs loans (in relation to variable share) on the regional economy

	(1) RGDP_cap	(2) RGDP_cap	(3) RGDP_cap	(4) RGDP_cap	(5) agr	(6) agr	(7) agr	(8) agr
msme	0.005		0.005	-0.114***	0.002		0.002	-0.079*
	[0.016]		[0.016]	[0.040]	[0.026]		[0.025]	[0.044]
share		-0.160	-0.161	-0.605***		0.436***	0.436***	0.128
		[0.127]	[0.127]	[0.132]		[0.120]	[0.121]	[0.176]
msme#share				0.704***				0.481**
				[0.217]				[0.213]
sanitation	0.413***	0.416***	0.417***	0.369***	0.461***	0.456***	0.459***	0.436***
	[0.049]	[0.051]	[0.050]	[0.050]	[0.136]	[0.135]	[0.135]	[0.139]
guest	0.018	0.018	0.018	0.027	-0.086***	-0.087***	-0.086***	-0.078***
	[0.022]	[0.022]	[0.022]	[0.022]	[0.029]	[0.029]	[0.029]	[0.029]
electric	0.109	0.099	0.100	0.163**	0.790***	0.809***	0.813***	0.862***
	[0.067]	[0.069]	[0.069]	[0.080]	[0.213]	[0.214]	[0.214]	[0.233]
rice	0.354*	0.378**	0.380**	0.371**	0.371	0.305	0.305	0.301
	[0.182]	[0.172]	[0.171]	[0.158]	[0.229]	[0.231]	[0.231]	[0.224]
branch	-0.003	-0.000	0.000	-0.003	-0.029	-0.037	-0.037	-0.038
	[0.021]	[0.018]	[0.019]	[0.022]	[0.036]	[0.036]	[0.037]	[0.038]
security	0.080	0.058	0.059	0.034	-0.185*	-0.127	-0.127	-0.143
	[0.070]	[0.070]	[0.072]	[0.064]	[0.106]	[0.110]	[0.110]	[0.111]
Constant	0.074	0.022	0.005	0.073	-0.214	-0.042	-0.051	-0.028
	[0.728]	[0.714]	[0.700]	[0.656]	[1.018]	[1.015]	[1.019]	[0.992]
Observations	332	332	332	332	332	332	332	332
No.of regions	26	26	26	26	26	26	26	26
R^2-within	0.566	0.566	0.566	0.591	0.390	0.399	0.399	0.410
R^2-between	0.376	0.392	0.389	0.345	0.060	0.069	0.072	0.086
R^2-overall	0.250	0.270	0.271	0.263	0.012	0.013	0.013	0.019

The regression equation is estimated using a random effect (RE) model with the time trend added. The dependent variables are RGDP_cap or regional GDP per capita and agr or regional income per capita from the agricultural sector. Models 1, 2, 3, and 4 show the impact of variable msme in its interaction with variable share while affecting the RGDP_cap. Models 5, 6, 7, and 8 show the impact of variable msme in its interaction with variable share while affecting the agr. The data consist of RDB data of all provinces from 2001 to 2016. Robust standard error is applied. Standard errors are in parentheses. * Denotes $p < 0.1$. ** Denotes $p < 0.5$. *** Denotes $p < 0.01$.

Table 4- 10. Influence of the MSMEs loans (in relation to variable share) on the inequalities

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	unemp	unemp	unemp	unemp	p1	p1	p1	p1	RGDP_p25	RGDP_p25	RGDP_p25	RGDP_p25
msme	-0.008***		-0.008***	-0.003	0.002*		0.002*	-0.004*	0.044		0.044	0.219***
	[0.003]		[0.003]	[0.004]	[0.001]		[0.001]	[0.002]	[0.052]		[0.052]	[0.081]
share		-0.007	-0.007	0.011		-0.010	-0.011	-0.032**		0.255	0.249	0.863***
		[0.019]	[0.019]	[0.019]		[0.011]	[0.012]	[0.015]		[0.215]	[0.224]	[0.203]
msme#share				-0.029**				0.036***				-1.038***
				[0.013]				[0.012]				[0.232]
sanitation	-0.012	-0.015	-0.013	-0.011	-0.027***	-0.027***	-0.027***	-0.030***	-0.228	-0.206	-0.213	-0.134
	[0.022]	[0.023]	[0.022]	[0.022]	[0.004]	[0.005]	[0.004]	[0.004]	[0.246]	[0.247]	[0.246]	[0.253]
guest	0.003	0.003	0.003	0.003	-0.000	-0.000	-0.000	0.000	0.072*	0.073*	0.073*	0.064
	[0.002]	[0.002]	[0.002]	[0.003]	[0.001]	[0.001]	[0.001]	[0.001]	[0.041]	[0.041]	[0.040]	[0.043]
electric	0.044*	0.044**	0.043*	0.041*	-0.017***	-0.018***	-0.018***	-0.015**	-1.319***	-1.291***	-1.297***	-1.389***
	[0.025]	[0.023]	[0.024]	[0.023]	[0.006]	[0.006]	[0.006]	[0.006]	[0.190]	[0.189]	[0.195]	[0.184]
rice	-0.071**	-0.068**	-0.070**	-0.069**	0.001	0.002	0.003	0.002	-0.955***	-1.006***	-0.995***	-0.976***
	[0.028]	[0.028]	[0.028]	[0.028]	[0.007]	[0.007]	[0.007]	[0.007]	[0.166]	[0.160]	[0.166]	[0.175]
branch	0.005	0.005	0.005	0.005	-0.007***	-0.006***	-0.006***	-0.006***	-0.013	-0.019	-0.016	-0.009
	[0.006]	[0.006]	[0.006]	[0.006]	[0.002]	[0.002]	[0.002]	[0.002]	[0.065]	[0.066]	[0.067]	[0.070]
security	0.013	0.014	0.012	0.013	0.006	0.004	0.004	0.003	-0.115	-0.092	-0.080	-0.048
	[0.015]	[0.016]	[0.016]	[0.016]	[0.004]	[0.003]	[0.003]	[0.003]	[0.146]	[0.156]	[0.150]	[0.144]
Constant	0.339***	0.325***	0.337***	0.335***	0.065**	0.064**	0.060**	0.063**	4.929***	5.092***	5.015***	4.877***
	[0.123]	[0.122]	[0.120]	[0.122]	[0.028]	[0.028]	[0.028]	[0.029]	[0.718]	[0.709]	[0.738]	[0.785]
Observations	332	332	332	332	331	331	331	331				
No.of regions	26	26	26	26	26	26	26	26	332	332	332	332
R^2-within	0.675	0.665	0.675	0.677	0.542	0.543	0.547	0.569	26	26	26	26
R^2-between	0.225	0.200	0.221	0.227	0.196	0.140	0.144	0.102	0.239	0.238	0.240	0.266
R^2-overall	0.423	0.407	0.422	0.424	0.268	0.222	0.227	0.195	0.246	0.252	0.256	0.221

The regression equation is estimated with a random effect (RE) model, with time trend added. The dependent variables are unemp or unemployment level, p1 or poverty gap index, RGDP_p25 or low-income classes. Models 1, 2, 3, and 4 show the impact of variable $msme$ in its interaction with variable $share$ while affecting the $unemp$. Models 5, 6, 7 and 8 show the impact of $msme$ in its interaction with variable $share$ while affecting the $p1$. Models 9, 10, 11 and 12 show the impact of variable $msme$ in its interaction with variable $share$ while affecting variable RGDP_25. The data consist of the RDBs of all provinces from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. * Denotes p < 0.1. ** Denotes p < 0.5. *** Denotes p < 0.01

Table 4.10 (Continued)

	(5) rural	(6) rural	(7) rural	(8) rural	(9) urban	(10) urban	(11) urban	(12) urban
msme	0.003		0.003	-0.009	0.009**		0.009**	0.008
	[0.003]		[0.003]	[0.008]	[0.004]		[0.004]	[0.007]
share		-0.030	-0.029	-0.072*		0.048*	0.049	0.044**
		[0.023]	[0.024]	[0.040]		[0.027]	[0.030]	[0.022]
msme#share				0.069*				0.008
				[0.040]				[0.034]
sanitation	-0.099***	-0.098***	-0.099***	-0.102***	-0.075***	-0.071***	-0.074***	-0.074***
	[0.023]	[0.022]	[0.022]	[0.023]	[0.024]	[0.025]	[0.024]	[0.023]
guest	-0.010***	-0.010**	-0.010***	-0.009**	0.005	0.005	0.005	0.005
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
electric	-0.011	-0.016	-0.015	-0.014	-0.098***	-0.095***	-0.095***	-0.096***
	[0.016]	[0.016]	[0.016]	[0.016]	[0.019]	[0.021]	[0.019]	[0.019]
rice	-0.045**	-0.041*	-0.040	-0.041	-0.055***	-0.065***	-0.063***	-0.063***
	[0.022]	[0.024]	[0.025]	[0.026]	[0.018]	[0.019]	[0.017]	[0.018]
branch	-0.006	-0.005	-0.005	-0.004	0.003	0.002	0.003	0.003
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]
security	0.021*	0.017	0.018	0.016	-0.009	-0.004	-0.002	-0.002
	[0.011]	[0.011]	[0.011]	[0.010]	[0.010]	[0.010]	[0.010]	[0.009]
Constant	0.479***	0.474***	0.468***	0.476***	0.428***	0.461***	0.446***	0.445***
	[0.093]	[0.093]	[0.095]	[0.098]	[0.070]	[0.081]	[0.072]	[0.073]
Observations	319	319	319	319	332	332	332	332
No.of regions	25	25	25	25	26	26	26	26
R^2-within	0.745	0.746	0.747	0.752	0.670	0.665	0.674	0.674
R^2-between	0.108	0.071	0.075	0.055	0.016	0.020	0.023	0.022
R^2-overall	0.186	0.157	0.160	0.144	0.107	0.111	0.115	0.113

The regression equation is estimated with a random effect (RE) model, with time trend added. The dependent variables are $rural$ or percentage of poor people in rural area, and $urban$ or percentage of poor people in urban area. Models 13,14,15 and 16 show the impact of variable $msme$ in its interaction with variable $share$ while affecting variable $rural$. Models 17,18,19 and 20 show the impact of $msme$ in its interaction with variable $share$ while affecting variable $urban$. The data consist of the RDBs of all provinces from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. * Denotes p < 0.1. ** Denotes p < 0.5. *** Denotes p < 0.01

Table 4- 11. Influence of the MSMEs loans (in relation to variable share) on the RDBs' income

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	price	price	price	price	nim	nim	nim	nim	NPL	NPL	NPL	NPL
msme	0.030***		0.030***	0.030***	-0.007		-0.007	-0.004	0.000		0.000	0.014***
	[0.006]		[0.006]	[0.011]	[0.004]		[0.004]	[0.008]	[0.002]		[0.002]	[0.004]
share		0.025	0.026	0.025		0.058**	0.058**	0.066*		0.017	0.017	0.065***
		[0.049]	[0.049]	[0.062]		[0.026]	[0.026]	[0.034]		[0.019]	[0.019]	[0.022]
msme#share				0.001				-0.012				-0.081***
				[0.058]				[0.032]				[0.023]
sanitation	-0.089**	-0.078**	-0.089**	-0.089**	0.000	-0.001	0.001	0.002	0.016	0.017	0.017	0.022
	[0.041]	[0.040]	[0.041]	[0.040]	[0.023]	[0.023]	[0.022]	[0.023]	[0.019]	[0.019]	[0.019]	[0.021]
guest	-0.002	-0.002	-0.002	-0.002	-0.007	-0.007	-0.007	-0.007	0.001	0.001	0.001	0.000
	[0.008]	[0.008]	[0.008]	[0.008]	[0.006]	[0.006]	[0.006]	[0.006]	[0.002]	[0.002]	[0.002]	[0.002]
electric	0.155***	0.153***	0.157***	0.157***	0.016	0.020	0.019	0.018	-0.030**	-0.028**	-0.028**	-0.033**
	[0.035]	[0.034]	[0.036]	[0.035]	[0.019]	[0.018]	[0.019]	[0.019]	[0.012]	[0.012]	[0.012]	[0.013]
rice	-0.104	-0.114	-0.108	-0.108	0.091***	0.083***	0.082***	0.082***	-0.036**	-0.039**	-0.039**	-0.038**
	[0.126]	[0.131]	[0.127]	[0.128]	[0.023]	[0.025]	[0.025]	[0.025]	[0.017]	[0.018]	[0.018]	[0.017]
branch	-0.022**	-0.024**	-0.023**	-0.023**	0.016***	0.015***	0.015***	0.015***	-0.012*	-0.012*	-0.012*	-0.012*
	[0.011]	[0.010]	[0.011]	[0.011]	[0.005]	[0.005]	[0.005]	[0.005]	[0.007]	[0.007]	[0.007]	[0.007]
security	0.128***	0.126***	0.131***	0.131***	-0.061***	-0.052***	-0.053***	-0.052***	-0.027***	-0.025**	-0.025**	-0.024**
	[0.048]	[0.049]	[0.049]	[0.048]	[0.017]	[0.017]	[0.017]	[0.017]	[0.010]	[0.011]	[0.011]	[0.011]
Constant	0.504	0.562	0.516	0.516	-0.307***	-0.296***	-0.285***	-0.286***	0.215***	0.224***	0.224***	0.217***
	[0.522]	[0.538]	[0.523]	[0.527]	[0.098]	[0.101]	[0.102]	[0.102]	[0.058]	[0.060]	[0.059]	[0.056]
Observations	332	332	332	332	332	332	332	332	328	328	328	328
No.of regions	26	26	26	26	26	26	26	26	26	26	26	26
R^2-within	0.425	0.401	0.426	0.426	0.204	0.209	0.216	0.217	0.108	0.113	0.113	0.135
R^2-between	0.035	0.037	0.030	0.030	0.029	0.007	0.010	0.010	0.005	0.003	0.003	0.006
R^2-overall	0.133	0.130	0.129	0.129	0.052	0.027	0.032	0.032	0.023	0.019	0.019	0.030

The regression equation is estimated with a random effect (RE) model with time trend added. Model 1, 2, 3 and 4 show the impact of msme variable in its interaction with variable $share$, while affecting the variable price. Model 5, 6, 7, and 8 show the impact of msme variable in interaction with variable $share$ while affecting variable nim. Model 9, 10, 11, and 12 show the impact of variable $msme$ in its interaction with variable $share$ while affecting the variable NPL. The data consist of all the commercial banks in the Indonesian banking system from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. * Denotes p < 0.1. ** Denotes p < 0.5. *** Denotes p < 0.01

4.5.1.1 Is the quantity of MSME loans (distributed by RDBs) and the quality of capital allocation important to boost the regional economy?

To gain a comprehensive idea of the impact of MSME loans on the regional economy, we observed the contribution of MSME lending in terms of its impact not only on regional GDP as an aggregate but also on the low-income regions and the agriculture sector. As shown in table 4-3 and table 4-5, we found no significant influence of the three main independent variables, $msme$, $cost\_eff$, and $msme\#cost\_eff$, on the dependent variables. While testing the implication of MSME lending by a better bank for unemployment and poverty, as shown in Table 4-5, we again found that independent variables, particularly the $msme$ variable, interacted with $cost\_eff$ variable (msme#cost_eff), rarely had a significant impact on dependent variables, with the exception of the negative impact on the rural variable at the 10% significance level. This suggests that the MSME loans distributed by better banks can lower the percentage of poor people in rural areas.

Observing the individual $profit\_eff$ variable [see table 4-4 and table 4-6], it had a negative impact on agr, $p1$ and variable rural; and had positive influence on $unemp$, RGDP_p25 and variable urban. Whilst the individual variable $msme$ had a negative impact on RGDP_cap, variable agr and variable rural and urban; mixing results on $unemp$ and $p1$; positive impact on RGDP_p25 as well, yet these significances were not consistent for all models. Moreover, as this study emphasised on the interaction variable, it is showed that the $msme\#profit\_eff$ was significant in affecting the regional GDP (aggregate), agriculture sector, unemployment level, and variable RGDP_p25 and variable srural. Referred to the inconsistency of the significant coefficient in the main effect implied that the main effect was not fixed for whole observations, Hays (1983), Jaccard et al. (1990), and Hayes (2005) stated the main effect becomes meaningless when discovering a significant coefficient in the interaction model. Furthermore, the positive and significant coefficients found when we regress msme#profit_eff [see table 4-4 and table 4-6] on regional GDP per head (overall) and agr variable implied that the MSME lending by better banks (proxied by $profit\_eff$) tends to improve the income of the regional economy as an aggregate as well as affecting the income of the agricultural sector. Whereas a negative and significant coefficient was found when we regressed the interaction variable ($msme\#profit\_eff$) on variable $unemp$ and variable $RGDP\_p25$. However, compared to the impact of msme#profit_eff on variable $rural$ (Table 4-6), its showed a positive and significant coefficient, meaning that the MSME loans distributed by better RDBs (proxied by profit efficiency) increased the number of poor people in rural area.

Based on the outcomes in Table 4-7 and Table 4-8, the interaction between msme variable with cost_eff variable gave a different result than the interaction between msme and profit_eff. The implication of the distributed MSME loans by better banks (proxied by cost_eff) tended to lower the NPL (10% significance level), but the MSME credit disbursed by profit efficiency-oriented banks tended to increase the NPL as well as nim. By studying the regression results, we learned that significant signs were mostly found when we regressed $msme$ variables with profit efficiency variable, or $profit\_eff$, which is similar to the findings of Hasan et al. (2009) and Pasiouras, Tanna, and Zopounidis (2009). Regarding descriptive analysis of cost efficiency and profit efficiency, cost efficiency and profit efficiency seem not to work in tandem. (De Guevara & Maudos, 2002) explained that differences might occur because profit efficiency is more likely driven by revenues rather than costs, so the analysis of cost efficiency alone would offer only a partial insight into bank efficiency. Thus, it is important to analyse profit efficiency as well (De Guevara & Maudos, 2002).

The MSME loans distributed by profit efficiency-oriented banks seem to encourage the regional economy per head (as an aggregate), the agricultural sector and unemployment but not helping the low-income regions. By dividing the RGDP into 25 quantiles, we were able to capture conditions in which, although the provision of more credit on the part of efficient banks implied a good selection of projects, this came at the cost of the incomes of low-income regions. We suggest that this may be linked with the effort to avoid additional risk because these low-income regions may have a weaker ability to pay back loans, which can potentially reduce bank revenue and lower profit efficiency. It might also explain the increase in the number of poor people in rural areas due to the business potential of the location, which strategically might not generate better return for RDBs if their objective is to achieve a positive return, as is reflected in their positive and significant coefficient in nim variable; furthermore increasing credit to small business sector increased the risk of unpaid debt, as the NPL was significant and positive. While examining the impact of MSME loan distribution by cost-efficiency oriented banks, the outcomes were rarely significant in affecting the income of the regions, either in regional GDP (aggregate), or in low-classes income, or in the agricultural sector, while it has a negative and significant impact on lowering the percentage of poor people in rural areas and affects the NPL in a negative way. In other side, using profit efficiency indicator, we found a positive and significant outcome when we regressed msme#profit_eff on rural variable, which is the opposite from the prior finding (using cost efficiency indicator). However, to receive a robust outcome, we observed the consistency of the results by adding control variables and conducted an endogeneity test.

4.5.1.2 Does the higher RDBs' market share amplify their support for the MSME sector?

When studying the contribution of RDBs through MSME lending on the regional economy, we need to consider, as noted by Chong, Lu, and Ongena (2013) and (De Young et al., 2004), the notion of credit rationing. The size of the bank correlates with the contribution made. Because RDBs' size is smaller in proportion compared to other banks (national public banks and private banks), their lending to MSMEs might not be effective in affecting the economy when the market is occupied. The high-concentration market (combined with the tension inherent in competition) might be related to favourable conditions, such as having high endowment levels and being located within the financial centre or close to the capital city, because better locations and endowments attract more banks to open their branches (De Young et al., 2004). As shown in chapter three (3)[1], most banks tend to be situated on Java island, particularly in the vicinity of Jakarta, because this is the capital city, and most financial transactions occur here. Regarding the descriptive statistics [see figure 4-9], the RDBs' size (in terms of the lending distribution) in Java island might be bigger compared to the total number of loans by RDBs across all regions, but at the same time, RDBs' size in their regions (compared to the total number of loans that commercial banks have in the same region) seem smaller. In contrary, the lending by RDBs located in low-developed regions might be smaller (when compared to the total number of loans distributed by all RDBs), but within the regions, their size is bigger compared to the RDBs located on Java island. This implies that, generally, commercial banks place focus on certain areas, namely, better endowment locations, and leave poor regions that might potentially have a high chance of credit rationing, underserved. Understanding this situation, the GOI created regional banks with the expectation that they would remain in their regions and support development there. This was similar to the concept of the regional bank in Hakenes and Schnabel (2006). Moreover, Hakenes et al. (2015) stated that regional banks support through loans will be effective in improving the regional economy if the banks show concern about the quality of their intermediation.

Testing the contribution of RDBs in less competitive regions, surprisingly, we found that the interaction variables ($msme\#share$) have a significant coefficient when regressed on almost all dependent variables, expect variable urban [see table 4-9 and table 4-10]. Meanwhile individual variables such as $msme$ and share variables rarely have a significant influence on dependent variables (Table 4-9), implying that the impact of MSME lending is more effective when interacting with the size of the RDBs. The higher the market share of the RDBs, the greater the positive and significant impact on regional GDP of MSME loans (distributed by RDBs). Further, the contribution of loans is

[1] See chapter 3, 'Does geography influence RDBs lending?'

significant in terms of improving income in the agricultural sector. However, we observed that loans did not help the low-income regions; rather, it experienced a negative impact because the coefficient was negative and significant. Thus, it means that the relative size of the MSMEs credit distributed by the RDBs that have more market share does not influence the poorest segment of the society. In addition, a negative and significant coefficient was also found when we regressed the $msme\#share$ on the unemployment rate, which was good. At the same time, $msme\#share$ had a positive and significant influence on p1 a $rural$ variable. This indicates that although lending may be able to solve unemployment, another problem remains, that is, growth in the poverty gap. Therefore, the outcomes imply that disparity across regions and within regions might connect with the effort of the banks to generate more income and lower the risk of unpaid debt as the NPL was negative and significant. This finding might explain the findings of Beck et al., (2005) and (Ali & Pernia, 2003) which they found that the growth of MSMEs tend to increase the poverty gap. Using another approach, MSMEs loans, we found that the credit distributed by the banks, in this case, RDBs might cause the disparity. The lending may not be equally spread within region, and the location of RDBs in less competitive markets may indicate unfavourable conditions in terms of geographical or location conditions; as such, the risks related to non-performing loans may be high. However, RDBs must consider risks and returns when deciding the allocation of lending, which may be linked with the negative and significant impact of regressing $msme\#share$ on the RGDP_p25. In the context of a lower endowment, a bank may lend money to middle- and upper-economy and in this way help them avoid additional risk. This decision may be linked to the rules set out by the GOI that banks should control their npl despite providing loans to the MSME sector, which technically carries additional risk.

Observing the control variables, the sanitation variable showed that better access to decent sanitation improved the overall economy and increased incomes in the agricultural sector, whereas we found no significance sign when we regressed the variable with RGDP_p25. When testing the impact of the guest variable on dependent variables, we found that the number of foreign visitors had a negative relationship on the agricultural sector. Although it appeared to increase the incomes of the low-income region, not all models were consistently significant. An increase in the number of visitors may help to develop the economy and attract migration from rural areas, which is where agriculture tends to be situated. We linked these two notions because we found a negative and significant coefficient, after regressing the guest variable on the rural variable. Improvement in the tourism sector lowered the number of poor people in rural areas, but not in urban areas; this made us consider that these two may be related, because as the agricultural sector is primarily located in rural areas, a higher percentage of visitors may change the structure of agriculture. People may choose to use a percentage of their rice fields to build a hotel or proper accommodation for visitors; others may change occupations from being farmers to being tourist guides or switch to a different job created as a result of having more visitors.

When checking the implications of having electricity access, we found a positive and significant increase in income on average and improved incomes in the agricultural sector, but a drop in income for low-income regions. The cost of accessing the electricity infrastructure may be proportionally bigger for low-income region and may thus affect their income. When examining the impact of electricity access, a negative impact was observed on the $p1$ variable but a positive impact was observed on the unemployment level and poor people in urban area. We believe that more accessible areas (electricity) will spur development and attract more people, but if employment opportunities are limited, unemployment will increase and push the number of poor people in urban area. Improvements to this facility (electricity access) are important for bridging the poverty gap (Zhang et al., 2016). Adding agriculture income as a dependent variable helped us to understand the impact of the increasing price of rice. The positive and significant sign yielded when we regressed the rice variable on RGDP_cap but not with agr variable albeit it has a positive coefficient. This might occur because the agr variable consists several sectors, which are animal husbandry, forestry, and fisheries. While the results showed that the increasing price of rice eroded incomes among the low-income region ($RGDP\_p25$). However, we found no positive impact of the rice variable on the poverty gap as well as the percentage of poor people in rural areas; rather, we found that the increasing price of rice lowered the percentage of poor people in the urban area as well as in the rural area. Referred to the prior explanation [see Chapter two (2)], the opposite impact may occur due to the certain programs implemented by the GOI, such as cut the role of the middle man, and Poverty Alleviation Program.

Studying the impact of size, proxied by the branch variable, in line with the lower poverty gap, we rarely found significant signs when regressing the variable with other dependent variables. Considering the impact of the behaviour of RDBs in allocating funds to the securities, we found that the more they allocate their funds to securities, the bigger the interest incomes and the smaller the NPL, yet it increased the nim. However, the bigger the size of banks seemed to have less interest income, but generate higher nim, which we suspected that the big banks might have more efficient system to save the operational costs compared to the small banks.

4.5.1.3 Does the spillover amplify the impact of the MSMEs lending on the regional economy?

To what extent may MSME loans distributed by RDBs and affecting the regional economy in home regions affected by the activities in neighbouring regions, which possibly have a significant impact on the home region's economic conditions? We run three spatial panel models, the spatial autoregressive model (SAR), spatial Durbin model (SDM), and spatial error model (SEM)– to observe the spatial dependence effect on the MSMEs loans. However, we drop the RGDP_p25 variable as a dependent variable as the dummy generated in this variable does not based on variance within the regions but comparatively across regions. We conduct spatial panel analysis using the random effect model based on an estimation of the Hausman test attached in the appendix. In addition, as the spatial analysis requires a balance panel data, then the interpolation method is applied for unbalanced variables, such as variable $p1, rice$, and $sanitation$.

We detected the existence of spatial dependence in almost all models using rho (spatial lag) and lambda (spatial error). For instance, the positive significance of spatial lag (rho) when the dependent variable is RGDP_cap suggests that the increase of the RGDP (per capita) of the neighbouring regions has a positive influence on the growth of home regions and vice versa. Using $unemp$ as a dependent variable, a positive sign was also found for all models, which suggests that increasing (decreasing) the level of unemployment in the neighbouring regions tends to affect the unemployment level in the home regions in a positive (negative) way and vice versa. The same applies when we use $p1$ as a dependent variable. The poverty gap in the neighbouring regions affects the poverty gap in the home regions and vice versa. We do not interact $msme$ variable with the efficiency indicator because we intend to see the spatial dependence that might contribute to the outcomes. Yet, we observed little impact of the two main independent variables, MSME lending (msme) and cost efficiency, on the dependent variables. This was similar to the previous findings obtained using regression analysis at table 4-3.

Table 4- 12. Estimated results of the Spatial Dependence Estimators (with cost efficiency as an indicator of the banking performance)

	(1) RGDP_cap	(2) RGDP_cap	(3) RGDP_cap	(4) agr	(5) agr	(6) agr
msme	0.021	0.014	0.027	0.024	0.020	0.025
	[0.020]	[0.025]	[0.023]	[0.025]	[0.026]	[0.026]
cost_eff	-0.217	-0.157	-0.352**	-0.446	-0.413*	-0.493
	[0.150]	[0.129]	[0.174]	[0.277]	[0.240]	[0.320]
sanitation	0.251**	0.232**	0.312**	-0.081	-0.098	-0.075
	[0.114]	[0.095]	[0.122]	[0.065]	[0.082]	[0.063]
guest	0.057**	0.034	0.071**	-0.055	-0.075***	-0.053
	[0.028]	[0.028]	[0.034]	[0.038]	[0.028]	[0.038]
electricity	0.468***	0.447***	0.454**	0.964***	0.949***	0.969***
	[0.165]	[0.153]	[0.188]	[0.214]	[0.213]	[0.219]
rice	-0.019	0.076	0.028	0.097	0.169*	0.104
	[0.081]	[0.074]	[0.100]	[0.111]	[0.092]	[0.114]
branches	0.110***	0.091**	0.104**	0.070*	0.062*	0.073*
	[0.040]	[0.038]	[0.049]	[0.042]	[0.036]	[0.044]
security	-0.065	0.015	-0.046	-0.336***	-0.290***	-0.341***
	[0.061]	[0.055]	[0.061]	[0.085]	[0.069]	[0.086]
constant	0.737***	0.416**	1.053***	0.860**	0.253	0.922**
	[0.193]	[0.198]	[0.283]	[0.391]	[0.344]	[0.435]
Wx*msme		-0.147***			-0.141***	
		[0.047]			[0.049]	
Wx*cost_eff		1.143***			1.541***	
		[0.342]			[0.505]	
Wx*sanitation		-0.316**			-0.249*	
		[0.130]			[0.129]	
Wx*guest		-0.085			-0.068	
		[0.052]			[0.063]	
Wx*electricity		0.144			0.359*	
		[0.141]			[0.189]	
Wx*rice		-0.052			-0.055	
		[0.120]			[0.109]	
Wx*branches		0.076			-0.015	
		[0.069]			[0.048]	
Wx*security		-0.389***			-0.281***	
		[0.086]			[0.101]	
Spatial effect						
rho	0.306***	0.161***		0.060	-0.071	
(spatial lag)	[0.068]	[0.052]		[0.043]	[0.053]	
lambda			0.370***			0.078
(spatial error)			[0.098]			[0.058]
Observations	416	416	416	416	416	416
R^2-overall	0.099	0.096	0.216	0.018	0.000	0.029
R^2-within	0.076	0.065	0.197	0.120	0.006	0.174
R^2-between	0.461	0.548	0.424	0.421	0.475	0.420
AIC	-305.3247	-347.6396	-298.6152	-221.1107	-253.0776	-220.9873
BIC	-256.9565	-287.1793	-250.2469	-172.7424	-192.6173	-172.619

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p< 0.5. *** Denotes p< 0.01

Table 4-12. (continued)

	(7) unemp	(8) unemp	(9) unemp	(10) p1	(11) p1	(12) p1	(13) rural	(14) rural	(15) rural
msme	-0.006**	-0.007***	-0.006**	0.001	0.001	0.001	0.006	0.006	0.004
	[0.002]	[0.002]	[0.003]	[0.001]	[0.002]	[0.001]	[0.005]	[0.004]	[0.004]
cost_eff	-0.009	-0.008	-0.003	-0.010	-0.010	-0.011	0.046*	0.034	0.046**
	[0.014]	[0.013]	[0.015]	[0.014]	[0.012]	[0.014]	[0.024]	[0.025]	[0.022]
sanitation	-0.015	-0.013	-0.016	0.019	0.020	0.021	0.026	0.022	0.030
	[0.012]	[0.011]	[0.011]	[0.019]	[0.020]	[0.019]	[0.032]	[0.030]	[0.035]
guest	-0.004	-0.002	-0.003	-0.003**	-0.003***	-0.003***	-0.021***	-0.014*	-0.021***
	[0.003]	[0.003]	[0.003]	[0.001]	[0.001]	[0.001]	[0.007]	[0.007]	[0.005]
electricity	0.006	0.011	0.009	-0.040*	-0.040*	-0.043*	-0.115*	-0.101*	-0.106
	[0.018]	[0.017]	[0.019]	[0.021]	[0.021]	[0.022]	[0.067]	[0.061]	[0.074]
rice	-0.031**	-0.037***	-0.044***	-0.003	-0.001	-0.005	-0.026***	-0.060***	-0.056***
	[0.015]	[0.014]	[0.017]	[0.005]	[0.004]	[0.004]	[0.009]	[0.012]	[0.019]
branches	-0.003	-0.002	-0.004	-0.008***	-0.006***	-0.008***	-0.011*	-0.009	-0.012**
	[0.006]	[0.006]	[0.007]	[0.002]	[0.002]	[0.002]	[0.006]	[0.006]	[0.005]
security	0.026***	0.019**	0.026***	0.012***	0.009***	0.013***	0.050***	0.037***	0.041**
	[0.008]	[0.009]	[0.009]	[0.004]	[0.003]	[0.005]	[0.011]	[0.007]	[0.017]
constant	0.217***	0.249***	0.281***	0.095**	0.080***	0.112***	0.393***	0.518***	0.555***
	[0.052]	[0.047]	[0.056]	[0.038]	[0.026]	[0.030]	[0.039]	[0.062]	[0.061]
Wx*msme	-0.006**	-0.006***		0.001	0.001		0.006	0.006	
	[0.003]	[0.002]		[0.001]	[0.002]		[0.005]	[0.004]	
Wx*cost_eff	-0.009	-0.014		-0.010	-0.010		0.046*	0.032	
	[0.014]	[0.014]		[0.014]	[0.012]		[0.025]	[0.027]	
Wx*sanitation	-0.016	-0.013		0.019	0.020		0.026	0.023	
	[0.012]	[0.011]		[0.019]	[0.020]		[0.033]	[0.030]	
Wx*guest	-0.004	-0.002		-0.003**	-0.003***		-0.021***	-0.014*	
	[0.003]	[0.003]		[0.001]	[0.001]		[0.007]	[0.007]	
Wx*electricity	0.007	0.012		-0.040**	-0.040*		-0.117*	-0.102*	
	[0.019]	[0.017]		[0.020]	[0.021]		[0.068]	[0.059]	
Wx*rice	-0.032**	-0.038***		-0.003	-0.000		-0.027***	-0.059***	
	[0.015]	[0.014]		[0.005]	[0.004]		[0.009]	[0.012]	
Wx*branches	-0.003	-0.003		-0.008***	-0.006***		-0.011*	-0.009	
	[0.006]	[0.006]		[0.002]	[0.002]		[0.006]	[0.006]	
Wx*security	0.027***	0.021***		0.013***	0.009***		0.051***	0.037***	
	[0.009]	[0.008]		[0.004]	[0.003]		[0.011]	[0.008]	
Spatial effect									
rho	0.292***	0.255***		0.183**	0.070		0.242***	0.033	
(spatial lag)	[0.066]	[0.074]		[0.089]	[0.067]		[0.026]	[0.092]	
lamda			0.321***			0.157*			0.338***
(spatial error)			[0.094]			[0.091]			[0.080]
Observations									
R^2-overall	416	416	416	416	416	416	416	416	416
R^2-within	0.131	0.205	0.137	0.234	0.289	0.205	0.178	0.222	0.209
R^2-between	0.00717	0.0122	0.0793	0.163	0.225	0.137	0.111	0.149	0.152
AIC	-2274.093	-2290.311	-2266.93	-2635.187	-2649.601	-2628.549	-1591.642	-1625.507	-1588.173
BIC	-2225.725	-2229.85	-2218.561	-2586.819	-2589.141	-2580.18	-1543.274	-1565.046	-1539.805

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p< 0.5. *** Denotes p< 0.01

Table 4-12. (continued)

	(16) urban	(17) urban	(18) urban	(19) price	(20) price	(21) price
msme	0.003	0.001	0.002	0.042***	0.041***	0.043***
	[0.004]	[0.004]	[0.004]	[0.014]	[0.011]	[0.014]
cost_eff	0.032	0.022	0.027	-0.242	-0.252*	-0.243*
	[0.027]	[0.025]	[0.026]	[0.150]	[0.137]	[0.145]
sanitation	-0.004	-0.014	-0.004	0.051	0.027	0.050
	[0.009]	[0.009]	[0.009]	[0.083]	[0.081]	[0.081]
guest	-0.007	-0.006	-0.008	-0.003	0.003	-0.004
	[0.006]	[0.006]	[0.006]	[0.010]	[0.011]	[0.010]
electricity	-0.057***	-0.045*	-0.043***	0.007	0.053**	0.006
	[0.020]	[0.023]	[0.016]	[0.037]	[0.027]	[0.040]
rice	-0.063***	-0.074***	-0.074***	-0.016	-0.058	-0.020
	[0.010]	[0.015]	[0.010]	[0.087]	[0.081]	[0.092]
branches	-0.005	-0.005	-0.008	-0.023*	-0.021*	-0.025*
	[0.006]	[0.005]	[0.005]	[0.013]	[0.012]	[0.014]
security	0.000	0.007	-0.002	0.282***	0.257***	0.290***
	[0.012]	[0.008]	[0.012]	[0.078]	[0.072]	[0.083]
constant	0.439***	0.467***	0.499***	0.331	0.465*	0.366
	[0.057]	[0.070]	[0.044]	[0.285]	[0.265]	[0.294]
Wx*msme		-0.007			-0.002	
		[0.007]			[0.030]	
Wx* cost_eff		-0.039			0.143	
		[0.040]			[0.119]	
Wx*sanitation		0.017			0.188***	
		[0.017]			[0.051]	
Wx*guest		0.019**			-0.049***	
		[0.007]			[0.011]	
Wx*electricity		-0.212***			0.064	
		[0.032]			[0.067]	
Wx*rice		0.018			-0.003	
		[0.013]			[0.037]	
Wx*branches		0.025**			-0.014	
		[0.012]			[0.021]	
Wx*security		0.002			0.099**	
		[0.011]			[0.046]	
Spatial effect		-0.007			-0.002	
rho	0.062	0.142***		-0.078	-0.104	
(spatial lag)	[0.063]	[0.048]		[0.076]	[0.074]	
lambda			0.222***			0.015
(spatial error)			[0.048]			[0.092]
Observations	416	416	416	416	416	416
R^2-overall	0.177	0.241	0.195	0.162	0.176	0.159
R^2-within	0.0729	0.141	0.0953	0.0270	0.0360	0.0247
R^2-between	0.546	0.597	0.547	0.415	0.451	0.410
AIC	-1935.409	-1977.655	-1941.238	-986.8821	-1006.48	-985.0855
BIC	-1887.041	-1917.195	-1892.87	-938.5139	-946.0192	-936.7173

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table 4-12. (continued)

	(22) nim	(23) nim	(24) nim	(25) NPL	(26) NPL	(27) NPL
msme	-0.004	-0.005	-0.005	0.003	0.002	0.003
	[0.004]	[0.004]	[0.004]	[0.003]	[0.003]	[0.003]
cost_eff	0.024	0.021	0.020	0.022	0.024	0.016
	[0.033]	[0.030]	[0.031]	[0.024]	[0.024]	[0.027]
sanitation	-0.010	-0.018	-0.010	0.031***	0.031**	0.032***
	[0.013]	[0.013]	[0.012]	[0.011]	[0.015]	[0.010]
guest	-0.007	-0.004	-0.007	-0.003	-0.003	-0.003
	[0.006]	[0.007]	[0.006]	[0.003]	[0.003]	[0.003]
electricity	0.012	0.034***	0.020	-0.013	-0.008	-0.012
	[0.014]	[0.013]	[0.014]	[0.020]	[0.023]	[0.020]
rice	-0.010	-0.011	-0.014	0.003	0.004	0.001
	[0.011]	[0.011]	[0.012]	[0.008]	[0.007]	[0.007]
branches	0.007*	0.010**	0.008*	-0.014**	-0.012**	-0.014***
	[0.004]	[0.004]	[0.004]	[0.005]	[0.005]	[0.005]
security	-0.025	-0.033**	-0.028*	-0.001	-0.018	-0.001
	[0.016]	[0.016]	[0.017]	[0.014]	[0.013]	[0.013]
constant	0.069	0.032	0.086	0.040	0.034	0.050
	[0.053]	[0.053]	[0.054]	[0.038]	[0.032]	[0.034]
Wx*msme		0.010			0.007	
		[0.009]			[0.006]	
Wx* cost_eff		0.039			-0.031	
		[0.062]			[0.054]	
Wx*sanitation		-0.006			0.028	
		[0.023]			[0.025]	
Wx*guest		-0.004			0.000	
		[0.006]			[0.004]	
Wx*electricity		-0.081**			0.042*	
		[0.036]			[0.023]	
Wx*rice		0.021			-0.007	
		[0.019]			[0.013]	
Wx*branches		-0.009			-0.006	
		[0.010]			[0.008]	
Wx*security		-0.004			0.057***	
		[0.015]			[0.013]	
Spatial effect		0.010			0.007	
rho	0.154***	0.186***		-0.133	-0.204***	
(spatial lag)	[0.054]	[0.051]		[0.086]	[0.078]	
lambda			0.238***			-0.186**
(spatial error)			[0.056]			[0.086]
Observations	416	416	416	416	416	416
R^2-overall	0.026	0.038	0.022	0.070	0.081	0.070
R^2-within	0.0241	0.0301	0.0181	0.0820	0.0624	0.0807
R^2-between	0.0366	0.0956	0.0383	0.0809	0.120	0.0815
AIC	-1866.062	-1884.603	-1870.517	-1914.323	-1927.342	-1915.866
BIC	-1817.694	-1824.143	-1822.149	-1865.955	-1866.882	-1867.498

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table 4- 13. Estimated results of the Spatial Dependence Estimators (with profit efficiency as an indicator of the banking performance)

	(1) RGDP_cap	(2) RGDP_cap	(3) RGDP_cap	(4) agr	(5) agr	(6) agr
msme	0.017	0.010	0.023	0.020	0.014	0.018
	[0.020]	[0.021]	[0.022]	[0.023]	[0.022]	[0.023]
profit_eff	0.513*	0.643**	0.593*	0.546*	0.637**	0.541*
	[0.286]	[0.254]	[0.304]	[0.293]	[0.259]	[0.295]
sanitation	0.226**	0.253***	0.280**	-0.112	-0.099	-0.116
	[0.104]	[0.097]	[0.110]	[0.085]	[0.087]	[0.085]
guest	0.072**	0.058*	0.081**	-0.040	-0.057*	-0.040
	[0.029]	[0.030]	[0.036]	[0.035]	[0.031]	[0.035]
electricity	0.594***	0.538***	0.613***	1.145***	1.083***	1.156***
	[0.175]	[0.169]	[0.195]	[0.214]	[0.221]	[0.218]
rice	0.005	0.008	0.071	0.122	0.121	0.130
	[0.102]	[0.096]	[0.126]	[0.139]	[0.122]	[0.140]
branches	0.096***	0.061*	0.088**	0.058	0.042	0.060
	[0.034]	[0.035]	[0.042]	[0.038]	[0.034]	[0.041]
security	-0.063	0.028	-0.025	-0.326***	-0.273***	-0.333***
	[0.066]	[0.046]	[0.068]	[0.088]	[0.070]	[0.091]
constant	-0.142	0.395	-0.079	-0.247	-0.117	-0.230
	[0.527]	[0.385]	[0.614]	[0.721]	[0.671]	[0.737]
Wx*msme		-0.106***			-0.122***	
		[0.036]			[0.045]	
Wx* profit_eff		-0.607*			-0.210	
		[0.313]			[0.356]	
Wx*sanitation		-0.348***			-0.303**	
		[0.109]			[0.128]	
Wx*guest		-0.038			0.007	
		[0.045]			[0.057]	
Wx*electricity		-0.162			0.081	
		[0.154]			[0.235]	
Wx*rice		0.096			0.110	
		[0.115]			[0.093]	
Wx*branches		0.098*			-0.004	
		[0.057]			[0.043]	
Wx*security		-0.266***			-0.209*	
		[0.086]			[0.109]	
Spatial effect						
rho	0.154***	0.148***		-0.106**	-0.132**	
(spatial lag)	[0.043]	[0.049]		[0.052]	[0.066]	
lambda			0.374***			0.016
(spatial error)			[0.094]			[0.063]
Observations	416	416	416	416	416	416
R^2-overall	0.097	0.188	0.196	0.031	0.023	0.041
R^2-within	0.0748	0.160	0.174	0.137	0.151	0.171
R^2-between	0.471	0.539	0.434	0.429	0.446	0.427
AIC	-313.343	-350.055	-306.245	-223.659	-233.575	-222.974
BIC	-264.975	-289.594	-257.877	-175.291	-173.114	-174.606

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01.

Table 4-13. (continued)

	(7) unemp	(8) unemp	(9) unemp	(10) p1	(11) p1	(12) p1	(13) rural	(14) rural	(15) rural
msme	-0.007***	-0.006***	-0.007**	0.001	0.001	0.001	0.005	0.005	0.003
	[0.002]	[0.002]	[0.003]	[0.001]	[0.001]	[0.001]	[0.004]	[0.004]	[0.004]
profit_eff	0.027*	0.021	0.028*	-0.007	-0.009	-0.002	0.044	0.028	0.051
	[0.016]	[0.016]	[0.015]	[0.013]	[0.014]	[0.014]	[0.044]	[0.036]	[0.044]
sanitation	-0.017	-0.016	-0.018	0.019	0.023	0.021	0.025	0.024	0.029
	[0.011]	[0.011]	[0.011]	[0.018]	[0.019]	[0.018]	[0.032]	[0.029]	[0.035]
guest	-0.003	-0.002	-0.002	-0.003***	-0.003***	-0.003***	-0.018***	-0.014*	-0.019***
	[0.003]	[0.003]	[0.003]	[0.001]	[0.001]	[0.001]	[0.006]	[0.007]	[0.005]
electricity	0.012	0.017	0.014	-0.039**	-0.041**	-0.041**	-0.117*	-0.100	-0.107
	[0.018]	[0.017]	[0.018]	[0.018]	[0.019]	[0.019]	[0.067]	[0.063]	[0.073]
rice	-0.030**	-0.031**	-0.042***	-0.004	-0.008**	-0.005	-0.023***	-0.067***	-0.051***
	[0.014]	[0.014]	[0.016]	[0.005]	[0.003]	[0.004]	[0.008]	[0.011]	[0.019]
branches	-0.004	-0.003	-0.005	-0.007***	-0.007***	-0.008***	-0.013*	-0.012**	-0.014**
	[0.006]	[0.006]	[0.007]	[0.002]	[0.001]	[0.001]	[0.007]	[0.006]	[0.006]
security	0.026***	0.021***	0.026***	0.013***	0.009***	0.014***	0.047***	0.034***	0.038**
	[0.008]	[0.008]	[0.009]	[0.004]	[0.003]	[0.005]	[0.011]	[0.007]	[0.018]
constant	0.173***	0.190***	0.239***	0.096***	0.121***	0.106***	0.374***	0.575***	0.521***
	[0.052]	[0.052]	[0.059]	[0.022]	[0.020]	[0.019]	[0.046]	[0.049]	[0.073]
Wx*msme		0.008*			0.002			0.024**	
		[0.005]			[0.002]			[0.011]	
Wx* profit_eff		-0.010			-0.049***			-0.184***	
		[0.022]			[0.015]			[0.055]	
Wx*sanitation		0.012			-0.014			0.025	
		[0.016]			[0.009]			[0.029]	
Wx*guest		-0.002			0.001			-0.013**	
		[0.005]			[0.003]			[0.006]	
Wx*electricity		0.014			0.005			-0.106**	
		[0.017]			[0.026]			[0.044]	
Wx*rice		-0.004			0.015***			0.067***	
		[0.010]			[0.004]			[0.020]	
Wx*branches		-0.003			-0.012**			-0.010	
		[0.004]			[0.005]			[0.008]	
Wx*security		0.017			0.017**			0.070***	
		[0.015]			[0.008]			[0.026]	
Spatial effect		0.008*			0.002			0.024**	
rho	0.230***	0.234**		0.114	0.031		0.076*	0.044	
(spatial lag)	[0.069]	[0.098]		[0.074]	[0.066]		[0.042]	[0.089]	
lambda			0.318***			0.150			0.326***
(spatial error)			[0.091]			[0.091]			[0.092]
Observations	416	416	416	416	416	416	416	416	416
R^2-overall	0.138	0.214	0.146	0.234	0.291	0.202	0.178	0.224	0.204
R^2-within	0.00468	0.00388	0.0712	0.164	0.220	0.133	0.109	0.150	0.145
R^2-between	0.557	0.571	0.543	0.423	0.473	0.412	0.505	0.566	0.479
AIC	-2276.56	-2281.78	-2269.94	-2634.64	-2662.36	-2627.35	-1591.36	-1628.09	-1588.33
BIC	-2228.2	-2221.32	-2221.57	-2586.27	-2601.9	-2578.99	-1543	-1567.63	-1539.96

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table 4-13. (continued)

	(16) urban	(17) urban	(18) urban	(19) price	(20) price	(21) price
msme	0.003	0.001	0.003	0.040***	0.040***	0.041***
	[0.004]	[0.004]	[0.004]	[0.012]	[0.010]	[0.012]
profit_eff	-0.058	-0.049	-0.057	0.276	0.228	0.283
	[0.037]	[0.035]	[0.042]	[0.178]	[0.175]	[0.173]
sanitation	-0.001	-0.009	-0.001	0.033	0.021	0.033
	[0.007]	[0.007]	[0.007]	[0.079]	[0.085]	[0.078]
guest	-0.009*	-0.008	-0.009	0.001	0.006	0.001
	[0.005]	[0.006]	[0.006]	[0.012]	[0.012]	[0.012]
electricity	-0.073***	-0.054**	-0.057***	0.090**	0.120**	0.089**
	[0.026]	[0.027]	[0.022]	[0.040]	[0.048]	[0.038]
rice	-0.066***	-0.087***	-0.078***	-0.002	-0.064	-0.004
	[0.013]	[0.015]	[0.014]	[0.082]	[0.088]	[0.086]
branches	-0.003	-0.005	-0.006	-0.029**	-0.027**	-0.031**
	[0.006]	[0.005]	[0.006]	[0.012]	[0.012]	[0.013]
security	-0.000	0.005	-0.003	0.293***	0.269***	0.299***
	[0.012]	[0.008]	[0.013]	[0.078]	[0.072]	[0.078]
constant	0.544***	0.606***	0.601***	-0.238	0.056	-0.224
	[0.098]	[0.084]	[0.094]	[0.436]	[0.441]	[0.453]
Wx*msme		-0.002			0.008	
		[0.006]			[0.028]	
Wx* profit_eff		-0.094***			-0.092	
		[0.028]			[0.108]	
Wx*sanitation		0.017			0.162***	
		[0.014]			[0.053]	
Wx*guest		0.012*			-0.036**	
		[0.007]			[0.014]	
Wx*electricity		-0.212***			0.051	
		[0.025]			[0.071]	
Wx*rice		0.030***			0.027	
		[0.008]			[0.037]	
Wx*branches		0.029**			-0.015	
		[0.012]			[0.020]	
Wx*security		0.014			0.107**	
		[0.012]			[0.053]	
Spatial effect		-0.002			0.008	
rho	0.062	0.142***		-0.078	-0.104	
(spatial lag)	[0.063]	[0.048]		[0.076]	[0.074]	
lambda			0.222***			0.015
(spatial error)			[0.048]			[0.092]
Observations	416	416	416	416	416	416
R^2-overall	0.160	0.248	0.180	0.174	0.168	0.173
R^2-within	0.0543	0.147	0.075	0.040	0.028	0.039
R^2-between	0.551	0.607	0.551	0.417	0.445	0.414
AIC	-1939.35	-1989.94	-1945.44	-989.119	-1002.3	-988.113
BIC	-1890.98	-1929.48	-1897.07	-940.751	-941.842	-939.744

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table 4-13. (continued)

	(22) nim	(23) nim	(24) nim	(25) NPL	(26) NPL	(27) NPL
msme	-0.005	-0.006	-0.006	0.004	0.003	0.004
	[0.004]	[0.004]	[0.004]	[0.003]	[0.003]	[0.003]
profit_eff	0.109***	0.104***	0.116***	-0.044	-0.065**	-0.048
	[0.024]	[0.027]	[0.026]	[0.033]	[0.030]	[0.032]
sanitation	-0.015	-0.018	-0.015	0.034***	0.033**	0.037***
	[0.013]	[0.012]	[0.012]	[0.011]	[0.014]	[0.010]
guest	-0.003	-0.001	-0.003	-0.004	-0.004	-0.004
	[0.006]	[0.006]	[0.006]	[0.003]	[0.003]	[0.003]
electricity	0.025*	0.043***	0.036***	-0.021	-0.015	-0.020
	[0.014]	[0.012]	[0.013]	[0.022]	[0.025]	[0.022]
rice	-0.002	-0.014*	-0.006	-0.001	0.005	-0.003
	[0.009]	[0.008]	[0.009]	[0.010]	[0.007]	[0.009]
branches	0.004	0.005	0.004	-0.013**	-0.011**	-0.013**
	[0.004]	[0.004]	[0.004]	[0.005]	[0.005]	[0.005]
security	-0.028**	-0.035**	-0.031**	-0.001	-0.019	0.000
	[0.014]	[0.015]	[0.014]	[0.015]	[0.014]	[0.015]
constant	-0.061	-0.026	-0.056	0.120*	0.112**	0.131*
	[0.065]	[0.064]	[0.064]	[0.070]	[0.048]	[0.068]
Wx*msme		0.013			0.004	
		[0.009]			[0.006]	
Wx* profit_eff		-0.069*			0.033	
		[0.038]			[0.031]	
Wx*sanitation		-0.013			0.038	
		[0.021]			[0.025]	
Wx*guest		0.001			-0.002	
		[0.008]			[0.003]	
Wx*electricity		-0.101***			0.041**	
		[0.039]			[0.021]	
Wx*rice		0.035**			-0.018*	
		[0.016]			[0.011]	
Wx*branches		-0.006			-0.006	
		[0.010]			[0.007]	
Wx*security		0.005			0.055***	
		[0.014]			[0.013]	
Spatial effect		0.013			0.004	
rho	0.154***	0.186***		-0.133	-0.204***	
(spatial lag)	[0.054]	[0.051]		[0.086]	[0.078]	
lambda			0.238***			-0.186**
(spatial error)			[0.056]			[0.086]
Observations	416	416	416	416	416	416
R^2-overall	0.012	0.010	0.008	0.073	0.091	0.075
R^2-within	0.002	0.0009	0.0002	0.086	0.069	0.085
R^2-between	0.074	0.135	0.079	0.084	0.127	0.086
AIC	-1882.98	-1901.88	-1889.65	-1916.58	-1933.23	-1919.23
BIC	-1834.61	-1841.42	-1841.29	-1868.21	-1872.77	-1870.86

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table 4- 14. Estimated results of the Spatial Dependence Estimators (with variable share)

	(1) RGDP_cap	(2) RGDP_cap	(3) RGDP_cap	(4) agr	(5) agr	(6) agr
msme	0.022	0.022	0.026	0.030	0.027	0.028
	[0.020]	[0.025]	[0.022]	[0.027]	[0.028]	[0.027]
share	0.044	0.117	0.048	0.611***	0.707***	0.601***
	[0.146]	[0.138]	[0.152]	[0.173]	[0.166]	[0.179]
sanitation	0.248**	0.275**	0.297**	-0.053	-0.026	-0.059
	[0.117]	[0.108]	[0.131]	[0.060]	[0.070]	[0.062]
guest	0.054*	0.040	0.065*	-0.055	-0.070**	-0.054
	[0.028]	[0.030]	[0.035]	[0.039]	[0.033]	[0.040]
electricity	0.513***	0.410***	0.528***	1.074***	0.982***	1.086***
	[0.159]	[0.156]	[0.187]	[0.219]	[0.228]	[0.220]
rice	-0.022	0.009	0.028	0.085	0.076	0.094
	[0.079]	[0.071]	[0.098]	[0.112]	[0.083]	[0.114]
branches	0.111**	0.088**	0.109**	0.053	0.041	0.056
	[0.044]	[0.042]	[0.053]	[0.043]	[0.039]	[0.046]
security	-0.055	0.025	-0.034	-0.283***	-0.240***	-0.292***
	[0.066]	[0.056]	[0.071]	[0.082]	[0.066]	[0.085]
constant	0.554***	0.815***	0.714***	0.392	0.499	0.405
Wx*msme		-0.139***			-0.145**	
		[0.053]			[0.059]	
Wx*compete		-0.719***			-0.272	
		[0.272]			[0.376]	
Wx*sanitation		-0.436***			-0.337**	
		[0.135]			[0.157]	
Wx*guest		-0.053			-0.026	
		[0.058]			[0.072]	
Wx*electricity		-0.032			0.252	
		[0.182]			[0.236]	
Wx*rice		0.102			0.128	
		[0.099]			[0.084]	
W*branches		0.079			-0.019	
		[0.070]			[0.051]	
W*security		-0.379***			-0.218*	
		[0.097]			[0.128]	
Spatial effect						
rho	0.295***	0.194***		0.051	-0.069	
(spatial lag)	[0.064]	[0.051]		[0.048]	[0.043]	
lambda			0.328***			0.014
(spatial error)			[0.091]			[0.053]
Observations	416	416	416	416	416	416
R^2-overall	0.151	0.203	0.026	0.012	0.037	0.253
R^2-within	0.524	0.433	0.431	0.449	0.428	0.221
R^2-between	0.115	0.182	0.146	0.100	0.190	0.274
AIC	-303.528	-333.809	-294.123	-225.520	-235.981	-224.671
BIC	-255.159	-273.349	-245.755	-177.152	-175.520	-176.302

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Table 4-14. (continued)

	(7) unemp	(8) unemp	(9) unemp	(10) p1	(11) p1	(12) p1
msme	-0.006**	-0.007***	-0.006**	0.001	0.002*	0.002
	[0.002]	[0.002]	[0.003]	[0.001]	[0.001]	[0.001]
share	0.009	0.003	0.005	0.023	0.026	0.025
	[0.018]	[0.018]	[0.018]	[0.020]	[0.022]	[0.021]
sanitation	-0.015	-0.015	-0.016	0.021	0.023	0.023
	[0.011]	[0.011]	[0.011]	[0.019]	[0.021]	[0.020]
guest	-0.004	-0.002	-0.003	-0.003**	-0.003***	-0.003***
	[0.003]	[0.003]	[0.003]	[0.001]	[0.001]	[0.001]
electricity	0.008	0.017	0.010	-0.038**	-0.042**	-0.040**
	[0.019]	[0.018]	[0.019]	[0.018]	[0.021]	[0.020]
rice	-0.031**	-0.031**	-0.044***	-0.004	-0.001	-0.006
	[0.015]	[0.014]	[0.017]	[0.006]	[0.003]	[0.004]
branches	-0.003	-0.002	-0.004	-0.008***	-0.006***	-0.008***
	[0.007]	[0.006]	[0.007]	[0.002]	[0.002]	[0.002]
security	0.027***	0.022***	0.026***	0.014***	0.010***	0.015***
	[0.008]	[0.008]	[0.009]	[0.005]	[0.004]	[0.006]
constant	0.207***	0.209***	0.278***	0.083***	0.071***	0.099***
	[0.054]	[0.055]	[0.056]	[0.025]	[0.016]	[0.019]
Wx*msme		0.008*			-0.002	
		[0.004]			[0.003]	
Wx*compete		0.048			-0.056**	
		[0.036]			[0.024]	
Wx*sanitation		0.020			-0.019**	
		[0.013]			[0.009]	
Wx*guest		-0.003			0.003	
		[0.005]			[0.002]	
Wx*electricity		0.016			0.012	
		[0.016]			[0.030]	
Wx*rice		-0.008			0.008*	
		[0.008]			[0.004]	
W*branches		-0.004			-0.013**	
		[0.004]			[0.005]	
W*security		0.022			0.004	
		[0.018]			[0.005]	
Spatial effect						
rho	0.294***	0.246***		0.185**	0.092*	
(spatial lag)	[0.066]	[0.074]		[0.090]	[0.047]	
lambda			0.321***			0.170**
(spatial error)			[0.090]			[0.084]
Observations	416	416	416	416	416	416
R^2-overall	0.125	0.195	0.133	0.293	0.414	0.269
R^2-within	0.556	0.572	0.540	0.421	0.455	0.413
R^2-between	0.00973	0.00382	0.0865	0.242	0.398	0.217
AIC	-2274.099	-2282.224	-2266.975	-2638.840	-2660.556	-2632.723
BIC	-2225.73	-2221.763	-2218.607	-2590.472	-2600.096	-2584.355

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Table A4-14 (continued)

	(13) rural	(14) rural	(15) rural	(16) urban	(17) urban	(18) urban
msme	0.005	0.007	0.003	0.003	0.002	0.003
	[0.004]	[0.005]	[0.004]	[0.004]	[0.004]	[0.004]
share	-0.042	-0.058	-0.021	0.089**	0.079**	0.094***
	[0.050]	[0.062]	[0.045]	[0.036]	[0.033]	[0.034]
sanitation	0.024	0.017	0.029	0.002	-0.009	0.003
	[0.031]	[0.029]	[0.034]	[0.008]	[0.008]	[0.008]
guest	-0.020***	-0.015**	-0.020***	-0.006	-0.006	-0.006
	[0.006]	[0.007]	[0.005]	[0.005]	[0.006]	[0.005]
electricity	-0.125*	-0.113	-0.115	-0.060***	-0.049*	-0.045**
	[0.069]	[0.070]	[0.076]	[0.022]	[0.025]	[0.018]
rice	-0.025**	-0.048***	-0.055***	-0.064***	-0.073***	-0.075***
	[0.010]	[0.009]	[0.021]	[0.009]	[0.013]	[0.009]
branches	-0.010	-0.007	-0.012**	-0.008	-0.008	-0.011**
	[0.007]	[0.007]	[0.005]	[0.006]	[0.005]	[0.005]
security	0.046***	0.032***	0.037**	0.003	0.011	0.001
	[0.010]	[0.009]	[0.017]	[0.014]	[0.010]	[0.014]
constant	0.439***	0.488***	0.596***	0.453***	0.460***	0.509***
	[0.036]	[0.041]	[0.054]	[0.069]	[0.065]	[0.050]
Wx*msme		0.016			-0.009	
		[0.012]			[0.007]	
Wx*compete		-0.161			-0.042	
		[0.116]			[0.047]	
Wx*sanitation		0.010			0.014	
		[0.034]			[0.017]	
Wx*guest		-0.009			0.018***	
		[0.007]			[0.006]	
Wx*electricity		-0.102*			-0.196***	
		[0.056]			[0.030]	
Wx*rice		0.051**			0.013	
		[0.022]			[0.012]	
W*branches		-0.016**			0.025**	
		[0.006]			[0.013]	
W*security		0.037**			-0.002	
		[0.017]			[0.011]	
Spatial effect						
rho	0.240***	0.030		0.097	0.105	
(spatial lag)	[0.028]	[0.097]		[0.065]	[0.071]	
lambda			0.330***			0.236***
(spatial error)			[0.092]			[0.053]
Observations	416	416	416	416	416	
R^2-overall	0.154	0.131	0.196	0.187	0.236	
R^2-within	0.508	0.562	0.476	0.559	0.606	
R^2-between	0.0841	0.0505	0.137	0.0830	0.134	
AIC	-1591.199	-1621.636	-1586.668	-1947.139	-1985.614	-1955.28
BIC	-1542.831	-1561.175	-1538.299	-1898.771	-1921.123	-1906.911

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Table 4-14. (continued)

	(19) price	(20) price	(21) price	(22) nim	(23) nim	(24) nim	(25) NPL	(26) NPL	(27) NPL
msme	0.043***	0.040***	0.044***	-0.003	-0.005	-0.004	0.003	0.002	0.003
	[0.015]	[0.011]	[0.015]	[0.004]	[0.004]	[0.004]	[0.003]	[0.002]	[0.003]
share	-0.030	-0.040	-0.030	0.067***	0.049**	0.061***	-0.012	-0.013	-0.012
	[0.055]	[0.056]	[0.059]	[0.020]	[0.022]	[0.022]	[0.021]	[0.024]	[0.021]
sanitation	0.045	0.024	0.047	-0.006	-0.014	-0.006	0.030***	0.030**	0.032***
	[0.083]	[0.087]	[0.084]	[0.013]	[0.012]	[0.012]	[0.011]	[0.015]	[0.010]
guest	-0.007	0.000	-0.008	-0.006	-0.003	-0.006	-0.003	-0.003	-0.003
	[0.010]	[0.011]	[0.010]	[0.006]	[0.006]	[0.006]	[0.003]	[0.003]	[0.003]
electricity	0.047*	0.098***	0.045	0.010	0.033**	0.017	-0.016	-0.009	-0.016
	[0.029]	[0.033]	[0.029]	[0.014]	[0.014]	[0.014]	[0.021]	[0.026]	[0.021]
rice	-0.021	-0.070	-0.024	-0.010	-0.014	-0.014	0.003	0.007	0.001
	[0.086]	[0.082]	[0.089]	[0.011]	[0.010]	[0.012]	[0.008]	[0.006]	[0.007]
branches	-0.020	-0.018	-0.022*	0.005	0.008*	0.006	-0.013**	-0.012**	-0.014***
	[0.012]	[0.012]	[0.013]	[0.004]	[0.004]	[0.005]	[0.005]	[0.005]	[0.005]
security	0.296***	0.268***	0.305***	-0.023	-0.031*	-0.026	-0.002	-0.019	-0.002
	[0.090]	[0.078]	[0.094]	[0.016]	[0.016]	[0.017]	[0.014]	[0.013]	[0.013]
constant	0.138	0.304	0.168	0.078	0.055	0.093*	0.061*	0.043	0.065*
	[0.315]	[0.284]	[0.327]	[0.055]	[0.054]	[0.057]	[0.037]	[0.028]	[0.034]
Wx*msme		0.006			0.009			0.006	
		[0.030]			[0.009]			[0.007]	
Wx*compete		0.107			0.051			0.028	
		[0.092]			[0.074]			[0.041]	
Wx*sanitation		0.190***			-0.001			0.036	
		[0.052]			[0.017]			[0.029]	
Wx*guest		-0.045***			-0.003			-0.001	
		[0.011]			[0.008]			[0.004]	
Wx*electricity		0.063			-0.080**			0.040*	
		[0.065]			[0.036]			[0.021]	
Wx*rice		0.011			0.024*			-0.014*	
		[0.027]			[0.013]			[0.008]	
W*branches		-0.017			-0.009			-0.005	
		[0.020]			[0.011]			[0.008]	
W*security		0.118**			0.005			0.058***	
		[0.059]			[0.015]			[0.012]	
Spatial effect									
rho	0.075	-0.043		0.135**	0.150***		-0.113	-0.168	
(spatial lag)	[0.056]	[0.076]		[0.054]	[0.055]		[0.075]	[0.109]	
lambda			0.009			0.198***			-0.171*
(spatial error)			[0.102]			[0.061]			[0.095]
Observations	416	416	416	416	416	416	416	416	416
R^2-overall	0.192	0.182	0.188	0.002	0.016	0.002	0.078	0.092	0.078
R^2-within	0.397	0.431	0.392	0.055	0.108	0.055	0.075	0.113	0.077
R^2-between	0.071	0.049	0.068	9.57e-06	0.007	0.0001	0.103	0.087	0.098
AIC	-976.396	-993.855	-974.805	-1871.692	-1887.772	-1875.293	-1913.798	-1926.488	-1915.695
BIC	-928.028	-933.394	-926.437	-1823.324	-1827.312	-1826.924	-1865.430	-1866.028	-1867.327

Note: All the models estimated using random effect (RE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Observing the individual indicator, profit efficiency, it showed that, the improvement in banks' intermediation had a positive impact on the overall regional income and the income of the agricultural sector, the nim, but increased the NPL. These outcomes were different from the regression results, which were rarely significant. When we studied the impact of $share$ variable, we found that a higher RDB market share had a positive relationship with the income of the agricultural sector and nim variable, but it increased the percentage of the poor people in urban areas.

An observation of the preferred model using AIC and BIC criteria showed that the SDM model is superior to the other models. Thus, the following table shows the decomposition of the direct and indirect effects of the independent variables on the dependent variables using the SDM model based on a preliminary test.

Table 4- 15. Decomposition estimates of the direct and indirect effects of the independent variables using SDM Model (with cost efficiency as an indicator of the banking performance)

		(1) RGDP_cap	(2) agr	(3) unemp	(4) p1	(5) rural
Direct	msme	0.008	0.023	-0.006***	0.001	0.006
		[0.025]	[0.026]	[0.002]	[0.002]	[0.004]
	cost_eff	-0.108	-0.441*	-0.014	-0.010	0.032
		[0.131]	[0.233]	[0.014]	[0.012]	[0.027]
	sanitation	0.220**	-0.094	-0.013	0.020	0.023
		[0.093]	[0.082]	[0.011]	[0.020]	[0.030]
	guest	0.031	-0.074***	-0.002	-0.003***	-0.014*
		[0.027]	[0.028]	[0.003]	[0.001]	[0.007]
	electric	0.457***	0.943***	0.012	-0.040*	-0.102*
		[0.154]	[0.215]	[0.017]	[0.021]	[0.059]
	rice	0.074	0.170*	-0.038***	-0.000	-0.059***
		[0.072]	[0.092]	[0.014]	[0.004]	[0.012]
	branch	0.095***	0.063*	-0.003	-0.006***	-0.009
		[0.037]	[0.037]	[0.006]	[0.002]	[0.006]
	security	-0.002	-0.285***	0.021***	0.009***	0.037***
		[0.052]	[0.070]	[0.008]	[0.003]	[0.008]
Indirect	msme	-0.133***	-0.110***	0.007*	-0.001	0.013*
		[0.045]	[0.039]	[0.004]	[0.002]	[0.007]
	cost_eff	1.028***	1.212***	-0.085**	-0.001	-0.159***
		[0.296]	[0.385]	[0.035]	[0.018]	[0.037]
	sanitation	-0.256**	-0.186*	0.005	-0.008	0.019
		[0.117]	[0.097]	[0.015]	[0.006]	[0.029]
	guest	-0.073	-0.048	-0.001	0.003	-0.003
		[0.046]	[0.047]	[0.005]	[0.003]	[0.006]
	electric	0.199	0.225*	0.007	0.004	-0.099***
		[0.126]	[0.135]	[0.017]	[0.025]	[0.029]
	rice	-0.037	-0.052	-0.001	0.005	0.055***
		[0.105]	[0.084]	[0.010]	[0.006]	[0.018]
	branch	0.083	-0.015	-0.004	-0.012***	-0.014***
		[0.059]	[0.037]	[0.004]	[0.004]	[0.005]
	security	-0.356***	-0.201***	0.028**	0.008**	0.053***
		[0.076]	[0.070]	[0.014]	[0.004]	[0.013]
Total	msme	-0.125**	-0.088*	0.001	-0.000	0.019**
		[0.062]	[0.047]	[0.005]	[0.003]	[0.010]
	cost_eff	0.919***	0.771**	-0.099**	-0.011	-0.127***
		[0.336]	[0.385]	[0.041]	[0.017]	[0.047]
	sanitation	-0.036	-0.281*	-0.008	0.012	0.042*
		[0.144]	[0.147]	[0.023]	[0.016]	[0.024]
	guest	-0.042	-0.122**	-0.003	-0.001	-0.017**
		[0.048]	[0.062]	[0.005]	[0.002]	[0.008]
	electric	0.655***	1.168***	0.019	-0.036***	-0.201***
		[0.233]	[0.196]	[0.023]	[0.012]	[0.078]
	rice	0.037	0.118	-0.038**	0.004	-0.004
		[0.100]	[0.130]	[0.019]	[0.006]	[0.020]
	branch	0.178***	0.048	-0.006	-0.018***	-0.023***
		[0.042]	[0.036]	[0.007]	[0.004]	[0.007]
	security	-0.357***	-0.486***	0.050***	0.017***	0.091***
		[0.075]	[0.069]	[0.017]	[0.004]	[0.011]

Note: All the models are in random effect (RE) model, clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table 4.15. (continued)

		(6) urban	(7) price	(8) nim	(9) NPL
Direct	msme	0.001	0.041***	-0.004	0.002
		[0.004]	[0.011]	[0.004]	[0.002]
	cost_eff	0.021	-0.253*	0.023	0.025
		[0.026]	[0.139]	[0.031]	[0.023]
	sanitation	-0.014	0.026	-0.018	0.031*
		[0.009]	[0.081]	[0.013]	[0.016]
	guest	-0.006	0.004	-0.004	-0.003
		[0.006]	[0.011]	[0.007]	[0.003]
	electric	-0.050**	0.053**	0.031**	-0.009
		[0.021]	[0.027]	[0.013]	[0.023]
	rice	-0.074***	-0.058	-0.010	0.005
		[0.015]	[0.081]	[0.011]	[0.007]
	branch	-0.004	-0.021*	0.009**	-0.012**
		[0.005]	[0.012]	[0.004]	[0.005]
	security	0.007	0.256***	-0.033**	-0.021
		[0.008]	[0.071]	[0.016]	[0.013]
Indirect	msme	-0.006	-0.002	0.008	0.005
		[0.007]	[0.024]	[0.008]	[0.004]
	cost_eff	-0.032	0.119	0.039	-0.026
		[0.035]	[0.100]	[0.057]	[0.040]
	sanitation	0.013	0.148***	-0.008	0.017
		[0.014]	[0.039]	[0.021]	[0.018]
	guest	0.016***	-0.039***	-0.005	0.001
		[0.006]	[0.009]	[0.006]	[0.003]
	electric	-0.188***	0.050	-0.069**	0.031*
		[0.021]	[0.053]	[0.033]	[0.019]
	rice	0.009	-0.001	0.018	-0.006
		[0.012]	[0.029]	[0.017]	[0.010]
	branch	0.021**	-0.011	-0.007	-0.003
		[0.010]	[0.017]	[0.009]	[0.006]
	security	0.003	0.072**	-0.008	0.044***
		[0.009]	[0.028]	[0.014]	[0.010]
Total	msme	-0.005	0.038	0.004	0.006
		[0.010]	[0.024]	[0.009]	[0.006]
	cost_eff	-0.011	-0.134	0.062	-0.000
		[0.048]	[0.122]	[0.078]	[0.047]
	sanitation	-0.001	0.174*	-0.026	0.048***
		[0.017]	[0.091]	[0.023]	[0.014]
	guest	0.010	-0.035***	-0.009	-0.003
		[0.006]	[0.013]	[0.008]	[0.005]
	electric	-0.238***	0.103*	-0.039	0.022
		[0.036]	[0.057]	[0.036]	[0.021]
	rice	-0.065***	-0.059	0.008	-0.001
		[0.012]	[0.075]	[0.017]	[0.009]
	branch	0.017	-0.032*	0.003	-0.015**
		[0.011]	[0.018]	[0.008]	[0.006]
	security	0.010	0.329***	-0.041**	0.024**
		[0.012]	[0.081]	[0.021]	[0.012]

Note: All the models are in random effect (RE) model, clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table 4- 16. Decomposition estimates of the direct and indirect effects of the independent variables using SDM Model (with profit efficiency as an indicator of the banking performance)

		(1)	(2)	(3)	(4)	(5)
		RGDP_cap	agr	unemp	p1	rural
Direct	msme	0.003	0.016	-0.006***	0.001	0.006
		[0.022]	[0.023]	[0.002]	[0.001]	[0.004]
	profit_eff	0.613**	0.641**	0.021	-0.010	0.025
		[0.251]	[0.261]	[0.017]	[0.014]	[0.036]
	sanitation	0.234**	-0.094	-0.015	0.023	0.025
		[0.095]	[0.086]	[0.011]	[0.019]	[0.028]
	guest	0.056**	-0.057*	-0.002	-0.003***	-0.014*
		[0.028]	[0.031]	[0.003]	[0.001]	[0.008]
	electric	0.536***	1.083***	0.018	-0.041**	-0.102*
		[0.171]	[0.224]	[0.018]	[0.019]	[0.060]
	rice	0.015	0.119	-0.032**	-0.008**	-0.066***
		[0.092]	[0.123]	[0.014]	[0.003]	[0.010]
	branch	0.068**	0.042	-0.003	-0.007***	-0.012**
		[0.033]	[0.034]	[0.006]	[0.001]	[0.006]
	security	0.011	-0.269***	0.023***	0.009***	0.036***
		[0.045]	[0.071]	[0.008]	[0.003]	[0.008]
Indirect	msme	-0.103***	-0.095***	0.006	0.002	0.020***
		[0.036]	[0.036]	[0.005]	[0.002]	[0.008]
	profit_eff	-0.451	-0.197	-0.005	-0.041***	-0.154***
		[0.289]	[0.263]	[0.024]	[0.011]	[0.049]
	sanitation	-0.286***	-0.229**	0.008	-0.011	0.022
		[0.101]	[0.098]	[0.016]	[0.007]	[0.026]
	guest	-0.025	0.008	-0.003	0.001	-0.012***
		[0.040]	[0.044]	[0.005]	[0.003]	[0.004]
	electric	-0.036	0.004	0.018	0.003	-0.094***
		[0.149]	[0.184]	[0.015]	[0.023]	[0.025]
	rice	0.097	0.078	-0.012	0.012***	0.053***
		[0.097]	[0.074]	[0.010]	[0.004]	[0.018]
	branch	0.110**	-0.005	-0.004	-0.010***	-0.009
		[0.053]	[0.034]	[0.004]	[0.004]	[0.006]
	security	-0.256***	-0.147*	0.023	0.014**	0.061***
		[0.086]	[0.075]	[0.014]	[0.006]	[0.016]
Total	msme	-0.100**	-0.079**	0.000	0.003	0.026***
		[0.049]	[0.040]	[0.005]	[0.002]	[0.010]
	profit_eff	0.162	0.445	0.016	-0.051***	-0.129***
		[0.342]	[0.349]	[0.036]	[0.010]	[0.041]
	sanitation	-0.052	-0.323**	-0.007	0.012	0.047**
		[0.129]	[0.139]	[0.023]	[0.014]	[0.024]
	guest	0.031	-0.049	-0.004	-0.002	-0.026***
		[0.034]	[0.046]	[0.006]	[0.003]	[0.008]
	electric	0.499**	1.087***	0.037	-0.038***	-0.196**
		[0.249]	[0.203]	[0.024]	[0.010]	[0.080]
	rice	0.112	0.197	-0.044**	0.004	-0.014
		[0.089]	[0.127]	[0.018]	[0.005]	[0.021]
	branch	0.179***	0.037	-0.007	-0.017***	-0.021**
		[0.039]	[0.041]	[0.007]	[0.004]	[0.008]
	security	-0.245**	-0.416***	0.045***	0.023***	0.097***
		[0.096]	[0.074]	[0.016]	[0.006]	[0.013]

Note: All the models are in random effect (RE) model, clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table 4.16. (Continued)

		(6) urban	(7) price	(8) nim	(9) npl
Direct	msme	0.001	0.039***	-0.005	0.002
		[0.004]	[0.010]	[0.004]	[0.003]
	profit_eff	-0.052	0.228	0.101***	-0.067**
		[0.034]	[0.177]	[0.026]	[0.030]
	sanitation	-0.009	0.020	-0.019	0.032**
		[0.007]	[0.085]	[0.012]	[0.016]
	guest	-0.007	0.006	-0.001	-0.004
		[0.006]	[0.012]	[0.006]	[0.003]
	electric	-0.061**	0.120**	0.039***	-0.017
		[0.025]	[0.047]	[0.012]	[0.025]
	rice	-0.086***	-0.064	-0.012	0.006
		[0.015]	[0.088]	[0.008]	[0.007]
	branch	-0.004	-0.027**	0.005	-0.010**
		[0.005]	[0.012]	[0.004]	[0.005]
	security	0.006	0.268***	-0.035**	-0.022
		[0.008]	[0.070]	[0.015]	[0.014]
Indirect	msme	-0.002	0.006	0.011	0.003
		[0.006]	[0.023]	[0.009]	[0.004]
	profit_eff	-0.090***	-0.079	-0.047	0.033
		[0.027]	[0.085]	[0.033]	[0.024]
	sanitation	0.014	0.127***	-0.015	0.024
		[0.012]	[0.041]	[0.021]	[0.018]
	guest	0.009*	-0.029**	0.001	-0.001
		[0.005]	[0.012]	[0.007]	[0.003]
	electric	-0.195***	0.037	-0.088**	0.032*
		[0.016]	[0.057]	[0.038]	[0.017]
	rice	0.016**	0.023	0.031**	-0.014*
		[0.008]	[0.029]	[0.015]	[0.008]
	branch	0.025**	-0.011	-0.005	-0.003
		[0.010]	[0.017]	[0.009]	[0.005]
	security	0.013	0.078**	-0.001	0.043***
		[0.011]	[0.035]	[0.013]	[0.010]
Total	msme	-0.000	0.045*	0.006	0.005
		[0.009]	[0.024]	[0.010]	[0.006]
	profit_eff	-0.142***	0.150	0.054	-0.035
		[0.040]	[0.189]	[0.033]	[0.028]
	sanitation	0.006	0.147	-0.034	0.055***
		[0.015]	[0.091]	[0.025]	[0.013]
	guest	0.002	-0.023	-0.000	-0.005
		[0.003]	[0.019]	[0.009]	[0.004]
	electric	-0.256***	0.157**	-0.049	0.015
		[0.036]	[0.062]	[0.042]	[0.022]
	rice	-0.070***	-0.041	0.018	-0.008
		[0.015]	[0.072]	[0.017]	[0.008]
	branch	0.021*	-0.038**	0.000	-0.014**
		[0.012]	[0.017]	[0.009]	[0.006]
	security	0.018	0.346***	-0.036*	0.021*
		[0.012]	[0.081]	[0.019]	[0.013]

Note: All the models are in random effect (RE) model, clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table 4- 17. Decomposition estimates of the direct and indirect effects of the independent variables using SDM Model (with variable $share$)

		(1) RGDP_cap	(2) agr	(4) unemp	(5) p1	(6) rural
Direct	msme	0.014	0.029	-0.006***	0.002	0.007
		[0.025]	[0.028]	[0.002]	[0.001]	[0.005]
	share	0.080	0.713***	0.007	0.025	-0.059
		[0.141]	[0.166]	[0.019]	[0.022]	[0.059]
	sanitation	0.255**	-0.020	-0.014	0.022	0.017
		[0.105]	[0.068]	[0.011]	[0.021]	[0.029]
	guest	0.038	-0.070**	-0.002	-0.003***	-0.015**
		[0.029]	[0.033]	[0.003]	[0.001]	[0.008]
	electric	0.412***	0.979***	0.019	-0.042**	-0.114*
		[0.158]	[0.230]	[0.018]	[0.020]	[0.068]
	rice	0.015	0.074	-0.033**	-0.001	-0.048***
		[0.069]	[0.084]	[0.014]	[0.003]	[0.009]
	branch	0.094**	0.042	-0.003	-0.007***	-0.007
		[0.039]	[0.039]	[0.006]	[0.002]	[0.007]
	security	0.005	-0.236***	0.023***	0.011***	0.032***
		[0.053]	[0.067]	[0.008]	[0.004]	[0.009]
Indirect	msme	-0.128**	-0.114**	0.006	-0.002	0.013
		[0.050]	[0.047]	[0.004]	[0.002]	[0.009]
	share	-0.660**	-0.247	0.049	-0.047**	-0.134
		[0.261]	[0.285]	[0.035]	[0.020]	[0.086]
	sanitation	-0.363***	-0.259**	0.016	-0.014**	0.009
		[0.120]	[0.121]	[0.014]	[0.007]	[0.029]
	guest	-0.043	-0.016	-0.003	0.003	-0.008*
		[0.052]	[0.055]	[0.005]	[0.002]	[0.005]
	electric	0.045	0.143	0.021	0.007	-0.087**
		[0.163]	[0.187]	[0.015]	[0.025]	[0.035]
	rice	0.099	0.095	-0.015*	0.007	0.041**
		[0.084]	[0.064]	[0.009]	[0.004]	[0.019]
	branch	0.091	-0.017	-0.004	-0.012***	-0.013**
		[0.066]	[0.040]	[0.004]	[0.004]	[0.005]
	security	-0.355***	-0.156	0.027	0.004	0.031***
		[0.087]	[0.097]	[0.017]	[0.004]	[0.010]
Total	msme	-0.114*	-0.084*	-0.000	-0.000	0.021*
		[0.064]	[0.049]	[0.005]	[0.003]	[0.012]
	share	-0.580*	0.465	0.055	-0.022	-0.193
		[0.307]	[0.342]	[0.046]	[0.021]	[0.135]
	sanitation	-0.108	-0.279**	0.002	0.008	0.026
		[0.132]	[0.135]	[0.022]	[0.017]	[0.026]
	guest	-0.005	-0.086	-0.006	-0.001	-0.023***
		[0.052]	[0.065]	[0.005]	[0.002]	[0.009]
	electric	0.457*	1.122***	0.039	-0.035***	-0.200**
		[0.254]	[0.207]	[0.025]	[0.013]	[0.097]
	rice	0.114	0.169	-0.048***	0.005	-0.006
		[0.081]	[0.108]	[0.018]	[0.006]	[0.023]
	branch	0.185***	0.025	-0.007	-0.019***	-0.021**
		[0.048]	[0.047]	[0.008]	[0.005]	[0.010]
	security	-0.351***	-0.392***	0.051**	0.015***	0.064***
		[0.083]	[0.072]	[0.020]	[0.005]	[0.011]

Note: All the models are in random effect (RE) model, clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table 4.17. (Continued)

		(7) urban	(8) price	(9) nim	(10) NPL
Direct	msme	0.002	0.040***	-0.005	0.001
		[0.004]	[0.011]	[0.004]	[0.002]
	share	0.078**	-0.041	0.051**	-0.014
		[0.033]	[0.055]	[0.021]	[0.025]
	sanitation	-0.008	0.022	-0.014	0.029*
		[0.008]	[0.086]	[0.013]	[0.016]
	guest	-0.005	0.001	-0.003	-0.003
		[0.006]	[0.011]	[0.006]	[0.003]
	electric	-0.055**	0.097***	0.030**	-0.011
		[0.024]	[0.033]	[0.015]	[0.026]
	rice	-0.072***	-0.070	-0.013	0.008
		[0.013]	[0.082]	[0.010]	[0.006]
	branch	-0.007	-0.018	0.007*	-0.011**
		[0.005]	[0.012]	[0.004]	[0.005]
	security	0.011	0.267***	-0.031*	-0.022
		[0.010]	[0.076]	[0.016]	[0.013]
Indirect	msme	-0.008	0.004	0.007	0.004
		[0.007]	[0.024]	[0.009]	[0.005]
	share	-0.030	0.086	0.053	0.022
		[0.042]	[0.072]	[0.066]	[0.030]
	sanitation	0.012	0.148***	-0.003	0.022
		[0.015]	[0.039]	[0.016]	[0.020]
	guest	0.015***	-0.035***	-0.003	-0.000
		[0.005]	[0.009]	[0.007]	[0.003]
	electric	-0.176***	0.046	-0.068**	0.030*
		[0.021]	[0.050]	[0.034]	[0.017]
	rice	0.005	0.011	0.020*	-0.011*
		[0.010]	[0.021]	[0.012]	[0.006]
	branch	0.021**	-0.013	-0.007	-0.002
		[0.011]	[0.016]	[0.009]	[0.006]
	security	-0.001	0.084***	-0.000	0.045***
		[0.010]	[0.032]	[0.014]	[0.009]
Total	msme	-0.006	0.043*	0.003	0.006
		[0.009]	[0.025]	[0.009]	[0.006]
	share	0.049	0.044	0.104*	0.008
		[0.068]	[0.091]	[0.061]	[0.035]
	sanitation	0.003	0.170*	-0.017	0.051***
		[0.018]	[0.092]	[0.022]	[0.015]
	guest	0.009*	-0.034**	-0.007	-0.003
		[0.006]	[0.013]	[0.008]	[0.005]
	electric	-0.231***	0.143***	-0.039	0.019
		[0.040]	[0.056]	[0.042]	[0.021]
	rice	-0.067***	-0.059	0.007	-0.004
		[0.012]	[0.073]	[0.015]	[0.009]
	branch	0.014	-0.031*	0.001	-0.014**
		[0.012]	[0.017]	[0.009]	[0.007]
	security	0.010	0.350***	-0.031	0.023
		[0.015]	[0.094]	[0.019]	[0.014]

Note: All the models are in random effect (RE) model, clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Studying the impact of better-quality banks (proxied by cost efficiency), we found it to be hardly significant on regional economy indicators in home region. One exception was that it had a negative influence on the income of the agricultural sector as well as the price of lending in the home region (10% significance level). However, surprisingly, better banks (proxied by cost efficiency) affected neighbouring regions' economic environment in many ways. They had a positive relationship with overall regional income as well as in the agriculture sector, had a negative relationship with the unemployment level and reduced the percentage of poor people in rural area. We suspect mixed results because banks might target certain sectors for lending that will benefit them the most, especially in saving their costs. Additionally, because the impact of cost_eff on agriculture in the home region has a negative coefficient, this means that the agricultural sector is not the target in home regions if these regions have lower endowment compared to neighbouring regions. If RDBs that have better efficiency (proxied by cost efficiency) are surrounded by rich regions, they might prefer to find a better investment location to reduce costs and improve the efficiency. Therefore, the impact on home regions is reduced because the banks might focus on obtaining benefits from outside. This explains why better banks (proxied by cost efficiency) make no significant impact on the overall regional economy (home region) as well as on regression outcomes.

However, when using the profit efficiency indicator, we found contrary responses. Better banks (proxied in profit_eff) had a positive correlation with the improvement of the overall regional economy and the income of the agricultural sector in the home regions, increased the net interest margin, and lowered the NPL of the home region. The improvement of the banks' efficiency also lowered the poverty gap and the percentage of poor people in urban and rural area of the neighbouring regions, but we found no impact of increasing regional GDP on the income of the agricultural sector in neighbouring areas. We suspect that the pull effect occurs because the improvement in intermediation quality spur the regional income and attract migration from neighbours and it lowered the percentage of poor people in urban and in rural area, and eventually the poverty gap in the neighbouring region. Meanwhile, an improvement in the poverty gap as well as a decline in the number of poor people in both rural and urban areas is not detected occur in the home region, which they might have mixed results, due to the possibility that the higher number of population (because of the migration) may increase the agglomeration and will increase the poverty level in the home region.

Regarding the implications of having more support from home RDBs (as RDBs' market size increased), we found that the increase in RDBs' market share seemed to lead to more contributions to the agricultural sector in the home region, and it might had a pull effect on neighbouring regions because it showed a decline in the overall GDP an also in the agriculture sector albeit no significant sign found. The people from neighbouring regions might migrate to home regions and try to borrow funds and invest in the agricultural sector, or as the income of the agriculture sector increased, the people from neighbouring regions attracted to move to the home regions. Thus, the aggregate income in neighbouring regions might be reduced, and the poverty gap might become smaller. Because the agricultural sector mostly operates in rural area, it might affect the conditions of poor people in urban areas, but we found no significant sign of this when we regressed share variable with rural variables. Instead, the number of poor people in urban areas increased which might link with the migration from the neighbouring regions.

Concerning the impact of the control variables, we found that better access to decent sanitation contributes to the regional economy (as an aggregate). Moreover, the improvement in sanitation in home regions seems to attract migration from neighbouring regions because we found negative and significant coefficients when we regressed sanitation variable on RGDP_cap and agr variable. Using the guest variable, a higher number of visitors seemed to increase the overall regional income, although not all models showed significant signs. However, one similarity between table 4-15, 4-16 and 4-17 was that the income of the agricultural sector decreased when the number of the visitors increased. As explained earlier, an improvement in the tourism sector might be related to the agricultural land conversion function because farmers sell their agricultural land to become tourist objects for tourism purposes [2]. This might lower the income of the agricultural sector because paddy fields are getting smaller, but at the same time, it might increase the income of rural (as the percentage of poor people in rural area decreased) areas if the tourism sector can absorb more labour to pay wages periodically. The improvement in home regions caused by the increase in the number of visitors might attract people (urban and rural area) from neighbouring regions as well, and if they are able to enjoy the benefits of the improvement of the tourism sector in home regions, this might lower the percentage of poor people in rural and urban areas in neighbouring regions.

About the electricity access, better electricity access improves the regional income as well as the agriculture sector. It also lowers the percentage of poor people in home regions but also in

[2] See https://www.theguardian.com/world/2013/mar/09/bali-property-frenzy-islanders-boom

neighbouring regions. In according to the impact of the price of rice, the staple food, it affected the income of the agricultural sector, although the significant sign was not seen in all models. However, the increase in the price of rice lowered the unemployment level. Because the income of farmers may increase when the price of rice increases, this might attract more people to farming and therefore lower the percentage of poor people in rural areas (negative and significant coefficient). At the same time, the increase in the price of rice seemed to affect the economy of the neighbouring regions. If the home region is the supplier of rice for neighbouring regions, then a rise in the price of rice will erodes the income of people in rural and in urban area. Studying the effect of branch variable, we found that RDBs that have more branches make a positive contribution to the overall regional economy in the home region and seem to affect the economy of the neighbouring regions, although not all the coefficients showed a significant influence.

Testing the implications of the decision to put funds in securities, we found that a higher proportion of the securities (over total assets) has a negative relationship with the income of the agricultural sector, it increased the unemployment level and the number of poor people in rural areas, and that pushed the poverty gap in home regions. Regarding the impact on the neighbouring region, it has a negative influence in almost economy indicators, such as overall GDP, agricultural sector, and percentage of poor people in rural areas and widens the poverty gap. This indicates that placing more funds to the security affect the economy of the home regions as well as the neighbouring regions in the same time. Although the RDB in the home region generates more interest incomes but with the fewer funds distributed, the income of the agriculture sector will lower, unemployment increases as well as the poverty gap and percentage of poor people in the home region as well as in the neighbouring region.

4.5.2 Robustness Check

To prove consistency with previous findings, we conducted several robustness checks. First, although the Hausman test proved that the RE seemed to be the preferred model for most of the regressions, the within R-squared seemed to have a higher value compared to other types of R-squared. This suggests the variance within the regions should contribute more to the outcomes. Therefore, for the sake of clarity, we will re-do the analysis using the FE model. The outcomes of the robustness analyses are in the appendix chapter.

4.5.2.1 Fixed effects

Referring to the results in table A4-5, table A4-6 and table A4-7, we hardly found a significant influence when we interacted the msme variable with the cost_eff variable (msme#cost_eff), albeit it had a negative relationship with the NPL (10% significance level). When using the profit efficiency indicator, we found similar outcomes with the RE model in the regressions in the previous tables. We found that the MSME loans distributed by the better banks consistently affected regional economy (as an aggregate), increased the income of the agriculture sector and lowered the unemployment level. The negative and significant coefficient was consistently found when we regressed the interaction variable (msme#profit_eff) with the RGDP_p25 variable, which implied the MSME lending distributed by the profit-oriented banks might target the middle and upper regional economy. This is closely related to the potential profit that they can generate and explains the positive and significant coefficient of the nim variable. Regressing the interaction variable on the banking indicator, we found no indication that the MSME loans from the better banks were generally expensive. However, the implication of good allocation capital pushed the net interest margin of the RDBs, and there was cost carried by the banks if they increased their lending to the MSMEs, as we found msme#profit_eff was positive and significant in affecting NPL.

Studying the impact of having a bigger market share on the regional economic indicators, we saw that the impact of MSME loans (distributed by RDBs) was consistent in significantly affecting the regional GDP (per capita) and the agriculture sector, and in lowering the unemployment level. However, the lending tends to push the poverty gap, as well as we saw the percentage of poor people in the rural area increased, and therefore the NPL decreased. Having the bigger size (comparing to the total commercial banks within the region) the RDBs seemed to avoid taking more risk and target a certain sector that have less risk with the motive to control their NPL. Studying the impact of msme#share on the individual variable RGDP_p25, although the MSME loans seem to encourage the low-income regions, and the bigger the size of the RDBs contributes more to the low-income regions, but when we interact these two variables, it showed that a negative and significant coefficient, it implied that the impact of the individual variables (msme and share) is not fixed for all observations, the MSMEs loans distributed by the RDBs that have more market size not helping the low-income regions. Hence, the poverty gap might not have occurred because of the disparity within regions but also across regions.

Observing the spatial dependence in affecting the impact of msme as well as the impact of efficiency indicator (cost_eff as well as profit_eff variable), the main results remain the same [see table A4-15, table A4-16 and table A4-17]. The impact of spatial dependence was strongly seen in cost efficiency-oriented banks, while profit efficiency-oriented banks tend has less impact of the spatial clustering. Regarding the size of the RDBs, it showed that the bigger the size of the RDBs (in proportion to the total commercial banks in the region) affected the agriculture sector, and it affected the neighbouring economy, as the RGDP_cap decreased as the unemployment increased significantly. The significant of unemployment variable had not seen when we applied RE model, instead it pushed the poverty gap. However, the findings were still connecting, because the higher the unemployment level it pushed the poverty gap.

4.5.2.2 Using alternative indicators

The second robustness check referred to the descriptive data and we saw that the increased distribution of MSME loans was not always in line with an increase in MSME borrowers. Understanding the importance of the MSME loans, we considered that it was possible that increasing the proportion of MSME loans did not have the same impact on the regional economy as increasing the proportion of MSME borrowers, as some of the increasing (decreasing) proportions of the MSME loans were not in line with the increase (decrease) of the MSME debtors. This suggests that some of the RDBs lent their MSME funds only for similar debtors, which they had connected or engaged with before (Baum, Schaffer, et al., 2010). This strategy enables them to easily track the history of debtors and lowers the possibility of having less non-performing loans.

Interacting with the cost efficiency variable [see Table A4-9 in the appendix], we did not find significant impact when we regressed the independent variables, especially the interaction variable (msme#cost_eff) with the dependent variables, which was similar to previous findings. While interacting with the profit efficiency variable, we found that a higher proportion of MSME debtors obtaining funds from the better banks had a positive relationship with regional GDP (per capita), agriculture sector but negative impact on the low-income region, which is similar with the previous findings. The unemployment level decreased when the proportion of borrowers increased. However, the poverty gap seemed to be sharper. We suspected that this might be related to the profit efficiency objective. The banks might allocate the loans to certain sectors that have high chance to gain profit, as the relationship between the interaction variable (msme_borr#profit_eff) was positive and significant in affecting the nim variable, albeit they have to carry a higher NPL due to the decision in distributing MSMEs loans.

Considering the market share of the banking market [see table A4-11], the outcomes are consistently similar to previous regressions. The higher MSME debtors had a positive correlation with RGDP_cap and the agriculture sector, similar to previous findings, but had a negative impact on the low-income region. However, we found an insignificant result when we regressed the interaction model ($msme\_borr\#share$) with unemp albeit the coefficient was negative. The higher proportion of MSME debtors had a positive contribution to the poverty gap, which was similar to the facts obtained using the msme variable. The interest incomes seen in the price variable were also affected (get less interests income) when the banks lent to more borrowers in less concentrated regions although it was not significant, but the NPL was more controllable. Thus, in less concentrated regions, which may have an unfavourable location or less endowment, the existence of RDBs is important for spurring the economy (including the agriculture sector), although RDBs cannot maximise their income through their interest income. However, the impact of lending seemed not affecting the low-income regions, which we suspected was related to the effort to manage the risk of unpaid debts, as seen in variable npl.

4.5.2.3 Two-stages least squares (2SLS)

Third, to anticipate the endogeneity problem, we ran a 2SLS program [see table A4-17, A4-18 and A4-19]. Empirically, this study used a lagged model to avoid the problem of reverse causality. However, we became aware of the omitted variable bias, or the endogeneity problem, that might relate to some of the control variables, especially the geographical variables used, affecting the consistent parameter estimates. Based on the Durbin Hausman test, we found that the msme variable might have a problem with endogeneity, as MSME lending might be affected by some variables outside the model or have a reverse causality with RGDP_cap or other geographical indicators. Therefore, to find a robust model, we ran the models with two-stage least squares (2SLS), by using the instrument variables that satisfied certain properties, uncorrelated with the error, but correlated with the endogenous variable. We clustered the data based on year to generate coefficient estimates that were efficient in the presence of the corresponding deviations from independent and identically distributed (i.i.d.) disturbances (Baum, Schaffer, et al., 2010). We used the first difference of the lagged $msme$ variable, lagged of the percentage of school participation rate, and the lagged of the number of motorcycles (log) as instrumental variables. After running the model, we conducted two tests – a weak instrument test to see the correlation between the instrument variables and an overidentification test to test that the instrument set was valid, and the model was correctly specified. The weak-instrument problem arises when the correlations between the endogenous regressors and the excluded instruments are nonzero, but small (Baum et al., 2010). Regarding the weak-instrument test, the null hypothesis was that the instruments did not suffer from the specified bias.

As the cost efficiency indicator seemed to be non-significant in affecting the dependent variables, we only ran the model with the profit efficiency indicator. We found that most of the findings remained constant, similar to the regression analysis. The loans to MSMEs distributed by the better banks were consistent in increasing the regional GDP, agriculture sector and lowering unemployment, had a positive relationship with nim and variable NPL, but decreased the income of the low-income regions. In addition, it showed that higher the MSME credit distributed by the better banks (proxied by profit efficiency indicator) decreased the percentage of the poor people in rural areas but increased the percentage of the poor people in urban areas and therefore lowering the poverty gap. However, these significant impacts have no found in the previous regression models. Furthermore, examining the Hansen J Stat and the Wald F-test, the 2sls results should be interpreted with caution, as they suffer from specified bias as the Wald F-test value was less than the critical value at the 10 per cent level.

We also tested the consistency of the MSMEs contribution lent by the RDBs' that have the bigger market share. We used the first difference of variable msme, the lag of percentage of the MSMEs borrowers, the lag of labour participation rate as the instrument variables. Surprisingly, the outcomes are quite different. The higher the market size of the RBDs', the impact of the MSMEs loans increased the income of the agriculture sector, had a negative correlation with the NPL, yet found a negative and significant coefficient when we regressed msme#share on RGDP_cap, not significant found when we regressed the interaction variable (msme#share) on RGDP_p25. We suspect that it might be connected to the performance of the 2sls outcomes. Examining the Hansen J-stat, some of the models had rarely passed the overidentifying restrictions test; therefore, the 2sls results should be interpreted with caution, as the instrument set might not valid or the models were not correctly specified. Therefore, we use another indicator of market concentration, which is the proportion of deposit of RDBs in the region over total deposits of the commercial banks in the region, or variable share2. Running using FE model, the outcomes in table A4-8 showed the consistent results, MSMEs credit distributed by the RDBs in less developed regions increased the regional GDP as well as the agriculture sector, it lowered the unemployment, but not improved the low-income regions, and had a relationship with the poverty gap which we suspected it connected with their effort to control the NPL to stay low.

4.5.2.4 Applying Seemingly Unrelated Regression Dependent (SURE)

In the absence of contemporaneous correlation between errors in different equations, the random effects model (RE) equation-by-equation is fully efficient. However, in Zellner (1962), it was shown that when the error terms are correlated across the equations, the equations are related, and joint estimation—rather than equation-by-equation estimation—leads to more precise estimates of the regression coefficients. Since Chapter Four (4) has a common specification for a vector of endogenous variables, it is possible that the errors are cross-correlated, and applying SURE estimation may enable us to explain the ambiguity of the prior findings.

Table A4-27 shows the result of the Breusch-Pagan test of independence of the separate REM equations. The cross-correlation matrix shows high correlation coefficients of the residuals among the equations across the sectors, which indicates that the SUR estimation may provide a better estimation than the REM equation-by-equation procedure.

Tables A4-24, A4-25, and A4-26 present the results of the SURE model. Generally, the results show similar outcomes to those shown in Tables 4-3 to 4-11. Furthermore, with RE, the interaction variable between an efficient bank, measured by cost efficiency and variable msme (msme#cost_eff) has no effect on the regional GDP or in agriculture, whereas with a SURE model we found all the interaction variables showed a significant and positive effect on the dependent variables. When observing the impact on regional inequalities seen in the unemp, p1, and RGDP_25 variables, the interaction variable (msme#cost_eff), again gave better information, while in the prior RE, there was no statistical significance sign in any of the models. We observed that, in general, both msme#cost_eff and msme#profit_eff confirmed the previous findings that the higher volume of MSME lending distributed by the efficient banks might not help to lower the disparity across regions. In relation to the impact on the banks' financial performance, we had the same unclear findings as before.

When examining the impact of the MSME lending relative to the size of their RDBs, we found results that were the opposite of our previous findings. Using a SURE model, we found that there is no impact of MSME lending lent by RDBs that have a higher market share on the regional GDP, but we found a consistent result when regressed variable msme#share with RGDP_25, meaning that the MSME lending seemed to cause a disparity across regions. In reference to the positive and statistical significance on variable price and NIM, the RDBs seem to act conservatively by making sure that they will still be able to generate income for the bank.

4.5.2.5 The contribution of the RDBs' lending (to MSMEs) compared to other types of banks

To obtain a comprehensive idea of the contribution of the RDBs through their MSME loans to the economy, we ran another regression that compared the RDBs with other types of banks [see table A4-20, table A4-21, table A4-22, and table A4-23]. To do the comparison, we needed to match the geographic data for each type of bank. Ideally, the comparison would be fair if we had regional level information for each type of bank, moreover, lack of regional data from other types of banks was the main impediment in this study. The national public banks only had aggregate figures from all the regions (provinces), which was the same for private banks, joint venture banks and foreign banks. However, to match the analysis, as the public banks operate nationally, we used national geographic data, while private banks are different. There are several banks that operate nationally, or the asset size is proportionally bigger relative to the national banks, including Bank Central Asia, Bank Danamon, Bank International Indonesia and Bank Bukopin. Therefore, we used national geographic data to match these banks, while others were matched with geographic data from DKI Jakarta, based on the location of the headquarters. This was also applied to joint venture banks and foreign banks. We used data from DKI Jakarta to match these two types of banks, as they mostly operated in Jakarta. We did not analyse the low-income class, as we considered this an unfair denominator across the groups.

We ran a random effect analysis, as the fixed effect model cannot be applied when we have a time-invariant variable – the bank type. Bank type was a dummy variable, with 1 representing RDBs, and 0 representing the other banks. Because we compared RDBs with the other four bank types, we had four sub-variables of bank types, which were rdb_national, rdb_private, rdb_joint and rdb_foreign. Referring to the outcomes, we did not find a significant coefficient when we regressed the interaction variable (sme#rdb_national) with the dependent variables. Generally, there was no dominant impact observed between RDBs and national public banks, except the impact on the unemp variable, with a 10 per cent confidence interval. We suggested that, as public banks, RDBs and national public banks might have similar attitudes, to contribute the economy through their lending. However, compared to private banks, the loans distributed by the RDBs contributed more to lowering the unemployment level. However, the poverty gap was still a major problem, as well as the price of lending and the net interest margin. Compared to joint venture banks and foreign banks, again, we found the MSME lending of the RDBs tended to boost the poverty gap.

4.6 Conclusion

This paper focuses on the support offered by RDBs through loans to MSMEs to boost regional economies. MSMEs make a positive contribution to the economy, but at the same time, there is an opaqueness problem as they do not provide sufficient good-quality information, which is the main problem causing difficulty in accessing loans from banks. However, observing their function as a social and developmental agent, we suspect that the contribution of RDBs might be obvious, by giving credit to MSMEs, they eventually affect the regional economy. To provide a comprehensive analysis, we have examined the impact of MSME loans, not only on the overall regional GDP, but also on specific sectors, such as agriculture. Regarding the disparity or poverty gap found by Beck et al., (2005) and (OJK, 2016a), this study will contribute the literature by test if the issue of the disparity might be related to the different attitude of the RDBs in providing loans. We also test whether the behaviour of the RDBs causes the disparity within a region as well as across regions. In addition, we relate these regional indicators to those given by the banks to give a comprehensive picture of how regional variations are reflected in the banks' motives, as seen in their figures. To see the impact of lending to MSMEs, we consider certain variables that might amplify the contribution of MSME loans to the economy. The first is the quality of intermediation, as proxied by cost efficiency and profit efficiency, and the second is the size of the market concentration and the impact of spatial dependence.

Firstly, we investigate whether the contribution of MSME loans is amplified by a better quality of intermediation, resulting in a more effective boost to regional economies. We looked at two different indicators of efficiency, cost efficiency and profit efficiency. We found that in almost all models, the interaction between cost efficiency and MSME loans was rarely significant, while the interaction between profit efficiency and MSME loans was almost always significant. This finding is similar to that of Hasan et al. (2009) and is explained by the fact that cost efficiency indicator does not capture a bank's ability to convert inputs into outputs efficiently, because the measure focuses only on the cost aspects of the banking business. Conversely, profit efficiency is about combining skills to maximise profits for a given production plan (Humphrey & Pulley, 1997). By looking at the interaction between MSME loans and the profit efficiency variable, we found that loans distributed by the better banks (as proxied by profit efficiency) had significant effect on the overall regional GDP, influenced on the income of the agriculture sector. This finding was not changed by several tests of robustness. However, the MSME credit distributed by the better banks (proxied by profit efficiency) did not help the low-income regions, while observing the poverty gap within the region, we found no evidence when we regressed msme#profit_eff on poverty gap. The banks seem to pursue a positive net interest margin although they have to face higher non-performing loans.

Regarding the influence of RDB lending to MSMEs in a less concentrated market, we found that an increase in MSME loans affected the overall regional GDP, increasing the income of the agriculture sector, and effectively lowering the level of unemployment. On the other hand, the loans themselves did not increase the income of the low-income regions, and also increased the poverty gap as the percentage of poor people in the rural area increased. These findings were found to be robust after several robustness checks. Located in less developed regions may be a higher risk for RDBs, making it more important to control the 'NPL' (as we found a significant negative coefficient when we regressed msme#share on NPL), and therefore by allocating to certain sector, or placing in middle and upper regions, it might avoid them getting a higher risk. The spatial indication might be detected here, which is revealed when we run using spatial panel method. Hence, the disparity occurred not only within the region but also across regions, as the banks tend to control their performance seen in the non-performing loans.

Examining the impact of spatial dependence, evidences suggest that improving the distribution of the individual $msme$ variable in the home region did not seem to affect the regional economy. This included the agriculture sector, but it did result in a lowered income in neighbouring regions, including their agriculture sector. Furthermore, we have seen that the cost efficiency indicator cannot adequately explain the variance in regional economic indicators, but using the spatial panel model, we have captured a capital drain indicator, as cost efficiency-oriented banks tend to contribute to their neighbours' economies rather than that of their home region. From this, we suspect that their efforts to save costs might be connected to the better endowments by the banks. Moreover, we found that profit efficiency-oriented banks have less impact on spatial dependency.

By studying the differences between the percentage of MSME loans and the percentage of MSME borrowers, we were able to do an additional test to investigate the impact of granting loans to more MSME debtors; yet, the results remain the same as when we use MSME loans as a variable. In addition, this measure showed that the loans distributed by the better banks (as proxied by profit efficiency) tend to pursue a positive net interest margin. When looking for an interaction with share variable, the findings were similar: in the less concentrated regions, a higher percentage of the MSME debtors increases the RGDP per capita in the agriculture sector but increases the poverty gap and has a negative relationship with the income of the low-income regions. Again, we suspect this is linked to efforts to control NPL. We did another test to establish the robustness of these findings, in which we compared the impact of MSME loans distributed by RDBs with those from other types of banks and found that the poverty gap is a major issue about which the RDBs should be concerned.

Appendix

Table A4- 1. Correlation

	cost_eff1	cost_eff2	cost3	cost_eff4	profit_eff1	profit_eff2	profit_eff3	profit_eff4
cost_eff1	1.000							
cost_eff2	0.950	1.000						
cost_eff3	0.946	0.992	1.000					
cost_eff4	0.934	0.943	0.953	1.000				
profit_eff11	-0.007	-0.009	-0.006	0.017	1.000			
profit_eff12	0.031	0.027	0.030	0.042	0.915	1.000		
profit_eff13	-0.007	-0.009	-0.006	0.017	1.000	0.915	1.000	
profit_eff14	0.031	0.027	0.030	0.042	0.915	1.000	0.915	1.000

This table presents correlation of among cost efficiency scores, and profit efficiency scores. There are four different methods used. Cost_eff 1 and profit_eff1 measured using half-normal distribution; cost_eff2 and profit_eff2 estimated using exponential distribution; cost_eff3 and profit_eff3 estimated using half-normal distribution but with adding two geographical indicators, log of GDP and log of population; cost_eff4 and profit_eff4 estimated using exponential distribution but with adding two geographical indicators, log of GDP and log of population.

Table A4- 2. Parameter estimation of Cost Efficiency Frontier function

Variables	Parameter	coeff.	St.error
Q1	β_1	0.662***	[0.105]
Q2	β_2	-1.011***	[0.103]
Q3	β_3	0.422***	[0.087]
w1/w3	ψ_1	0.198**	[0.086]
w2/w3	ϕ_1	-0.018	[0.090]
Q1Q1	θ_{11}	-0.054	[0.035]
Q1Q2	θ_{12}	-0.072**	[0.028]
Q1Q3	θ_{13}	0.072***	[0.021]
Q2Q2	θ_{22}	0.547***	[0.032]
Q2Q3	θ_{23}	-0.167***	[0.023]
Q3Q3	θ_{33}	0.038	[0.027]
(w1/w3)(w1/w3)	ψ_{11}	0.141***	[0.026]
(w1/w3)(w2/w3)	Ω_{11}	-0.034	[0.022]
(w2/w3)(w2/w3)	ϕ_{11}	-0.027	[0.033]
Q1(w1/w3)	ϖ_{11}	0.036	[0.024]
Q1(w2/w3)	κ_{11}	0.085**	[0.037]
Q2(w1/w3)	ϖ_{21}	0.100***	[0.026]
Q2(w2/w3)	κ_{21}	-0.110***	[0.038]
Q3(w1/w3)	ϖ_{31}	0.009	[0.023]
Q3(w2/w3)	κ_{31}	0.031	[0.032]
Year	τ_1	-0.011	[0.008]
Year^2	τ_{11}	-0.001***	[0.000]
Q1*T	λ_{21}	0.012***	[0.003]
Q2*T	λ_{22}	-0.012***	[0.003]
Q3*T	λ_{23}	0.006**	[0.003]
(w1/w3)*T	ψ_{21}	0.008***	[0.002]
(w2/w3)*T	ϕ_{21}	-0.003	[0.002]
Constant	α	2.014***	[0.227]
Observations		1,986	
Log-likelihood		1090.63	

Table A4- 3. Parameter estimation of Profit Efficiency Frontier function

		Profit Efficiency	
Variables	Parameter	coeff.	St.error
Q1	β_1	-0.154*	[0.089]
Q2	β_2	-0.195**	[0.088]
Q3	β_3	-0.450***	[0.074]
w1	ψ_1	0.196**	[0.097]
w2	ϕ_1	0.448***	[0.079]
w3	ν_1	-0.166**	[0.079]
Q1Q1	θ_{11}	-0.015	[0.022]
Q1Q2	θ_{12}	0.023	[0.018]
Q1Q3	θ_{13}	0.018	[0.018]
Q2Q2	θ_{22}	-0.048**	[0.023]
Q2Q3	θ_{23}	0.056***	[0.019]
Q3Q3	θ_{33}	-0.012	[0.018]
(w1)(w1)	ψ_{11}	-0.022	[0.025]
(w1)(w2)	Ω_{11}	0.026	[0.023]
(w1)(w3)	ϕ_{11}	-0.017	[0.025]
(w2)(w2)	$\varepsilon 11$	0.051**	[0.026]
(w2)(w3)	$\vartheta 11$	-0.034*	[0.020]
(w3)(w3)	$\gamma 11$	0.009	[0.023]
Q1(w1)	ϖ_{11}	0.004	[0.022]
Q1(w2)	κ_{11}	-0.040	[0.028]
Q1(w3)	ϵ_{11}	0.003	[0.025]
Q2(w1)	ϖ_{21}	-0.003	[0.020]
Q2(w2)	κ_{21}	0.016	[0.028]
Q2(w3)	ϵ_{21}	0.003	[0.027]
Q3(w1)	ϖ_{31}	-0.037**	[0.019]
Q3(w2)	κ_{31}	-0.034	[0.022]
Q3(w3)	ϵ_{31}	0.018	[0.020]
Year	τ_1	-0.056***	[0.006]
Year^2	τ_{11}	-0.000***	[0.000]
Q1*t	λ_{21}	0.002	[0.002]
Q2*t	λ_{22}	-0.000	[0.002]
Q3*t	λ_{23}	0.003*	[0.002]
(w1)*t	ψ_{21}	-0.000	[0.002]
(w2)*t	ϕ_{21}	-0.002	[0.002]
(w3)*t	ν_{21}	-0.001	[0.002]
Constant		9.485***	
		[0.185]	
Observations		1,986	
Log-likelihood		1674.623	

Table A4- 4. Hausman test (FE vs RE)

Dependent variables		**RGDP_cap**	**agr**	**RGDP_p25**	**Unemp**	**P1**	**Rural**	**Urban**	**Price**	**Nim**	**NPL**
Interacted with cost efficiency	χ^2	3.700	0.750	0.750	6.240	6.240	11.180	10.340	88.810	10.010	9.970
	p-value for χ^2	0.296	0.861	861	0.101	0.101	0.011	0.016	0.000	0.018	0.018
	RE vs FE	RE	RE	RE	RE	RE	FE	FE	FE	RE	RE
Interacted with profit efficiency	χ^2	5.960	1.000	0.210	6.750	0.750	61.230	61.230	10.980	2.370	6.160
	p-value for χ^2	0.113	0.802	0.976	0.080	0.861	0.000	0.000	0.012	0.500	0.104
	RE vs FE	RE	RE	RE	RE	RE	FE	FE	FE	RE	RE
Interacted with variable $share$	χ^2	3.370	7.050	9.760	0.730	43.360	41.500	0.860	12.330	0.450	4.240
	p-value for χ^2	0.338	0.070	0.021	0.865	0.000	0.000	0.834	0.006	0.929	0.236
Preferred method	RE vs FE	RE	RE	FE	RE	FE	FE	RE	RE	RE	RE

This table shows the Hausman test of the regression models. There are three different models tested, first, variable $msme$ in its interaction with variable cost efficiency while affecting the dependent variables, second, the variable $msme$ in its interaction with variable profit efficiency while affecting the dependent variables, and third, the variable $msme$ in its interaction with variable share while affecting the dependent variables. RE is random effect model, FE is fixed effect model. RE model is preferred when p-value is above 5% significance level.

Table A4- 5. Robustness test of the MSMEs lending (in relation to cost efficiency) using FE Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	RGDP_cap	agri	RGDP_p25	unemp	p1	rural	urban	price	nim	NPL
msme	-0.155	-0.670	-0.610	0.006	0.006	0.075*	0.037	-0.197	-0.016	0.086*
	[0.394]	[0.469]	[0.615]	[0.022]	[0.009]	[0.041]	[0.042]	[0.128]	[0.067]	[0.046]
cost_eff	-0.003	-0.468	-0.597	0.010	0.005	0.061*	0.007	-0.167**	0.038	0.088*
	[0.338]	[0.477]	[0.507]	[0.021]	[0.010]	[0.031]	[0.044]	[0.076]	[0.043]	[0.049]
msme#cost_eff	0.200	0.836	0.805	-0.017	-0.005	-0.089*	-0.036	0.283	0.012	-0.107*
	[0.477]	[0.565]	[0.769]	[0.028]	[0.011]	[0.049]	[0.052]	[0.162]	[0.082]	[0.056]
sanitation	0.319***	0.512***	-0.056	-0.016	-0.026***	-0.097***	-0.071***	-0.085	0.001	-0.006
	[0.046]	[0.126]	[0.266]	[0.019]	[0.004]	[0.022]	[0.017]	[0.049]	[0.023]	[0.020]
guest	-0.005	-0.068**	0.133**	0.002	-0.001	-0.011**	0.006	-0.000	-0.007	-0.003
	[0.026]	[0.029]	[0.053]	[0.003]	[0.001]	[0.004]	[0.004]	[0.010]	[0.006]	[0.004]
electric	0.119	0.870***	-1.630***	0.045	-0.015***	-0.002	-0.133***	0.148***	0.019	-0.019*
	[0.092]	[0.138]	[0.315]	[0.025]	[0.005]	[0.013]	[0.021]	[0.047]	[0.019]	[0.010]
rice	0.328*	0.410	-0.797***	-0.075**	0.001	-0.050**	-0.047**	-0.104	0.086***	-0.048**
	[0.181]	[0.242]	[0.141]	[0.027]	[0.007]	[0.022]	[0.017]	[0.114]	[0.020]	[0.019]
branch	-0.014	-0.021	0.076	0.002	-0.007**	-0.007	0.010*	-0.028*	0.017***	-0.023***
	[0.017]	[0.038]	[0.086]	[0.008]	[0.003]	[0.005]	[0.005]	[0.014]	[0.005]	[0.006]
security	0.059	-0.183*	0.029	0.011	0.005	0.019	-0.002	0.127**	-0.059***	-0.041***
	[0.050]	[0.088]	[0.142]	[0.015]	[0.004]	[0.011]	[0.010]	[0.046]	[0.017]	[0.012]
Constant	0.318	-0.155	4.445***	0.357***	0.063*	0.452***	0.390***	0.649	-0.318***	0.244***
	[0.665]	[0.819]	[0.742]	[0.114]	[0.030]	[0.085]	[0.080]	[0.473]	[0.081]	[0.072]
Observations	332	332	332	332	331	319	332	332	332	328
R^2	0.569	0.401	0.255	0.676	0.543	0.748	0.675	0.435	0.213	0.141

Note: The regression equation is estimated with a fixed effect (FE) model, with time trend added. Models 1,2,3,4,5,6,7,8,9 and 10 show the impact of variable msme in its interaction with cost efficiency while affecting the dependent variables. The dependent variable is RGDP_cap or the regional GDP (per capita), agri (the income per per capita for agricultural sector), RGDP_p25 (the 25th quantile of the RGDP_cap), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes $p < 0.1$. **Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 6. Robustness test of the MSMEs lending (in relation to profit efficiency) using FE Model

	(1) RGDP_cap	(2) agri	(3) RGDP_p25	(4) unemp	(5) p1	(6) rural	(7) urban	(8) price	(9) nim	(10) NPL
msme	-0.407**	-0.845***	2.030**	0.120***	-0.024	-0.112	-0.026	-0.058	-0.199***	-0.081**
	[0.162]	[0.238]	[0.796]	[0.037]	[0.014]	[0.066]	[0.047]	[0.097]	[0.045]	[0.032]
profit	0.233	-0.142	0.946	0.070**	-0.049**	-0.101**	-0.140***	-0.074	-0.030	-0.045
	[0.346]	[0.411]	[0.545]	[0.027]	[0.017]	[0.044]	[0.042]	[0.094]	[0.027]	[0.035]
msme#profit_eff	0.458**	0.933***	-2.184**	-0.140***	0.028*	0.126	0.037	0.097	0.212***	0.089**
	[0.174]	[0.267]	[0.848]	[0.039]	[0.015]	[0.073]	[0.052]	[0.103]	[0.051]	[0.034]
sanitation	0.285***	0.511***	-0.052	-0.018	-0.022***	-0.093***	-0.060***	-0.075	-0.003	-0.008
	[0.078]	[0.150]	[0.288]	[0.019]	[0.004]	[0.024]	[0.017]	[0.048]	[0.023]	[0.021]
guest	0.015	-0.052*	0.095**	0.001	-0.001	-0.009**	0.004	-0.001	-0.002	-0.001
	[0.021]	[0.025]	[0.043]	[0.002]	[0.001]	[0.003]	[0.004]	[0.010]	[0.005]	[0.003]
electric	0.129	0.880***	-1.535***	0.049*	-0.021***	-0.017	-0.145***	0.145***	0.009	-0.030**
	[0.093]	[0.132]	[0.315]	[0.024]	[0.006]	[0.013]	[0.022]	[0.043]	[0.019]	[0.012]
rice	0.308	0.375	-0.920***	-0.079**	0.005	-0.038*	-0.036*	-0.115	0.091***	-0.037**
	[0.173]	[0.230]	[0.154]	[0.029]	[0.007]	[0.019]	[0.017]	[0.122]	[0.020]	[0.016]
branch	-0.029	-0.033	0.067	0.001	-0.006**	-0.004	0.014**	-0.028	0.015**	-0.022***
	[0.020]	[0.036]	[0.086]	[0.007]	[0.003]	[0.005]	[0.005]	[0.016]	[0.006]	[0.006]
security	0.085	-0.172	0.018	0.012	0.003	0.018	-0.010	0.123**	-0.055***	-0.040***
	[0.049]	[0.099]	[0.134]	[0.015]	[0.003]	[0.011]	[0.011]	[0.045]	[0.016]	[0.012]
Constant	0.105	-0.317	3.693***	0.321**	0.100**	0.547***	0.495***	0.631	-0.297***	0.306***
	[0.658]	[0.910]	[0.786]	[0.108]	[0.036]	[0.092]	[0.074]	[0.488]	[0.078]	[0.072]
Observations	294	294	294	294	294	284	294	294	294	293
R^2	0.555	0.389	0.262	0.680	0.557	0.730	0.680	0.428	0.261	0.103

Note: The regression equation is estimated with a fixed effect (FE) model with time trend added. Models 1,2,3,4,5,6,7,8,9 and 10 show the impact of variable msme in its interaction with profit efficiency while affecting the dependent variables. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), RGDP_p25 (the 25th quantile of the RGDP_cap), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes $p < 0.1$. **Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 7. Robustness test of the MSMEs lending (in relation to variable $share$) using FE Model

	(1) RGDP_cap	(2) agri	(3) RGDP_p25	(4) unemp	(5) p1	(6) rural	(7) urban	(8) price	(9) nim	(10) NPL
msme	-0.111***	-0.081*	0.231**	-0.003	-0.005*	-0.010	0.008	0.030**	-0.004	0.014**
	[0.024]	[0.038]	[0.081]	[0.004]	[0.002]	[0.007]	[0.005]	[0.012]	[0.007]	[0.005]
share	-0.546**	0.115	0.895***	0.011	-0.048***	-0.094**	0.049*	0.038	0.077**	0.093***
	[0.182]	[0.178]	[0.255]	[0.023]	[0.015]	[0.034]	[0.026]	[0.089]	[0.033]	[0.028]
msme#share	0.693***	0.503**	-1.135***	-0.029**	0.041***	0.075*	0.002	0.004	-0.014	-0.083***
	[0.148]	[0.199]	[0.235]	[0.011]	[0.013]	[0.035]	[0.030]	[0.075]	[0.029]	[0.026]
sanitation	0.291***	0.501***	0.017	-0.015	-0.028***	-0.101***	-0.073***	-0.079	0.002	-0.004
	[0.048]	[0.127]	[0.292]	[0.019]	[0.005]	[0.023]	[0.018]	[0.046]	[0.023]	[0.020]
guest	0.008	-0.065**	0.107*	0.002	0.000	-0.009**	0.006	-0.002	-0.006	-0.004
	[0.025]	[0.029]	[0.051]	[0.003]	[0.001]	[0.004]	[0.004]	[0.010]	[0.005]	[0.003]
electric	0.151	0.941***	-1.689***	0.041	-0.013**	-0.005	-0.127***	0.154***	0.008	-0.033**
	[0.128]	[0.163]	[0.279]	[0.023]	[0.005]	[0.012]	[0.018]	[0.041]	[0.020]	[0.013]
rice	0.337**	0.297	-0.869***	-0.073**	0.005	-0.038	-0.054***	-0.126	0.079***	-0.046**
	[0.144]	[0.213]	[0.159]	[0.026]	[0.006]	[0.022]	[0.017]	[0.122]	[0.022]	[0.016]
branch	-0.014	-0.034	0.072	0.002	-0.007**	-0.005	0.009*	-0.030*	0.016***	-0.023***
	[0.022]	[0.040]	[0.096]	[0.007]	[0.003]	[0.006]	[0.004]	[0.014]	[0.005]	[0.006]
security	0.019	-0.149	0.083	0.011	0.001	0.012	0.005	0.130**	-0.050**	-0.031**
	[0.047]	[0.094]	[0.149]	[0.016]	[0.003]	[0.011]	[0.009]	[0.043]	[0.017]	[0.011]
Constant	0.326	-0.141	4.207***	0.357***	0.058*	0.465***	0.410***	0.600	-0.273***	0.292***
	[0.588]	[0.788]	[0.706]	[0.110]	[0.027]	[0.077]	[0.070]	[0.475]	[0.084]	[0.066]
Observations	332	332	332	332	331	319	332	332	332	328
R-squared	0.593	0.412	0.275	0.678	0.572	0.752	0.678	0.427	0.218	0.151

Note: The regression equation is estimated with a fixed effect (FE) model with time trend added. Models 1,2,3,4,5,6,7,8,9 and 10 show the impact of the variable msme in its interaction with variable share while affecting the dependent variables. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), RGDP_p25 (the 25th quantile of the RGDP_cap), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes $p < 0.1$. **Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 8. Robustness test of the MSMEs lending (in relation to variable share2) using FE Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	RGDP_cap	agr	RGDP_p25	unemp	p1	rural	urban	price	nim	NPL
msme	-0.118***	-0.068	0.114	0.003	-0.003	-0.005	0.010*	0.026**	0.001	0.010
	[0.037]	[0.041]	[0.071]	[0.006]	[0.002]	[0.009]	[0.005]	[0.011]	[0.007]	[0.006]
share1	-0.297	-0.159	0.925***	-0.022*	-0.025**	-0.054*	-0.030	0.039	0.004	0.055
	[0.187]	[0.138]	[0.234]	[0.011]	[0.011]	[0.026]	[0.022]	[0.047]	[0.030]	[0.033]
msme#share2	0.591***	0.337*	-0.430**	-0.047*	0.025*	0.039	-0.004	0.018	-0.034	-0.051*
	[0.183]	[0.176]	[0.193]	[0.023]	[0.012]	[0.037]	[0.024]	[0.055]	[0.030]	[0.028]
sanitation	0.286***	0.511***	0.074	-0.018	-0.029***	-0.105***	-0.076***	-0.074	0.002	-0.002
	[0.061]	[0.136]	[0.323]	[0.018]	[0.004]	[0.026]	[0.019]	[0.046]	[0.025]	[0.021]
guest	0.011	-0.064**	0.114**	0.002	0.000	-0.009**	0.006	-0.001	-0.007	-0.004
	[0.023]	[0.029]	[0.048]	[0.003]	[0.001]	[0.004]	[0.004]	[0.010]	[0.005]	[0.003]
electric	0.149	0.905***	-1.671***	0.042*	-0.013**	-0.003	-0.128***	0.151***	0.004	-0.033**
	[0.115]	[0.157]	[0.298]	[0.022]	[0.004]	[0.012]	[0.019]	[0.041]	[0.022]	[0.012]
rice	0.348**	0.376	-1.031***	-0.065**	0.005	-0.035	-0.039**	-0.130	0.091***	-0.049**
	[0.149]	[0.221]	[0.173]	[0.025]	[0.007]	[0.024]	[0.017]	[0.125]	[0.024]	[0.016]
branch	-0.011	-0.023	0.051	0.003	-0.007**	-0.005	0.011**	-0.030*	0.018***	-0.024***
	[0.023]	[0.040]	[0.090]	[0.007]	[0.003]	[0.006]	[0.005]	[0.015]	[0.005]	[0.006]
security	0.033	-0.206**	-0.091	0.021	0.007	0.026**	0.005	0.115**	-0.056***	-0.044***
	[0.057]	[0.094]	[0.113]	[0.016]	[0.004]	[0.010]	[0.011]	[0.039]	[0.016]	[0.012]
Constant	0.236	-0.376	4.932***	0.326***	0.049	0.441***	0.362***	0.626	-0.305***	0.316***
	[0.580]	[0.830]	[0.751]	[0.105]	[0.028]	[0.082]	[0.069]	[0.485]	[0.095]	[0.067]
Observations	332	332	332	332	331	319	332	332	332	328
R-squared	0.589	0.397	0.273	0.687	0.559	0.749	0.677	0.427	0.208	0.140

Note: The regression equation is estimated with a fixed effect (FE) model with time trend added. Models 1,2,3,4,5,6,7,8,9 and 10 show the impact of variable msme in its interaction with variable $share2$ while affecting the dependent variables. Variable share2 is the proportion of total deposits of RDB j in region i at time t over total commercial banks' deposit of region i at time t. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), RGDP_p25 (the 25th quantile of the RGDP_cap), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes $p < 0.1$. **Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 9. Influence of the MSMEs debtors (in relation to cost efficiency)

	(1) RGDP_cap	(2) agr	(3) RGDP_p25	(4) unemp	(5) p1	(6) rural	(7) urban	(8) price	(9) nim	(10) NPL
msme_borr	0.089	-0.193	-0.564	0.004	0.000	0.070	0.034	-0.201	-0.011	0.075*
	[0.359]	[0.376]	[0.537]	[0.025]	[0.012]	[0.047]	[0.032]	[0.117]	[0.072]	[0.040]
cost_eff	0.140	-0.169	-0.504	0.005	0.003	0.056	0.007	-0.139*	0.039	0.076
	[0.307]	[0.447]	[0.466]	[0.024]	[0.010]	[0.034]	[0.033]	[0.070]	[0.046]	[0.043]
msme_borr#cost_eff	-0.106	0.257	0.709	-0.012	-0.001	-0.089	-0.034	0.281*	0.005	-0.095*
	[0.432]	[0.448]	[0.649]	[0.032]	[0.014]	[0.056]	[0.039]	[0.146]	[0.088]	[0.050]
sanitation	0.328***	0.532***	-0.029	-0.019	-0.025***	-0.096***	-0.069***	-0.069	-0.002	-0.008
	[0.047]	[0.129]	[0.281]	[0.019]	[0.005]	[0.022]	[0.018]	[0.047]	[0.024]	[0.020]
guest	-0.005	-0.069**	0.132**	0.002	-0.001	-0.011**	0.007	0.001	-0.008	-0.004
	[0.025]	[0.027]	[0.055]	[0.002]	[0.001]	[0.004]	[0.004]	[0.010]	[0.006]	[0.004]
electric	0.110	0.845***	-1.648***	0.050*	-0.015***	-0.002	-0.139***	0.123***	0.025	-0.017*
	[0.091]	[0.131]	[0.338]	[0.025]	[0.004]	[0.014]	[0.022]	[0.038]	[0.020]	[0.009]
rice	0.315*	0.393	-0.804***	-0.077**	0.001	-0.052**	-0.044**	-0.093	0.082***	-0.049**
	[0.170]	[0.233]	[0.143]	[0.027]	[0.007]	[0.022]	[0.016]	[0.112]	[0.017]	[0.019]
branch	-0.015	-0.022	0.073	0.002	-0.008**	-0.008	0.010*	-0.028**	0.017***	-0.023***
	[0.017]	[0.038]	[0.088]	[0.008]	[0.003]	[0.005]	[0.005]	[0.013]	[0.005]	[0.006]
security	0.056	-0.188*	0.020	0.011	0.005	0.019	-0.002	0.127**	-0.060***	-0.040***
	[0.049]	[0.090]	[0.140]	[0.015]	[0.004]	[0.011]	[0.010]	[0.045]	[0.017]	[0.012]
Constant	0.267	-0.314	4.441***	0.367***	0.068**	0.468***	0.380***	0.594	-0.303***	0.256***
	[0.672]	[0.875]	[0.772]	[0.119]	[0.031]	[0.088]	[0.072]	[0.450]	[0.078]	[0.078]
Observations	332	332	332	332	331	319	332	332	332	328
R^2	0.569	0.394	0.252	0.673	0.538	0.748	0.674	0.432	0.217	0.140

Note: The regression equation is estimated with a fixed effect (FE) model with time trend added. Models 1,2,3,4,5,6,7,8,9 and 10 show the impact of variable msme_borr in its interaction with cost efficiency while affecting the dependent variables. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), RGDP_p25 (the 25th quantile of the RGDP_cap), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes $p < 0.1$. ** Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 10. Influence of the MSMEs debtors (in relation to profit efficiency)

	(1) RGDP_cap	(2) agr	(3) RGDP_p25	(4) unemp	(5) p1	(6) rural	(7) urban	(8) price	(9) nim	(10) NPL
msme_borr	-0.454	-0.730**	1.621*	0.080**	-0.032***	-0.055	-0.002	-0.124	-0.213***	-0.061*
	[0.257]	[0.271]	[0.773]	[0.031]	[0.009]	[0.081]	[0.045]	[0.119]	[0.036]	[0.033]
profit_eff	0.277	0.029	0.521	0.035	-0.049***	-0.066	-0.124***	-0.074	-0.014	-0.028
	[0.363]	[0.408]	[0.474]	[0.023]	[0.016]	[0.043]	[0.032]	[0.087]	[0.027]	[0.038]
msme_borr#profit_eff	0.509*	0.822**	-1.769*	-0.095**	0.034**	0.057	0.008	0.164	0.227***	0.065*
	[0.278]	[0.303]	[0.843]	[0.033]	[0.011]	[0.089]	[0.050]	[0.127]	[0.040]	[0.036]
sanitation	0.294***	0.520***	-0.051	-0.021	-0.021***	-0.091***	-0.057***	-0.062	-0.003	-0.007
	[0.076]	[0.153]	[0.277]	[0.019]	[0.004]	[0.024]	[0.018]	[0.046]	[0.024]	[0.021]
guest	0.017	-0.051*	0.097*	0.001	-0.001	-0.011***	0.004	0.002	-0.002	-0.002
	[0.020]	[0.024]	[0.048]	[0.002]	[0.001]	[0.003]	[0.004]	[0.011]	[0.005]	[0.004]
electric	0.124	0.878***	-1.581***	0.052*	-0.020***	-0.014	-0.149***	0.121***	0.017	-0.027**
	[0.099]	[0.134]	[0.323]	[0.024]	[0.004]	[0.013]	[0.023]	[0.036]	[0.020]	[0.012]
rice	0.322*	0.395	-0.935***	-0.081**	0.005	-0.041*	-0.035*	-0.099	0.092***	-0.038**
	[0.179]	[0.233]	[0.169]	[0.029]	[0.007]	[0.020]	[0.017]	[0.119]	[0.019]	[0.017]
branch	-0.026	-0.028	0.057	0.001	-0.006**	-0.004	0.014**	-0.028*	0.017**	-0.022***
	[0.021]	[0.037]	[0.088]	[0.007]	[0.003]	[0.005]	[0.006]	[0.015]	[0.006]	[0.006]
security	0.080	-0.177	0.032	0.012	0.002	0.016	-0.010	0.122**	-0.058***	-0.041***
	[0.051]	[0.101]	[0.129]	[0.015]	[0.003]	[0.011]	[0.011]	[0.045]	[0.017]	[0.012]
Constant	-0.006	-0.584	4.208***	0.361***	0.102**	0.533***	0.479***	0.571	-0.321***	0.295***
	[0.670]	[0.905]	[0.773]	[0.117]	[0.034]	[0.090]	[0.069]	[0.466]	[0.080]	[0.068]
Observations	332	332	332	332	331	319	332	332	332	328
R^2	0.585	0.406	0.264	0.679	0.568	0.748	0.703	0.426	0.260	0.126

Note: The regression equation is estimated with a fixed effect (FE) model with time trend added. Models 1,2,3,4,5,6,7,8,9 and 10 show the impact of the variable msme_borr in its interaction with profit efficiency while affecting the dependent variables. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), RGDP_p25 (the 25th quantile of the RGDP_cap), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes $p < 0.1$. **Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 11. Influence of the MSMEs debtors (in relation to variable *share*)

	(1) RGDP_cap	(2) agr	(3) RGDP_p25	(4) unemp	(5) p1	(6) rural	(7) urban	(8) price	(9) nim	(10) NPL
msme_borr	-0.111***	-0.062**	0.136*	-0.004	-0.005**	-0.013*	0.005	0.039***	-0.005	0.010***
	[0.024]	[0.023]	[0.071]	[0.004]	[0.002]	[0.007]	[0.007]	[0.011]	[0.007]	[0.003]
share	-0.377	0.258*	0.463	0.002	-0.036**	-0.070**	0.038	0.049	0.083***	0.070***
	[0.217]	[0.139]	[0.288]	[0.025]	[0.012]	[0.025]	[0.029]	[0.066]	[0.026]	[0.023]
msme_borr#share	0.626***	0.395***	-0.706***	-0.009	0.030**	0.062*	0.013	-0.072	-0.018	-0.067***
	[0.121]	[0.117]	[0.230]	[0.014]	[0.011]	[0.032]	[0.033]	[0.058]	[0.024]	[0.015]
sanitation	0.287***	0.503***	0.020	-0.019	-0.027***	-0.100***	-0.070***	-0.062	-0.001	-0.004
	[0.049]	[0.124]	[0.302]	[0.020]	[0.005]	[0.023]	[0.018]	[0.044]	[0.024]	[0.021]
guest	0.008	-0.065*	0.113*	0.002	-0.000	-0.009**	0.007	-0.001	-0.007	-0.004
	[0.024]	[0.030]	[0.054]	[0.002]	[0.001]	[0.004]	[0.004]	[0.010]	[0.005]	[0.003]
electric	0.230*	0.978***	-1.761***	0.048*	-0.010**	0.004	-0.131***	0.109***	0.014	-0.040***
	[0.126]	[0.167]	[0.318]	[0.026]	[0.004]	[0.015]	[0.023]	[0.035]	[0.021]	[0.012]
rice	0.354**	0.314	-0.890***	-0.076**	0.005	-0.038	-0.050***	-0.112	0.073***	-0.049**
	[0.139]	[0.214]	[0.187]	[0.026]	[0.007]	[0.024]	[0.016]	[0.115]	[0.020]	[0.016]
branch	-0.023	-0.038	0.078	0.002	-0.008**	-0.007	0.009*	-0.028**	0.016***	-0.022***
	[0.022]	[0.041]	[0.102]	[0.008]	[0.003]	[0.006]	[0.005]	[0.013]	[0.005]	[0.006]
security	0.030	-0.139	0.052	0.011	0.001	0.013	0.004	0.129**	-0.050**	-0.033**
	[0.051]	[0.090]	[0.158]	[0.016]	[0.003]	[0.011]	[0.009]	[0.043]	[0.017]	[0.012]
Constant	0.206	-0.251	4.397***	0.369***	0.056*	0.462***	0.397***	0.564	-0.249***	0.313***
	[0.563]	[0.797]	[0.810]	[0.112]	[0.030]	[0.083]	[0.065]	[0.444]	[0.077]	[0.068]
Observations	305	305	305	305	305	295	305	305	305	302
R^2	0.569	0.396	0.257	0.651	0.561	0.740	0.654	0.426	0.243	0.134

Note: The regression equation is estimated with a fixed effect (FE) model with time trend added. Models 1,2,3,4,5,6,7,8,9 and 10 show the impact of variable msme_borr in its interaction with variable *share*. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), RGDP_p25 (the 25th quantile of the RGDP_cap), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from year 2001 to year 2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes p < 0.1. **Denotes p < 0.5. *** Denotes p < 0.01

Table A4- 12. Estimated results of the Spatial Dependence Estimators (with cost efficiency as an indicator of the banking performance) – FE method

	(1) RGDP_cap	(2) RGDP_cap	(3) RGDP_cap	(4) agr	(5) agr	(6) agr
msme	0.025	0.016	0.028	0.028	0.022	0.028
	[0.020]	[0.024]	[0.022]	[0.021]	[0.024]	[0.021]
cost_eff	-0.233*	-0.207**	-0.342**	-0.447*	-0.470**	-0.487
	[0.122]	[0.095]	[0.142]	[0.261]	[0.209]	[0.297]
sanitation	0.249***	0.265***	0.295***	-0.055	-0.037	-0.052
	[0.091]	[0.074]	[0.094]	[0.063]	[0.066]	[0.062]
guest	0.051*	0.035	0.061*	-0.044	-0.054*	-0.041
	[0.027]	[0.023]	[0.032]	[0.040]	[0.032]	[0.040]
electricity	0.472***	0.428***	0.465**	0.984***	0.955***	0.993***
	[0.159]	[0.163]	[0.181]	[0.208]	[0.216]	[0.220]
rice	-0.027	-0.057	0.035	0.070	0.010	0.080
	[0.091]	[0.068]	[0.121]	[0.099]	[0.082]	[0.103]
branches	0.103***	0.078**	0.105**	0.070*	0.052	0.074**
	[0.038]	[0.036]	[0.045]	[0.036]	[0.034]	[0.037]
security	-0.068	-0.039	-0.065	-0.330***	-0.330***	-0.338***
	[0.054]	[0.043]	[0.059]	[0.076]	[0.056]	[0.080]
Wx*sme		-0.105***			-0.100**	
		[0.036]			[0.039]	
Wx* cost_eff		1.557***			1.925***	
		[0.289]			[0.456]	
Wx*sanitation		-0.519***			-0.423***	
		[0.121]			[0.135]	
Wx*guest		-0.070*			-0.060	
		[0.042]			[0.071]	
Wx*electricity		0.275*			0.386**	
		[0.148]			[0.171]	
Wx*rice		0.193			0.183	
		[0.129]			[0.139]	
Wx*branches		0.069			-0.002	
		[0.067]			[0.048]	
Wx*security		-0.265***			-0.137	
		[0.072]			[0.098]	
Spatial effect						
rho	0.177***	0.112*		-0.099	-0.131	
(spatial lag)	[0.048]	[0.066]		[0.068]	[0.097]	
lambda			0.370***			0.017
(spatial error)			[0.095]			[0.059]
Observations	416	416	416	416	416	416
R2-overall	0.141	0.021	0.205	0.028	0.001	0.038
R2-between	0.113	0.0146	0.185	0.155	1.95e-05	0.189
R2-within	0.462	0.560	0.427	0.422	0.486	0.420
AIC	-488.075	-538.831	-473.031	-402.600	-441.434	-401.892
BIC	-447.768	-478.371	-432.724	-362.293	-380.974	-361.585

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table A4-12. (continued)

	(7) unemp	(8) unemp	(9) unemp	(10) p1	(11) p1	(12) p1	(13) rural	(14) rural	(15) rural
msme	-0.007***	-0.007***	-0.007***	0.001	0.001	0.001	0.005	0.005	0.003
	[0.002]	[0.002]	[0.003]	[0.001]	[0.001]	[0.001]	[0.004]	[0.003]	[0.003]
cost_eff	-0.006	-0.005	-0.002	-0.009	-0.010	-0.010	0.049**	0.026	0.048***
	[0.015]	[0.014]	[0.016]	[0.013]	[0.011]	[0.013]	[0.020]	[0.020]	[0.018]
sanitation	-0.021*	-0.019*	-0.023*	0.019	0.022	0.021	0.026	0.035	0.030
	[0.012]	[0.011]	[0.012]	[0.018]	[0.017]	[0.018]	[0.027]	[0.022]	[0.028]
guest	-0.006**	-0.005**	-0.006**	-0.003*	-0.003**	-0.003**	-0.020***	-0.011	-0.020***
	[0.003]	[0.002]	[0.003]	[0.002]	[0.001]	[0.002]	[0.006]	[0.008]	[0.004]
electricity	0.009	0.009	0.009	-0.037**	-0.039**	-0.041**	-0.104	-0.098*	-0.100
	[0.019]	[0.019]	[0.021]	[0.016]	[0.018]	[0.018]	[0.064]	[0.055]	[0.073]
rice	-0.025**	-0.028***	-0.038***	-0.003	-0.007	-0.005	-0.026***	-0.099***	-0.056***
	[0.012]	[0.011]	[0.014]	[0.006]	[0.005]	[0.005]	[0.009]	[0.012]	[0.021]
branches	-0.005	-0.004	-0.007	-0.009***	-0.008***	-0.010***	-0.013**	-0.014**	-0.015**
	[0.006]	[0.005]	[0.006]	[0.002]	[0.002]	[0.002]	[0.006]	[0.006]	[0.006]
security	0.022***	0.018**	0.022***	0.012***	0.006**	0.012***	0.047***	0.024***	0.039**
	[0.007]	[0.007]	[0.008]	[0.004]	[0.003]	[0.004]	[0.011]	[0.006]	[0.016]
Wx*sme		0.007			0.001			0.026**	
		[0.005]			[0.002]			[0.011]	
Wx* cost_eff		-0.096***			0.021			-0.072*	
		[0.027]			[0.022]			[0.037]	
Wx*sanitation		0.017			-0.021***			-0.031	
		[0.015]			[0.007]			[0.035]	
Wx*guest		0.002			0.003			-0.000	
		[0.005]			[0.004]			[0.008]	
Wx*electricity		0.003			0.018			-0.072	
		[0.017]			[0.026]			[0.048]	
Wx*rice		-0.002			0.016*			0.130***	
		[0.011]			[0.010]			[0.021]	
Wx*branches		-0.001			-0.012**			-0.010	
		[0.004]			[0.005]			[0.006]	
Wx*security		0.022*			0.013**			0.086***	
		[0.013]			[0.006]			[0.024]	
Spatial effect		0.007			0.001			0.026**	
rho	0.177***	0.112*		-0.099	-0.131		0.109***	-0.064	
(spatial lag)	[0.048]	[0.066]		[0.068]	[0.097]		[0.040]	[0.068]	
lambda			0.370***			0.017			0.159***
(spatial error)			[0.095]			[0.059]			[0.052]
Observations	416	416	416	416	416	416	416	416	416
R2-overall	0.015	0.004	0.056	0.158	0.034	0.191	0.190	0.001	0.200
R2-between	0.0194	0.0114	0.123	0.0937	0.0139	0.123	0.138	0.0116	0.141
R2-within	0.557	0.588	0.543	0.424	0.461	0.415	0.505	0.581	0.475
AIC	-2417.051	-2427.058	-2404.059	-2771.125	-2784.901	-2764.645	-1751.216	-1797.672	-1743.861
BIC	-2376.744	-2366.598	-2363.752	-2730.818	-2724.44	-2724.338	-1710.909	-1737.211	-1703.554

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table A4-12. (continued)

	(16) urban	(17) urban	(18) urban	(19) price	(20) price	(21) price
msme	0.002	0.001	0.002	0.041***	0.039***	0.042***
	[0.004]	[0.003]	[0.004]	[0.013]	[0.010]	[0.013]
cost_eff	0.030	0.013	0.025	-0.261*	-0.276**	-0.261**
	[0.025]	[0.019]	[0.023]	[0.137]	[0.118]	[0.133]
sanitation	-0.003	-0.005	-0.002	0.054	0.041	0.053
	[0.009]	[0.007]	[0.008]	[0.091]	[0.093]	[0.089]
guest	-0.007	-0.004	-0.008	-0.001	0.009	-0.002
	[0.005]	[0.006]	[0.006]	[0.012]	[0.015]	[0.013]
electricity	-0.064***	-0.049**	-0.050***	-0.005	0.040	-0.009
	[0.023]	[0.022]	[0.020]	[0.047]	[0.029]	[0.052]
rice	-0.063***	-0.096***	-0.073***	-0.015	-0.087	-0.018
	[0.011]	[0.017]	[0.010]	[0.096]	[0.107]	[0.102]
branches	-0.004	-0.007	-0.006	-0.028**	-0.025*	-0.031**
	[0.006]	[0.005]	[0.005]	[0.013]	[0.013]	[0.014]
security	0.002	0.002	0.000	0.275***	0.244***	0.284***
	[0.011]	[0.008]	[0.011]	[0.068]	[0.064]	[0.072]
Wx*sme		0.000			0.000	
		[0.007]			[0.026]	
Wx* cost_eff		0.031			0.206	
		[0.039]			[0.166]	
Wx*sanitation		-0.008			0.143**	
		[0.011]			[0.070]	
Wx*guest		0.018**			-0.048***	
		[0.008]			[0.012]	
Wx*electricity		-0.176***			0.092	
		[0.042]			[0.068]	
Wx*rice		0.056***			0.047	
		[0.014]			[0.059]	
Wx*branches		0.030***			-0.019	
		[0.009]			[0.020]	
Wx*security		0.023**			0.117**	
		[0.012]			[0.049]	
Spatial effect						
rho	0.278***	0.255**		0.112	0.061	
(spatial lag)	[0.069]	[0.102]		[0.078]	[0.085]	
lambda			0.320***			0.140
(spatial error)			[0.089]			[0.097]
Observations	416	416	416	416	416	416
R2-overall	0.110	0.020	0.183	0.134	0.062	0.144
R2-within	0.025	0.004	0.079	0.006	0.016	0.013
R2-between	0.547	0.608	0.548	0.416	0.453	0.411
AIC	-2088.548	-2140.826	-2094.349	-1116.51	-1134.58	-1113.997
BIC	-2048.241	-2080.366	-2054.042	-1076.203	-1074.12	-1073.691

Note: All the models estimated using fixed effect (FE) with adding with time trend (time trend), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table A4-12. (Continued)

	(22) nim	(23) nim	(24) nim	(25) NPL	(26) NPL	(27) NPL
msme	-0.004	-0.005	-0.005	0.003	0.002	0.003
	[0.004]	[0.005]	[0.004]	[0.002]	[0.002]	[0.002]
cost_eff	0.019	0.015	0.015	0.031	0.040	0.025
	[0.030]	[0.027]	[0.029]	[0.030]	[0.028]	[0.031]
sanitation	-0.011	-0.015	-0.010	0.021*	0.017*	0.023**
	[0.011]	[0.010]	[0.010]	[0.011]	[0.010]	[0.010]
guest	-0.008	-0.003	-0.007	-0.005	-0.006	-0.005
	[0.006]	[0.006]	[0.006]	[0.004]	[0.004]	[0.004]
electricity	0.008	0.034**	0.015	-0.002	0.003	0.000
	[0.016]	[0.015]	[0.018]	[0.016]	[0.020]	[0.016]
rice	-0.009	-0.021	-0.013	0.009	0.033**	0.006
	[0.010]	[0.013]	[0.013]	[0.010]	[0.015]	[0.009]
branches	0.007*	0.010**	0.008*	-0.022***	-0.016***	-0.022***
	[0.004]	[0.005]	[0.005]	[0.004]	[0.004]	[0.004]
security	-0.026*	-0.037**	-0.030*	-0.012	-0.019	-0.011
	[0.015]	[0.015]	[0.015]	[0.012]	[0.012]	[0.012]
Wx*sme		0.010			0.002	
		[0.009]			[0.006]	
Wx* cost_eff		0.063			-0.111**	
		[0.060]			[0.050]	
Wx*sanitation		-0.021			0.064**	
		[0.028]			[0.028]	
Wx*guest		-0.004			0.003	
		[0.006]			[0.008]	
Wx*electricity		-0.078**			0.027	
		[0.033]			[0.030]	
Wx*rice		0.040			-0.052*	
		[0.030]			[0.029]	
Wx*branches		-0.011			-0.014***	
		[0.010]			[0.005]	
Wx*security		0.004			0.030**	
		[0.011]			[0.014]	
Spatial effect						
rho	0.100**	0.034		0.055	0.182***	
(spatial lag)	[0.042]	[0.083]		[0.066]	[0.056]	
lambda			0.327***			0.209***
(spatial error)			[0.084]			[0.047]
Observations	416	416	416	416	416	416
R2-overall	0.004	0.026	0.016	0.053	0.002	0.053
R2-within	0.0009	0.026	0.011	0.0616	0.0005	0.057
R2-between	0.037	0.097	0.039	0.0885	0.151	0.089
AIC	-2008.43	-2027.438	-2011.291	-2010.995	-2033.967	-2012.556
BIC	-1968.123	-1966.978	-1970.984	-1970.688	-1973.507	-1972.249

Note: All the models estimated using fixed effect (FE) with adding with time trend (time trend), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table A4- 13. Estimated results of the Spatial Dependence Estimators (with profit efficiency as an indicator of the banking performance) – FE method

	(1) RGDP_cap	(2) RGDP_cap	(3) RGDP_cap	(4) agr	(5) agr	(6) agr
msme	0.021	0.011	0.024	0.023	0.016	0.021
	[0.019]	[0.021]	[0.020]	[0.019]	[0.020]	[0.019]
profit_eff	0.540*	0.653**	0.597*	0.582*	0.662**	0.574*
	[0.286]	[0.267]	[0.310]	[0.308]	[0.273]	[0.310]
sanitation	0.224***	0.237***	0.265***	-0.088	-0.079	-0.093
	[0.085]	[0.066]	[0.084]	[0.081]	[0.075]	[0.082]
guest	0.068**	0.048*	0.073**	-0.028	-0.043	-0.027
	[0.027]	[0.026]	[0.033]	[0.039]	[0.035]	[0.040]
electricity	0.607***	0.555***	0.626***	1.172***	1.126***	1.185***
	[0.177]	[0.171]	[0.197]	[0.217]	[0.220]	[0.227]
rice	-0.003	0.019	0.077	0.097	0.091	0.108
	[0.114]	[0.094]	[0.149]	[0.127]	[0.119]	[0.130]
branches	0.088**	0.060*	0.088**	0.056*	0.041	0.060*
	[0.035]	[0.033]	[0.041]	[0.034]	[0.031]	[0.036]
security	-0.065	0.016	-0.043	-0.321***	-0.273***	-0.330***
	[0.060]	[0.044]	[0.065]	[0.080]	[0.067]	[0.084]
Wx*sme		-0.108***			-0.121***	
		[0.036]			[0.040]	
Wx* profit_eff		-0.671			-0.232	
		[0.527]			[0.531]	
Wx*sanitation		-0.343***			-0.293**	
		[0.081]			[0.133]	
Wx*guest		-0.039			0.003	
		[0.046]			[0.058]	
Wx*electricity		-0.200			-0.040	
		[0.125]			[0.236]	
Wx*rice		0.091			0.122	
		[0.086]			[0.114]	
Wx*branches		0.093**			0.011	
		[0.044]			[0.039]	
Wx*security		-0.269***			-0.180	
		[0.087]			[0.117]	
Spatial effect						
rho	-0.062	-0.113		0.180***	0.230***	
(spatial lag)	[0.071]	[0.085]		[0.058]	[0.050]	
lambda			0.011			0.238***
(spatial error)			[0.080]			[0.062]
Observations	416	416	416	416	416	416
R2-overall	0.074	0.136	0.186	0.034	0.038	0.049
R2-within	0.0562	0.0981	0.163	0.130	0.177	0.184
R2-between	0.471	0.540	0.436	0.430	0.447	0.427
AIC	-497.509	-527.077	-481.614	-406.616	-411.491	-405.377
BIC	-457.203	-466.617	-441.307	-366.309	-351.031	-365.071

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table A4-13. (continued)

	(7) unemp	(8) unemp	(9) unemp	(10) p1	(11) p1	(12) p1	(13) rural	(14) rural	(15) rural
msme	-0.007***	-0.007***	-0.007***	0.001	0.001	0.001	0.004	0.005*	0.003
	[0.002]	[0.002]	[0.003]	[0.001]	[0.001]	[0.001]	[0.003]	[0.003]	[0.003]
profit_eff	0.023	0.020	0.026**	-0.005	-0.006	-0.001	0.048	0.023	0.056
	[0.014]	[0.015]	[0.013]	[0.014]	[0.015]	[0.015]	[0.038]	[0.029]	[0.039]
sanitation	-0.022*	-0.020*	-0.024**	0.019	0.022	0.021	0.025	0.034	0.029
	[0.012]	[0.012]	[0.012]	[0.017]	[0.016]	[0.017]	[0.027]	[0.022]	[0.029]
guest	-0.005*	-0.005*	-0.005*	-0.003*	-0.004***	-0.003**	-0.018***	-0.010	-0.018***
	[0.003]	[0.003]	[0.003]	[0.002]	[0.001]	[0.002]	[0.006]	[0.008]	[0.005]
electricity	0.014	0.014	0.013	-0.036***	-0.037**	-0.039***	-0.106*	-0.098*	-0.100
	[0.019]	[0.019]	[0.021]	[0.014]	[0.015]	[0.015]	[0.064]	[0.057]	[0.072]
rice	-0.024**	-0.027***	-0.036***	-0.003	-0.005	-0.005	-0.023***	-0.097***	-0.051**
	[0.011]	[0.010]	[0.013]	[0.005]	[0.005]	[0.005]	[0.009]	[0.010]	[0.021]
branches	-0.006	-0.005	-0.007	-0.009***	-0.008***	-0.010***	-0.015**	-0.015**	-0.017**
	[0.006]	[0.005]	[0.006]	[0.002]	[0.002]	[0.002]	[0.007]	[0.007]	[0.007]
security	0.022***	0.017**	0.022***	0.012***	0.009**	0.013***	0.044***	0.022***	0.037**
	[0.007]	[0.007]	[0.008]	[0.004]	[0.004]	[0.005]	[0.010]	[0.007]	[0.016]
Wx*sme		0.009			0.002			0.027**	
		[0.005]			[0.002]			[0.011]	
Wx*profit_eff		-0.005			-0.068*			-0.018	
		[0.036]			[0.041]			[0.050]	
Wx*sanitation		0.014			-0.011			-0.032	
		[0.016]			[0.008]			[0.038]	
Wx*guest		0.001			-0.001			-0.001	
		[0.006]			[0.003]			[0.007]	
Wx*electricity		0.020			0.002			-0.065	
		[0.017]			[0.017]			[0.039]	
Wx*rice		-0.005			0.010			0.128***	
		[0.012]			[0.013]			[0.025]	
Wx*branches		-0.001			-0.011**			-0.009	
		[0.004]			[0.005]			[0.007]	
Wx*security		0.020			0.014**			0.085***	
		[0.014]			[0.006]			[0.024]	
Spatial effect									
rho	0.325***	0.290***		0.180**	0.038		0.261***	0.122	
(spatial lag)	[0.061]	[0.083]		[0.088]	[0.095]		[0.025]	[0.099]	
lambda			0.320***			0.140			0.327***
(spatial error)			[0.089]			[0.097]			[0.084]
Observations									
R2-overall	0.0272	0.0541	0.0631	0.159	0.0794	0.187	0.195	0.00266	0.193
R2-between	0.0242	0.0567	0.122	0.0951	0.0461	0.119	0.140	0.0136	0.132
R2-within	0.559	0.574	0.546	0.425	0.476	0.414	0.505	0.579	0.479
AIC	-2419.11	-2417.03	-2406.67	-2770.56	-2794.83	-2763.58	-1750.92	-1796.17	-1744.3
BIC	-2378.81	-2356.57	-2366.36	-2730.26	-2734.37	-2723.27	-1710.61	-1735.71	-1703.99

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p< 0.5.*** Denotes p< 0.01

Table A4-13. (continued)

	(16) urban	(17) urban	(18) urban	(19) price	(20) price	(21) price
msme	0.003	0.001	0.002	0.039***	0.039***	0.040***
	[0.003]	[0.003]	[0.003]	[0.011]	[0.010]	[0.011]
cost_eff	-0.061*	-0.057	-0.059	0.291*	0.252	0.297*
	[0.035]	[0.039]	[0.040]	[0.162]	[0.164]	[0.159]
sanitation	-0.000	-0.002	0.001	0.038	0.023	0.039
	[0.007]	[0.009]	[0.007]	[0.087]	[0.091]	[0.085]
guest	-0.009*	-0.006	-0.009*	0.006	0.009	0.005
	[0.005]	[0.006]	[0.005]	[0.012]	[0.013]	[0.013]
electricity	-0.080***	-0.059**	-0.065***	0.093**	0.130**	0.091*
	[0.028]	[0.028]	[0.024]	[0.047]	[0.051]	[0.047]
rice	-0.066***	-0.101***	-0.077***	-0.004	-0.055	-0.005
	[0.014]	[0.024]	[0.014]	[0.089]	[0.097]	[0.093]
branches	-0.002	-0.005	-0.005	-0.036***	-0.031**	-0.039***
	[0.006]	[0.005]	[0.006]	[0.013]	[0.012]	[0.013]
security	0.002	0.002	-0.001	0.285***	0.270***	0.293***
	[0.011]	[0.009]	[0.012]	[0.069]	[0.066]	[0.070]
Wx*sme		0.000			0.004	
		[0.006]			[0.026]	
Wx* cost_eff		-0.012			-0.226	
		[0.065]			[0.152]	
Wx*sanitation		-0.006			0.192***	
		[0.016]			[0.071]	
Wx*guest		0.014*			-0.043***	
		[0.007]			[0.015]	
Wx*electricity		-0.181***			0.014	
		[0.029]			[0.060]	
Wx*rice		0.059**			-0.003	
		[0.024]			[0.056]	
Wx*branches		0.030***			-0.014	
		[0.007]			[0.020]	
Wx*security		0.026**			0.101**	
		[0.012]			[0.046]	
Spatial effect						
rho	0.278***	0.255**		0.112	0.061	
(spatial lag)	[0.069]	[0.102]		[0.078]	[0.085]	
lambda			0.320***			0.140
(spatial error)			[0.089]			[0.097]
Observations	416	416	416	416	416	416
R2-overall	0.084	0.035	0.167	0.157	0.019	0.158
R2-within	0.016	0.007	0.062	0.030	0.002	0.026
R2-between	0.552	0.614	0.553	0.418	0.447	0.415
AIC	-2093.67	-2146.54	-2099.54	-1118.23	-1130	-1116.63
BIC	-2053.36	-2086.08	-2059.23	-1077.93	-1069.5	-1076.32

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Table A4-13. (continued)

	(22) nim	(23) nim	(24) nim	(25) NPL	(26) NPL	(27) NPL
msme	-0.005	-0.006	-0.006	0.003	0.003	0.003
	[0.004]	[0.004]	[0.004]	[0.003]	[0.003]	[0.003]
cost_eff	0.112***	0.111***	0.119***	-0.053	-0.064**	-0.056*
	[0.022]	[0.026]	[0.024]	[0.033]	[0.030]	[0.032]
sanitation	-0.015	-0.020**	-0.014	0.023**	0.021*	0.027**
	[0.012]	[0.010]	[0.011]	[0.012]	[0.011]	[0.012]
guest	-0.003	-0.001	-0.003	-0.007	-0.008*	-0.007
	[0.006]	[0.006]	[0.006]	[0.005]	[0.005]	[0.005]
electricity	0.024	0.049***	0.034**	-0.017	-0.010	-0.014
	[0.016]	[0.015]	[0.017]	[0.018]	[0.023]	[0.019]
rice	-0.002	-0.009	-0.006	0.007	0.028**	0.003
	[0.008]	[0.007]	[0.009]	[0.012]	[0.013]	[0.011]
branches	0.004	0.006	0.004	-0.020***	-0.015***	-0.020***
	[0.005]	[0.005]	[0.005]	[0.004]	[0.004]	[0.004]
security	-0.029**	-0.033**	-0.032**	-0.013	-0.021	-0.011
	[0.013]	[0.014]	[0.013]	[0.014]	[0.013]	[0.014]
Wx*sme		0.010			0.005	
		[0.009]			[0.006]	
Wx* cost_eff		-0.124**			-0.071	
		[0.049]			[0.050]	
Wx*sanitation		0.001			0.069**	
		[0.025]			[0.027]	
Wx*guest		-0.003			-0.007	
		[0.006]			[0.005]	
Wx*electricity		-0.122***			0.038*	
		[0.036]			[0.023]	
Wx*rice		0.022			-0.054*	
		[0.023]			[0.029]	
Wx*branches		-0.006			-0.013**	
		[0.009]			[0.005]	
Wx*security		0.002			0.033**	
		[0.011]			[0.015]	
Spatial effect						
rho	0.100**	0.034		0.055	0.182***	
(spatial lag)	[0.042]	[0.083]		[0.066]	[0.056]	
lambda			0.327***			0.209***
(spatial error)			[0.084]			[0.047]
Observations	416	416	416	416	416	416
R2-overall	0.021	0.009	0.007	0.055	0.002	0.057
R2-within	0.011	0.017	3.56e-05	0.065	0.0006	0.064
R2-between	0.073	0.136	0.079	0.092	0.148	0.094
AIC	-2027.47	-2048.50	-2032.77	-2013.77	-2034.74	-2016.54
BIC	-1987.16	-1988.04	-1992.46	-1973.47	-1974.28	-1976.23

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Table A4- 14. Estimated results of the Spatial Dependence Estimators (with variable share) – FE method

	(1) RGDP_cap	(2) RGDP_cap	(3) RGDP_cap	(4) agr	(5) agr	(6) agr
msme	0.026	0.023	0.028	0.034	0.030	0.032
	[0.019]	[0.023]	[0.021]	[0.023]	[0.025]	[0.023]
share	0.072	0.150	0.071	0.630***	0.722***	0.615***
	[0.176]	[0.162]	[0.182]	[0.191]	[0.180]	[0.194]
sanitation	0.246***	0.286***	0.282***	-0.029	0.007	-0.035
	[0.092]	[0.083]	[0.100]	[0.058]	[0.062]	[0.062]
guest	0.047*	0.035	0.055*	-0.044	-0.055	-0.043
	[0.027]	[0.025]	[0.032]	[0.039]	[0.035]	[0.041]
electricity	0.522***	0.409***	0.538***	1.095***	1.008***	1.109***
	[0.156]	[0.155]	[0.184]	[0.210]	[0.216]	[0.217]
rice	-0.029	-0.051	0.035	0.059	0.015	0.071
	[0.090]	[0.073]	[0.120]	[0.101]	[0.089]	[0.105]
branches	0.104**	0.082**	0.110**	0.052	0.040	0.057
	[0.043]	[0.039]	[0.049]	[0.038]	[0.034]	[0.040]
security	-0.056	-0.004	-0.052	-0.277***	-0.248***	-0.289***
	[0.059]	[0.051]	[0.070]	[0.074]	[0.060]	[0.079]
Wx*sme		-0.123***			-0.136***	
		[0.045]			[0.048]	
Wx*compete		-0.717**			-0.389	
		[0.292]			[0.350]	
Wx*sanitation		-0.529***			-0.382**	
		[0.125]			[0.162]	
Wx*guest		-0.040			-0.026	
		[0.047]			[0.074]	
Wx*electricity		-0.016			0.147	
		[0.140]			[0.205]	
Wx*rice		0.226*			0.201	
		[0.117]			[0.127]	
W*branches		0.072			-0.006	
		[0.059]			[0.045]	
W*security		-0.315***			-0.171	
		[0.101]			[0.127]	
Spatial effect						
rho	0.339***	0.217***		0.067	-0.034	
(spatial lag)	[0.067]	[0.054]		[0.043]	[0.049]	
lambda			0.324***			0.015
(spatial error)			[0.092]			[0.050]
Observations	416	416	416	416	416	416
R2-overall	0.069	0.190	0.033	0.009	0.046	0.206
R2-within	0.526	0.435	0.431	0.451	0.428	0.226
R2-between	0.0447	0.168	0.161	0.0461	0.207	0.207
AIC	-485.956	-512.186	-468.648	-407.839	-414.081	-406.393
BIC	-445.649	-451.726	-428.341	-367.533	-353.62	-366.086

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred.*Denotes p< 0.1. ∗∗Denotes p<0.5.∗∗∗ Denotes p< 0.01

Table A4-14. (continued)

	(7) unemp	(8) unemp	(9) unemp	(10) p1	(11) p1	(12) p1
msme	-0.007***	-0.007***	-0.007**	0.001	0.001	0.001
	[0.002]	[0.002]	[0.003]	[0.001]	[0.001]	[0.001]
share	0.011	0.008	0.010	0.015	0.018	0.018
	[0.020]	[0.019]	[0.020]	[0.017]	[0.019]	[0.017]
sanitation	-0.020*	-0.020*	-0.022*	0.020	0.024	0.022
	[0.012]	[0.011]	[0.012]	[0.018]	[0.018]	[0.018]
guest	-0.006**	-0.005**	-0.006**	-0.003*	-0.003***	-0.003**
	[0.003]	[0.003]	[0.003]	[0.002]	[0.001]	[0.002]
electricity	0.011	0.014	0.009	-0.035**	-0.040**	-0.038**
	[0.019]	[0.018]	[0.020]	[0.014]	[0.017]	[0.015]
rice	-0.025**	-0.029***	-0.038***	-0.003	-0.007	-0.005
	[0.012]	[0.011]	[0.013]	[0.006]	[0.004]	[0.005]
branches	-0.006	-0.005	-0.007	-0.010***	-0.009***	-0.010***
	[0.006]	[0.006]	[0.007]	[0.002]	[0.002]	[0.002]
security	0.023***	0.018***	0.023***	0.013***	0.008**	0.014***
	[0.007]	[0.007]	[0.008]	[0.005]	[0.003]	[0.005]
Wx*sme		0.008			0.000	
		[0.005]			[0.002]	
Wx*compete		0.054			-0.040	
		[0.036]			[0.026]	
Wx*sanitation		0.019			-0.025***	
		[0.015]			[0.006]	
Wx*guest		0.000			0.004	
		[0.006]			[0.004]	
Wx*electricity		0.024*			0.017	
		[0.014]			[0.028]	
Wx*rice		-0.005			0.017*	
		[0.012]			[0.010]	
W*branches		-0.002			-0.012**	
		[0.004]			[0.006]	
W*security		0.026*			0.010**	
		[0.015]			[0.004]	
Spatial effect						
rho	0.326***	0.284***		0.180**	0.094	
(spatial lag)	[0.060]	[0.087]		[0.091]	[0.074]	
lambda			0.319***			0.152
(spatial error)			[0.090]			[0.097]
Observations	416	416	416	416	416	416
R2-overall	0.015	0.056	0.053	0.193	0.086	0.231
R2-within	0.557	0.576	0.544	0.425	0.464	0.416
R2-between	0.022	0.067	0.132	0.130	0.0488	0.171
AIC	-2417.374	-2418.707	-2404.385	-2772.265	-2788.461	-2766.29
BIC	-2377.067	-2358.246	-2364.078	-2731.958	-2728	-2725.983

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Table A4-14. (continued)

	(13) rural	(14) rural	(15) rural	(16) urban	(17) urban	(18) urban
msme	0.004	0.006*	0.003	0.003	0.002	0.003
	[0.003]	[0.003]	[0.003]	[0.004]	[0.003]	[0.004]
share	-0.063	-0.070	-0.042	0.089**	0.081**	0.094***
	[0.057]	[0.069]	[0.049]	[0.037]	[0.032]	[0.035]
sanitation	0.023	0.032	0.028	0.003	0.002	0.004
	[0.025]	[0.020]	[0.027]	[0.008]	[0.006]	[0.007]
guest	-0.020***	-0.011	-0.020***	-0.006	-0.004	-0.006
	[0.006]	[0.007]	[0.004]	[0.005]	[0.006]	[0.005]
electricity	-0.116*	-0.110*	-0.110	-0.067***	-0.053**	-0.052***
	[0.068]	[0.064]	[0.077]	[0.024]	[0.024]	[0.019]
rice	-0.025**	-0.098***	-0.055**	-0.063***	-0.098***	-0.074***
	[0.010]	[0.013]	[0.023]	[0.010]	[0.017]	[0.009]
branches	-0.012	-0.012*	-0.014**	-0.007	-0.010**	-0.010*
	[0.007]	[0.006]	[0.006]	[0.006]	[0.005]	[0.005]
security	0.041***	0.017**	0.035**	0.006	0.006	0.003
	[0.009]	[0.008]	[0.016]	[0.012]	[0.009]	[0.013]
Wx*sme		0.028**			-0.002	
		[0.013]			[0.007]	
Wx*compete		-0.132			-0.051	
		[0.107]			[0.048]	
Wx*sanitation		-0.050			-0.013	
		[0.037]			[0.013]	
Wx*guest		-0.001			0.018***	
		[0.008]			[0.007]	
Wx*electricity		-0.074			-0.170***	
		[0.059]			[0.038]	
Wx*rice		0.136***			0.060***	
		[0.024]			[0.016]	
W*branches		-0.009			0.030***	
		[0.006]			[0.009]	
W*security		0.074***			0.020	
		[0.020]			[0.013]	
Spatial effect						
rho	0.270***	0.119		0.090	0.192***	
(spatial lag)	[0.028]	[0.104]		[0.062]	[0.049]	
lambda			0.329***			0.225***
(spatial error)			[0.089]			[0.048]
Observations	416	416	416	416	416	416
R2-overall	0.152	0.004	0.171	0.120	0.028	0.193
R2-within	0.509	0.587	0.477	0.560	0.619	0.562
R2-between	0.102	0.017	0.107	0.034	0.007	0.090
AIC	-1752.157	-1804.471	-1743.102	-2100.79	-2153.417	-2109.069
BIC	-1711.85	-1744.011	-1702.795	-2060.483	-2092.957	-2068.762

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Table A4-14. (continued)

	(19) price	(20) price	(21) price	(22) nim	(23) nim	(24) nim	(25) NPL	(26) NPL	(27) NPL
msme	0.041***	0.038***	0.042***	-0.004	-0.005	-0.004	0.003	0.002	0.003
	[0.014]	[0.010]	[0.013]	[0.004]	[0.004]	[0.004]	[0.002]	[0.002]	[0.002]
share	-0.019	-0.029	-0.015	0.074***	0.054**	0.070***	0.004	-0.001	0.004
	[0.070]	[0.069]	[0.074]	[0.019]	[0.022]	[0.021]	[0.035]	[0.039]	[0.034]
sanitation	0.048	0.031	0.050	-0.006	-0.012	-0.005	0.022*	0.018	0.024**
	[0.092]	[0.096]	[0.091]	[0.011]	[0.011]	[0.011]	[0.012]	[0.012]	[0.012]
guest	-0.005	0.005	-0.007	-0.007	-0.003	-0.006	-0.005	-0.006	-0.004
	[0.012]	[0.014]	[0.013]	[0.006]	[0.006]	[0.006]	[0.005]	[0.004]	[0.004]
electricity	0.043	0.102***	0.039	0.007	0.034**	0.013	-0.008	-0.001	-0.004
	[0.041]	[0.039]	[0.044]	[0.016]	[0.015]	[0.016]	[0.017]	[0.026]	[0.018]
rice	-0.021	-0.079	-0.022	-0.009	-0.021	-0.013	0.010	0.032**	0.007
	[0.095]	[0.107]	[0.101]	[0.010]	[0.013]	[0.012]	[0.010]	[0.014]	[0.009]
branches	-0.026**	-0.022*	-0.030**	0.004	0.008*	0.006	-0.022***	-0.017***	-0.022***
	[0.013]	[0.013]	[0.014]	[0.004]	[0.005]	[0.005]	[0.004]	[0.004]	[0.004]
security	0.288***	0.262***	0.299***	-0.024*	-0.034**	-0.027*	-0.013	-0.022*	-0.012
	[0.079]	[0.070]	[0.083]	[0.014]	[0.014]	[0.015]	[0.013]	[0.013]	[0.012]
constant	0.041***	0.038***	0.042***	-0.004	-0.005	-0.004	0.003	0.002	0.003
	[0.014]	[0.010]	[0.013]	[0.004]	[0.004]	[0.004]	[0.002]	[0.002]	[0.002]
Wx*sme		0.003			0.008			0.003	
		[0.027]			[0.010]			[0.007]	
Wx*compete		0.197*			0.059			0.040	
		[0.117]			[0.059]			[0.045]	
Wx*sanitation		0.183**			-0.012			0.063**	
		[0.075]			[0.026]			[0.031]	
Wx*guest		-0.047***			-0.003			0.002	
		[0.013]			[0.007]			[0.007]	
Wx*electricity		0.073			-0.081**			0.047*	
		[0.064]			[0.036]			[0.028]	
Wx*rice		0.026			0.039			-0.053**	
		[0.061]			[0.030]			[0.027]	
W*branches		-0.024			-0.011			-0.014**	
		[0.020]			[0.010]			[0.006]	
W*security		0.128**			0.011			0.035**	
		[0.055]			[0.010]			[0.016]	
Spatial effect									
rho	-0.028		0.154***	0.178***		-0.116*	-0.188**		-0.028
(spatial lag)	[0.077]		[0.056]	[0.054]		[0.067]	[0.081]		[0.077]
lambda		0.001			0.191***			-0.171**	
(spatial error)		[0.092]			[0.064]			[0.078]	
Observations	416	416	416	416	416	416	416	416	416
R2-overall	0.176	0.144	0.171	0.000	0.019	0.001	0.055	0.004	0.055
R2-within	0.048	0.033	0.047	0.006	0.014	0.001	0.067	0.002	0.062
R2-between	0.398	0.432	0.393	0.0566	0.108	0.057	0.084	0.135	0.085
AIC	-1103.54	-1119.335	-1101.286	-2015.902	-2031.272	-2017.964	-2009.437	-2026.206	-2011.496
BIC	-1063.233	-1058.874	-1060.98	-1975.596	-1970.811	-1977.657	-1969.13	-1965.745	-1971.189

Note: All the models estimated using fixed effect (FE), clustered in year. The estimates above are based on the following models: Spatial Autoregressive Model (SAR), Spatial Durbin Model (SDM), and Spatial Error Model (SEM). Spatial effect has spatial lag and spatial error is to test the existence of the spatial dependence; the null hypothesis is no spatially lagged dependent variable and the hypothesis of no spatially autocorrelated error term. The AIC or Akaike information criterion, is a criterion for model selection among a finite set of models; the model with the lowest BIC and AIC is preferred. *Denotes p< 0.1. **Denotes p<0.5. *** Denotes p< 0.01

Table A4- 15. Decomposition estimates of the direct and indirect effects of the independent variables using SDM Model (with cost efficiency as an indicator of the banking performance)

		(1) RGDP_cap	(2) agr	(3) unemp	(4) p1	(5) rural
Direct	msme	0.011	0.023	-0.006***	0.001	0.006**
		[0.024]	[0.024]	[0.002]	[0.001]	[0.003]
	cost_eff	-0.131	-0.487**	-0.013	-0.010	0.024
		[0.095]	[0.203]	[0.015]	[0.011]	[0.021]
	sanitation	0.241***	-0.033	-0.018	0.022	0.034
		[0.070]	[0.065]	[0.012]	[0.018]	[0.022]
	guest	0.032	-0.054*	-0.005**	-0.003**	-0.011
		[0.024]	[0.032]	[0.002]	[0.001]	[0.008]
	electricity	0.446***	0.952***	0.010	-0.039**	-0.100*
		[0.163]	[0.218]	[0.018]	[0.018]	[0.054]
	rice	-0.048	0.008	-0.029***	-0.006	-0.095***
		[0.066]	[0.083]	[0.011]	[0.005]	[0.011]
	branches	0.082**	0.052	-0.005	-0.009***	-0.015**
		[0.034]	[0.034]	[0.005]	[0.002]	[0.006]
	security	-0.053	-0.329***	0.020***	0.007**	0.027***
		[0.042]	[0.057]	[0.007]	[0.003]	[0.007]
Indirect	msme	-0.095***	-0.079**	0.006	0.001	0.023***
		[0.035]	[0.031]	[0.005]	[0.002]	[0.008]
	cost_eff	1.426***	1.532***	-0.100***	0.018	-0.061*
		[0.244]	[0.358]	[0.034]	[0.018]	[0.033]
	sanitation	-0.442***	-0.333***	0.013	-0.016***	-0.024
		[0.110]	[0.101]	[0.016]	[0.006]	[0.030]
	guest	-0.060	-0.046	0.001	0.003	-0.001
		[0.040]	[0.055]	[0.005]	[0.003]	[0.007]
	electricity	0.332**	0.278**	0.006	0.013	-0.074**
		[0.137]	[0.113]	[0.014]	[0.023]	[0.035]
	rice	0.171	0.144	-0.010	0.013	0.105***
		[0.113]	[0.110]	[0.011]	[0.008]	[0.019]
	branches	0.078	-0.003	-0.002	-0.011***	-0.011
		[0.060]	[0.039]	[0.003]	[0.004]	[0.007]
	security	-0.256***	-0.099	0.027**	0.012***	0.078***
		[0.069]	[0.065]	[0.011]	[0.004]	[0.015]
LR_Total	msme	-0.085	-0.056	-0.001	0.002	0.029***
		[0.052]	[0.041]	[0.005]	[0.003]	[0.009]
	cost_eff	1.295***	1.045***	-0.113***	0.008	-0.037
		[0.283]	[0.351]	[0.043]	[0.015]	[0.046]
	sanitation	-0.201*	-0.366**	-0.006	0.006	0.010
		[0.121]	[0.145]	[0.024]	[0.018]	[0.028]
	guest	-0.028	-0.099	-0.004	0.000	-0.012
		[0.054]	[0.067]	[0.006]	[0.004]	[0.009]
	electricity	0.778***	1.229***	0.016	-0.026**	-0.175**
		[0.261]	[0.200]	[0.019]	[0.012]	[0.081]
	rice	0.123	0.152	-0.039**	0.007	0.010
		[0.100]	[0.122]	[0.018]	[0.008]	[0.022]
	branches	0.160***	0.049	-0.007	-0.020***	-0.025***
		[0.049]	[0.035]	[0.006]	[0.005]	[0.010]
	security	-0.308***	-0.428***	0.047***	0.019***	0.105***
		[0.078]	[0.058]	[0.013]	[0.005]	[0.014]

Note: All the models are in fixed effect (FE), clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table A4-15. (Continued)

		(6) urban	(7) price	(8) nim	(9) NPL
Direct	msme	0.001	0.039***	-0.004	0.002
		[0.003]	[0.010]	[0.005]	[0.002]
	cost_eff	0.015	-0.276**	0.019	0.045*
		[0.020]	[0.120]	[0.028]	[0.027]
	sanitation	-0.005	0.041	-0.016	0.015
		[0.007]	[0.093]	[0.010]	[0.011]
	guest	-0.004	0.009	-0.004	-0.007
		[0.006]	[0.014]	[0.006]	[0.004]
	electricity	-0.058***	0.040	0.030*	0.002
		[0.021]	[0.029]	[0.015]	[0.021]
	rice	-0.094***	-0.087	-0.019	0.036**
		[0.017]	[0.106]	[0.012]	[0.015]
	branches	-0.006	-0.025*	0.009**	-0.015***
		[0.005]	[0.013]	[0.004]	[0.004]
	security	0.003	0.244***	-0.037**	-0.020
		[0.008]	[0.062]	[0.015]	[0.013]
Indirect	msme	0.000	0.000	0.009	0.001
		[0.007]	[0.022]	[0.009]	[0.004]
	cost_eff	0.032	0.167	0.062	-0.086**
		[0.039]	[0.134]	[0.056]	[0.037]
	sanitation	-0.008	0.116**	-0.022	0.044**
		[0.010]	[0.056]	[0.028]	[0.021]
	guest	0.016**	-0.038***	-0.005	0.003
		[0.007]	[0.010]	[0.006]	[0.006]
	electricity	-0.173***	0.074	-0.068**	0.019
		[0.034]	[0.054]	[0.032]	[0.023]
	rice	0.036***	0.038	0.034	-0.042*
		[0.013]	[0.046]	[0.027]	[0.022]
	branches	0.027***	-0.015	-0.009	-0.008*
		[0.008]	[0.016]	[0.009]	[0.004]
	security	0.022**	0.094***	-0.003	0.024**
		[0.010]	[0.036]	[0.011]	[0.012]
LR_Total	msme	0.001	0.040*	0.004	0.004
		[0.009]	[0.023]	[0.011]	[0.006]
	cost_eff	0.046	-0.109	0.081	-0.041
		[0.052]	[0.148]	[0.071]	[0.036]
	sanitation	-0.014	0.157	-0.038	0.059***
		[0.013]	[0.113]	[0.031]	[0.021]
	guest	0.012	-0.029*	-0.008	-0.003
		[0.008]	[0.016]	[0.009]	[0.006]
	electricity	-0.231***	0.114**	-0.038	0.021
		[0.049]	[0.057]	[0.038]	[0.022]
	rice	-0.058***	-0.048	0.015	-0.006
		[0.011]	[0.089]	[0.020]	[0.014]
	branches	0.021**	-0.040**	0.000	-0.023***
		[0.010]	[0.019]	[0.010]	[0.005]
	security	0.025***	0.338***	-0.040*	0.004
		[0.010]	[0.071]	[0.021]	[0.009]

Note: All the models are in fixed effect (FE), clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table A4- 16. Decomposition estimates of the direct and indirect effects of the independent variables using SDM Model (with profit efficiency as an indicator of the banking performance)

		(1)	(2)	(3)	(4)	(5)
		RGDP_cap	agr	unemp	p1	rural
Direct	msme	0.003	0.017	-0.006***	0.001	0.005**
		[0.021]	[0.020]	[0.002]	[0.001]	[0.003]
	profit_eff	0.617**	0.665**	0.020	-0.007	0.023
		[0.262]	[0.275]	[0.016]	[0.016]	[0.030]
	sanitation	0.217***	-0.076	-0.020	0.022	0.033
		[0.065]	[0.072]	[0.013]	[0.016]	[0.022]
	guest	0.046*	-0.043	-0.005	-0.004***	-0.010
		[0.026]	[0.035]	[0.003]	[0.001]	[0.008]
	electricity	0.550***	1.127***	0.016	-0.037**	-0.101*
		[0.174]	[0.220]	[0.019]	[0.015]	[0.056]
	rice	0.026	0.089	-0.028***	-0.005	-0.093***
		[0.093]	[0.119]	[0.010]	[0.005]	[0.009]
	branches	0.067**	0.041	-0.006	-0.009***	-0.016**
		[0.031]	[0.031]	[0.005]	[0.002]	[0.007]
	security	-0.003	-0.271***	0.019***	0.009***	0.025***
		[0.043]	[0.068]	[0.007]	[0.003]	[0.007]
Indirect	msme	-0.106***	-0.095***	0.007	0.002	0.024***
		[0.037]	[0.033]	[0.005]	[0.001]	[0.008]
	profit _eff	-0.512	-0.205	0.001	-0.057*	-0.014
		[0.510]	[0.411]	[0.039]	[0.030]	[0.045]
	sanitation	-0.285***	-0.227**	0.008	-0.008	-0.025
		[0.082]	[0.097]	[0.018]	[0.006]	[0.033]
	guest	-0.028	0.004	0.000	-0.001	-0.002
		[0.046]	[0.046]	[0.007]	[0.002]	[0.006]
	electricity	-0.064	-0.070	0.025	0.001	-0.068**
		[0.130]	[0.159]	[0.016]	[0.015]	[0.029]
	rice	0.095	0.093	-0.013	0.008	0.103***
		[0.075]	[0.089]	[0.012]	[0.011]	[0.022]
	branches	0.108**	0.007	-0.003	-0.009***	-0.010
		[0.043]	[0.031]	[0.004]	[0.003]	[0.007]
	security	-0.265***	-0.132	0.026**	0.012***	0.078***
		[0.088]	[0.082]	[0.013]	[0.004]	[0.015]
Total	msme	-0.102*	-0.078**	0.001	0.002	0.030***
		[0.052]	[0.038]	[0.006]	[0.002]	[0.009]
	profit _eff	0.105	0.460	0.021	-0.064***	0.009
		[0.550]	[0.469]	[0.048]	[0.020]	[0.062]
	sanitation	-0.068	-0.303**	-0.011	0.014	0.008
		[0.116]	[0.141]	[0.027]	[0.020]	[0.027]
	guest	0.018	-0.039	-0.005	-0.004*	-0.012
		[0.056]	[0.049]	[0.008]	[0.003]	[0.011]
	electricity	0.486**	1.057***	0.041*	-0.036***	-0.169**
		[0.245]	[0.211]	[0.023]	[0.008]	[0.079]
	rice	0.121	0.182	-0.041**	0.003	0.009
		[0.105]	[0.120]	[0.019]	[0.009]	[0.024]
	branches	0.175***	0.048	-0.008	-0.018***	-0.026***
		[0.042]	[0.039]	[0.007]	[0.004]	[0.010]
	security	-0.268***	-0.403***	0.045***	0.021***	0.103***
		[0.101]	[0.075]	[0.014]	[0.006]	[0.013]

Note: All the models are in fixed effect (FE), clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes p < 0.1.

** Denotes p < 0.5.

*** Denotes p < 0.01

Table A4-16. (Continued)

		(6) urban	(7) price	(8) nim	(9) NPL
Direct	msme	0.001	0.039***	-0.006	0.003
		[0.003]	[0.009]	[0.004]	[0.002]
	profit_eff	-0.058	0.253	0.105***	-0.061*
		[0.037]	[0.167]	[0.025]	[0.031]
	sanitation	-0.003	0.021	-0.021**	0.017
		[0.009]	[0.092]	[0.010]	[0.012]
	guest	-0.005	0.010	-0.001	-0.008*
		[0.006]	[0.013]	[0.006]	[0.005]
	electricity	-0.069**	0.130**	0.042***	-0.013
		[0.027]	[0.051]	[0.015]	[0.022]
	rice	-0.099***	-0.055	-0.008	0.031**
		[0.023]	[0.097]	[0.006]	[0.013]
	branches	-0.004	-0.031**	0.006	-0.014***
		[0.005]	[0.012]	[0.005]	[0.004]
	security	0.003	0.269***	-0.034**	-0.023*
		[0.009]	[0.065]	[0.014]	[0.014]
Indirect	msme	0.000	0.003	0.009	0.003
		[0.006]	[0.021]	[0.009]	[0.004]
	profit _eff	-0.020	-0.184	-0.097**	-0.041
		[0.057]	[0.123]	[0.047]	[0.040]
	sanitation	-0.006	0.153***	-0.003	0.046**
		[0.014]	[0.054]	[0.025]	[0.021]
	guest	0.012*	-0.035***	-0.003	-0.004
		[0.007]	[0.012]	[0.007]	[0.004]
	electricity	-0.178***	0.009	-0.109***	0.029*
		[0.024]	[0.049]	[0.035]	[0.017]
	rice	0.038*	-0.001	0.020	-0.043*
		[0.020]	[0.043]	[0.022]	[0.022]
	branches	0.027***	-0.011	-0.004	-0.007*
		[0.007]	[0.016]	[0.009]	[0.004]
	security	0.024**	0.075**	-0.005	0.027**
		[0.011]	[0.033]	[0.011]	[0.012]
Total	msme	0.001	0.042*	0.003	0.006
		[0.009]	[0.023]	[0.011]	[0.006]
	profit _eff	-0.078**	0.068	0.008	-0.102***
		[0.036]	[0.166]	[0.054]	[0.039]
	sanitation	-0.008	0.174	-0.024	0.063***
		[0.012]	[0.109]	[0.028]	[0.022]
	guest	0.007	-0.025	-0.004	-0.012**
		[0.008]	[0.019]	[0.010]	[0.005]
	electricity	-0.247***	0.139**	-0.066*	0.016
		[0.041]	[0.061]	[0.040]	[0.025]
	rice	-0.061***	-0.056	0.012	-0.012
		[0.010]	[0.084]	[0.020]	[0.014]
	branches	0.023**	-0.042**	0.001	-0.021***
		[0.010]	[0.019]	[0.010]	[0.005]
	security	0.027***	0.345***	-0.039**	0.004
		[0.010]	[0.071]	[0.019]	[0.011]

Note: All the models are in fixed effect (FE), clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table A4- 17. Decomposition estimates of the direct and indirect effects of the independent variables using SDM Model (with variable share)

		(1) RGDP_cap	(2) agr	(3) unemp	(4) p1	(5) rural
Direct	msme	0.016	0.031	-0.007***	0.001	0.007**
		[0.024]	[0.026]	[0.002]	[0.001]	[0.003]
	share	0.109	0.726***	0.013	0.017	-0.074
		[0.168]	[0.180]	[0.020]	[0.020]	[0.068]
	sanitation	0.257***	0.010	-0.019	0.024	0.031
		[0.080]	[0.059]	[0.012]	[0.018]	[0.020]
	guest	0.033	-0.055	-0.005**	-0.003**	-0.011
		[0.026]	[0.035]	[0.003]	[0.001]	[0.008]
	electricity	0.413***	1.007***	0.017	-0.039**	-0.113*
		[0.158]	[0.217]	[0.018]	[0.017]	[0.063]
	rice	-0.038	0.013	-0.030***	-0.006	-0.095***
		[0.071]	[0.089]	[0.011]	[0.004]	[0.011]
	branches	0.087**	0.040	-0.005	-0.009***	-0.012*
		[0.036]	[0.034]	[0.006]	[0.002]	[0.007]
	security	-0.024	-0.247***	0.020***	0.008**	0.020**
		[0.047]	[0.061]	[0.007]	[0.003]	[0.009]
Indirect	msme	-0.114***	-0.108***	0.007	0.000	0.025***
		[0.043]	[0.039]	[0.005]	[0.002]	[0.010]
	share	-0.665**	-0.327	0.059*	-0.033	-0.124
		[0.283]	[0.279]	[0.035]	[0.022]	[0.088]
	sanitation	-0.454***	-0.302**	0.014	-0.019***	-0.040
		[0.109]	[0.123]	[0.017]	[0.005]	[0.031]
	guest	-0.032	-0.019	-0.001	0.003	-0.002
		[0.046]	[0.057]	[0.006]	[0.003]	[0.006]
	electricity	0.071	0.089	0.030**	0.011	-0.077*
		[0.130]	[0.141]	[0.013]	[0.024]	[0.043]
	rice	0.208**	0.158	-0.014	0.014*	0.110***
		[0.099]	[0.100]	[0.012]	[0.009]	[0.021]
	branches	0.087	-0.006	-0.003	-0.011***	-0.009
		[0.058]	[0.036]	[0.004]	[0.004]	[0.007]
	security	-0.307***	-0.128	0.032**	0.009***	0.067***
		[0.096]	[0.092]	[0.014]	[0.003]	[0.014]
Total	msme	-0.098*	-0.077*	0.000	0.002	0.032***
		[0.058]	[0.042]	[0.006]	[0.003]	[0.011]
	share	-0.556	0.399	0.072	-0.016	-0.198
		[0.354]	[0.346]	[0.045]	[0.027]	[0.147]
	sanitation	-0.196*	-0.292**	-0.004	0.004	-0.010
		[0.104]	[0.135]	[0.026]	[0.019]	[0.028]
	guest	0.001	-0.074	-0.007	0.000	-0.013
		[0.059]	[0.068]	[0.007]	[0.003]	[0.010]
	electricity	0.484**	1.097***	0.047**	-0.028**	-0.190*
		[0.245]	[0.198]	[0.023]	[0.013]	[0.102]
	rice	0.170*	0.171*	-0.044**	0.008	0.015
		[0.090]	[0.103]	[0.019]	[0.008]	[0.024]
	branches	0.174***	0.034	-0.009	-0.020***	-0.021*
		[0.048]	[0.045]	[0.007]	[0.005]	[0.011]
	security	-0.331***	-0.375***	0.052***	0.017***	0.087***
		[0.103]	[0.075]	[0.016]	[0.005]	[0.014]

Note: All the models are in fixed effect (FE), clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table A4-17. (Continued)

		(6) urban	(7) price	(8) nim	(9) NPL
Direct	msme	0.002	0.038***	-0.005	0.002
		[0.003]	[0.010]	[0.004]	[0.002]
	share	0.079**	-0.031	0.057***	-0.003
		[0.033]	[0.067]	[0.021]	[0.041]
	sanitation	0.001	0.029	-0.012	0.015
		[0.006]	[0.097]	[0.011]	[0.013]
	guest	-0.003	0.005	-0.003	-0.006
		[0.005]	[0.014]	[0.006]	[0.004]
	electricity	-0.063***	0.102***	0.030**	-0.003
		[0.024]	[0.038]	[0.015]	[0.026]
	rice	-0.096***	-0.080	-0.019	0.035**
		[0.016]	[0.107]	[0.012]	[0.014]
	branches	-0.008	-0.022*	0.007	-0.016***
		[0.005]	[0.013]	[0.005]	[0.004]
	security	0.007	0.261***	-0.034**	-0.024*
		[0.009]	[0.068]	[0.015]	[0.014]
Indirect	msme	-0.002	0.002	0.007	0.002
		[0.007]	[0.023]	[0.009]	[0.005]
	share	-0.034	0.157*	0.064	0.029
		[0.048]	[0.089]	[0.055]	[0.035]
	sanitation	-0.012	0.144**	-0.013	0.044*
		[0.012]	[0.057]	[0.025]	[0.023]
	guest	0.017***	-0.037***	-0.003	0.002
		[0.006]	[0.010]	[0.006]	[0.005]
	electricity	-0.171***	0.056	-0.070**	0.034
		[0.035]	[0.048]	[0.035]	[0.022]
	rice	0.039***	0.022	0.033	-0.043**
		[0.014]	[0.048]	[0.026]	[0.021]
	branches	0.026***	-0.019	-0.009	-0.008*
		[0.008]	[0.016]	[0.009]	[0.004]
	security	0.020*	0.096***	0.005	0.028**
		[0.011]	[0.035]	[0.009]	[0.013]
Total	msme	-0.000	0.040*	0.002	0.004
		[0.009]	[0.023]	[0.011]	[0.006]
	share	0.045	0.126	0.122**	0.027
		[0.074]	[0.119]	[0.052]	[0.032]
	sanitation	-0.011	0.174	-0.025	0.059***
		[0.014]	[0.114]	[0.030]	[0.022]
	guest	0.014*	-0.033*	-0.006	-0.004
		[0.008]	[0.018]	[0.009]	[0.006]
	electricity	-0.233***	0.157***	-0.039	0.031
		[0.054]	[0.061]	[0.042]	[0.025]
	rice	-0.057***	-0.057	0.014	-0.008
		[0.010]	[0.087]	[0.020]	[0.013]
	branches	0.018	-0.040**	-0.002	-0.024***
		[0.011]	[0.019]	[0.010]	[0.006]
	security	0.027**	0.357***	-0.029	0.005
		[0.013]	[0.079]	[0.018]	[0.011]

Note: All the models are in fixed effect (FE), clustered in year. The estimates above are based on Spatial Durbin Model (SDM).

* Denotes $p < 0.1$.

** Denotes $p < 0.5$.

*** Denotes $p < 0.01$

Table A4- 18. The influence of the MSMEs loans on Regional economy (in relation to profit efficiency) -2SLS method

	(1)	(2)	(3)	(4)	(5)
	RGDP_cap	agr	RGDP_p25	unemp	p1
msme	-14.593***	-20.459**	9.353***	0.915***	0.534**
	[5.173]	[8.052]	[3.309]	[0.292]	[0.236]
profit_eff	-6.601**	-7.616**	3.340**	0.371***	0.162*
	[2.724]	[3.140]	[1.617]	[0.123]	[0.089]
msme#profit_eff	15.780***	22.129**	-10.129***	-1.013***	-0.579**
	[5.640]	[8.662]	[3.602]	[0.314]	[0.255]
sanitation	1.465***	-0.798**	-0.627***	0.005	-0.037***
	[0.187]	[0.371]	[0.183]	[0.016]	[0.008]
guest	0.121***	-0.054	0.039	-0.002	-0.001
	[0.031]	[0.057]	[0.033]	[0.002]	[0.001]
electric	0.064	-0.211	-0.787***	0.043***	-0.018**
	[0.186]	[0.328]	[0.150]	[0.012]	[0.007]
rice	0.213	1.197***	-0.315**	-0.086***	-0.004
	[0.195]	[0.203]	[0.144]	[0.014]	[0.006]
branch	0.121***	-0.080	-0.151***	0.012***	-0.003**
	[0.037]	[0.053]	[0.027]	[0.002]	[0.001]
security	1.880***	0.937***	-1.135***	0.044***	0.004
	[0.116]	[0.103]	[0.104]	[0.009]	[0.005]
Constant	4.888	3.971	0.073	0.040	-0.064
	[3.165]	[3.362]	[1.779]	[0.138]	[0.100]
Observations	308	308	308	308	307
R^2-centered	0.343	-0.078	0.294	0.186	0.0780
R^2-uncentered	0.945	0.852	0.433	0.872	0.702
Hansen J stat.	0.488	4.132	5.009	4.588	1.986
p-value	[0.783]	[0.126]	[0.081]	[0.100]	[0.370]
Wald F-stat	3.877	2.526	3.877	3.877	3.913
(critical value at 5%)	[9.08]	[9.08]	[9.08]	[9.08]	[9.08]

The regression equation is estimated with using 2sls method. The models show the impact of variable $msme$ in its interaction with variable profit_eff while affecting the dependent variables. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. The observation period started from the years 2001–2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes p< 0.1. $**$Denotes p<0.5.$***$ Denotes p< 0.01

Table A4-18. (Continued)

	(6) rural	(7) urban	(8) price	(9) nim	(10) NPL
msme	2.110***	-2.472***	-1.956**	-1.409***	-0.377*
	[0.774]	[0.876]	[0.954]	[0.441]	[0.197]
profit_eff	0.634**	-1.211***	-1.197**	-0.707***	-0.149*
	[0.290]	[0.388]	[0.503]	[0.229]	[0.089]
msme#profit_eff	-2.271***	2.725***	2.151**	1.531***	0.414*
	[0.830]	[0.939]	[1.044]	[0.483]	[0.214]
sanitation	-0.022	-0.177***	-0.215***	-0.092***	0.064***
	[0.040]	[0.044]	[0.035]	[0.019]	[0.013]
guest	-0.020***	0.006	-0.011*	-0.002	-0.004***
	[0.005]	[0.004]	[0.006]	[0.003]	[0.002]
electric	-0.166***	0.107***	0.273***	0.113***	-0.034***
	[0.028]	[0.033]	[0.029]	[0.023]	[0.009]
rice	-0.057***	-0.142***	-0.062**	-0.025	-0.010
	[0.017]	[0.018]	[0.030]	[0.018]	[0.013]
branch	0.012**	-0.023***	0.013**	0.005*	0.002
	[0.005]	[0.004]	[0.006]	[0.003]	[0.003]
security	0.063**	-0.130***	0.195***	-0.015	0.013*
	[0.025]	[0.024]	[0.032]	[0.020]	[0.007]
Constant	0.004	1.895***	1.316**	0.740***	0.212*
	[0.298]	[0.415]	[0.565]	[0.280]	[0.125]
Observations	295	308	308	308	308
R^2-centered	0.158	-0.230	0.203	0.0128	-0.045
R^2-uncentered	0.821	0.707	0.729	0.309	0.514
Hansen J stat.	10.749	1.059	8.913	9.488	5.640
p-value	[0.004]	[0.589]	[0.011]	[0.008]	[0.059]
Wald F-stat	3.957	3.877	3.877	3.877	3.809
(critical value at 5%)	[9.08]	[9.08]	[9.08]	[9.08]	[9.08]

The regression equation is estimated with using 2sls method. The models show the impact of variable *msme* in its interaction with variable profit_eff while affecting the dependent variables. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. The observation period started from the years 2001–2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Table A4- 19. The influence of the MSMEs loans on Regional economy (in relation to variable share)- 2SLS method

	(1) RGDP_cap	(2) agr	(3) RGDP_p25	(4) unemp	(5) p1
msme	0.187	-0.510**	0.046	-0.018	0.007
	[0.122]	[0.203]	[0.194]	[0.013]	[0.006]
share	-0.244	-1.741***	0.293	-0.001	0.093***
	[0.343]	[0.447]	[0.386]	[0.023]	[0.016]
msme#share	-1.441***	1.493*	0.136	0.029	-0.034
	[0.466]	[0.818]	[0.717]	[0.045]	[0.023]
sanitation	1.299***	-1.071***	-0.550***	0.008	-0.019***
	[0.137]	[0.196]	[0.148]	[0.013]	[0.004]
guest	0.116***	-0.072***	0.055**	-0.001	-0.001**
	[0.016]	[0.023]	[0.023]	[0.002]	[0.000]
electric	-0.182***	-0.272*	-0.727***	0.048***	-0.009**
	[0.056]	[0.147]	[0.107]	[0.008]	[0.004]
rice	0.675***	1.461***	-0.405***	-0.098***	-0.011***
	[0.092]	[0.161]	[0.129]	[0.014]	[0.004]
branch	0.071**	-0.100***	-0.130***	0.015***	-0.002***
	[0.034]	[0.028]	[0.023]	[0.001]	[0.001]
security	1.755***	0.789***	-1.013***	0.051***	0.019***
	[0.145]	[0.154]	[0.111]	[0.008]	[0.005]
Constant	-2.664***	-3.440***	3.211***	0.411***	0.078***
	[0.453]	[0.749]	[0.621]	[0.066]	[0.018]
Observations	332	332	332	332	331
R^2-centered	0.474	0.254	0.358	0.456	0.460
R^2-uncentered	0.956	0.898	0.483	0.915	0.826
Hansen J stat.	10.281	4.689	1.725	2.881	5.287
p-value	[0.005]	[0.095]	[0.422]	[0.236]	[0.071]
Wald F-stat	26.149	26.149	26.149	26.149	25.534
(critical value at 10%)	[9.08]	[9.08]	[9.08]	[9.08]	[9.08]

The regression equation is estimated with using 2sls method. The models show the impact of variable *msme* in its interaction with variable profit_eff while affecting the dependent variables. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. The observation period started from the years 2001–2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes p< 0.1. ∗∗Denotes p<0.5.∗∗∗ Denotes p< 0.01

Table A4-19. (Continued)

	(6) rural	(7) urban	(8) price	(9) nim	(10) NPL
msme	0.083**	-0.012	0.115***	0.015	0.017*
	[0.041]	[0.013]	[0.041]	[0.021]	[0.010]
share	0.583***	0.004	0.156	0.033	0.039
	[0.098]	[0.041]	[0.095]	[0.040]	[0.024]
msme#share	-0.382**	0.123*	-0.512***	-0.139*	-0.092*
	[0.182]	[0.073]	[0.151]	[0.077]	[0.051]
sanitation	0.065***	-0.177***	-0.231***	-0.103***	0.064***
	[0.022]	[0.028]	[0.037]	[0.019]	[0.010]
guest	-0.020***	0.006**	-0.008	-0.001	-0.005***
	[0.002]	[0.003]	[0.006]	[0.003]	[0.001]
electric	-0.132***	0.121***	0.226***	0.096***	-0.042***
	[0.023]	[0.013]	[0.020]	[0.011]	[0.007]
rice	-0.094***	-0.095***	0.050***	0.020	-0.006
	[0.020]	[0.015]	[0.018]	[0.016]	[0.009]
branch	0.015***	-0.031***	0.002	-0.001	0.000
	[0.004]	[0.003]	[0.006]	[0.003]	[0.003]
security	0.123***	-0.114***	0.209***	-0.018	0.006
	[0.029]	[0.015]	[0.042]	[0.016]	[0.008]
Constant	0.561***	0.601***	-0.240***	-0.071	0.064
	[0.085]	[0.055]	[0.079]	[0.075]	[0.040]
Observations	319	332	332	332	328
R^2-centered	0.436	0.416	0.213	0.084	0.101
R^2-uncentered	0.880	0.861	0.729	0.355	0.580
Hansen J stat.	2.962	8.015	0.648	4.901	6.816
p-value	[0.227]	[0.018]	[0.723]	[0.086]	[0.033]
Wald F-stat	24.260	26.149	26.149	26.149	25.319
(critical value at 10%)	[9.08]	[9.08]	[9.08]	[9.08]	[9.08]

The regression equation is estimated with using 2sls method. The models show the impact of variable *msme* in its interaction with variable profit_eff while affecting the dependent variables. Wald F Statistic is a weak identification test, with 10% critical value. The null hypothesis is the instruments do not suffer from the specified bias. Hansen J Statistic is a test of overidentifying restrictions, with 10% critical value. The null hypothesis is the instrument set is valid and the model is correctly specified. The observation period started from the years 2001–2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes p< 0.1. **Denotes p<0.5.*** Denotes p< 0.01

Table A4- 20. RDBs versus Public National Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	RDGP_cap	agr	unemp	p1	rural	urban	price	nim	NPL
msme	-0.122	-0.064	0.004	0.001	0.007**	0.006*	0.011	-0.006	-0.014
	[0.089]	[0.054]	[0.006]	[0.001]	[0.003]	[0.004]	[0.018]	[0.010]	[0.013]
rdb_national	-0.420	0.068	0.016	-0.015**	-0.040	0.009	0.029	0.057	-0.028
	[0.666]	[0.483]	[0.017]	[0.006]	[0.029]	[0.013]	[0.037]	[0.040]	[0.028]
msme#rdb_national	0.138	0.072	-0.012*	0.000	-0.004	0.004	0.019	0.001	0.011
	[0.087]	[0.051]	[0.007]	[0.002]	[0.004]	[0.005]	[0.018]	[0.011]	[0.012]
sanitation	0.374***	0.451***	-0.014	-0.028***	-0.107***	-0.078***	-0.092**	0.009	0.015
	[0.046]	[0.123]	[0.021]	[0.004]	[0.022]	[0.024]	[0.037]	[0.023]	[0.020]
guest	0.027	-0.084***	0.003	-0.000	-0.010***	0.005	-0.004	-0.007	-0.001
	[0.019]	[0.027]	[0.003]	[0.001]	[0.004]	[0.004]	[0.008]	[0.006]	[0.002]
electric	-0.028	0.705***	0.044*	-0.015**	-0.007	-0.101***	0.169***	-0.001	-0.016
	[0.077]	[0.183]	[0.022]	[0.006]	[0.016]	[0.020]	[0.033]	[0.018]	[0.010]
rice	0.200	0.318	-0.074**	0.001	-0.045*	-0.045**	-0.094	0.095***	-0.052**
	[0.126]	[0.201]	[0.029]	[0.007]	[0.023]	[0.018]	[0.119]	[0.023]	[0.026]
branch	-0.038	-0.043	0.004	-0.006***	-0.005	0.003	-0.019**	0.011***	-0.003
	[0.026]	[0.034]	[0.005]	[0.002]	[0.005]	[0.004]	[0.009]	[0.004]	[0.005]
security	0.156**	-0.132	0.013	0.004	0.017	-0.007	0.114***	-0.046***	-0.042***
	[0.064]	[0.081]	[0.013]	[0.003]	[0.011]	[0.008]	[0.043]	[0.014]	[0.014]
Constant	1.306***	0.171	0.290***	0.081***	0.492***	0.351***	0.375	-0.308***	0.269***
	[0.440]	[0.525]	[0.111]	[0.022]	[0.066]	[0.056]	[0.406]	[0.098]	[0.092]
Observations	380	380	380	380	367	380	380	380	376
R^2-within	0.603	0.409	0.699	0.555	0.762	0.686	0.420	0.173	0.088
R^2-between	0.216	0.000840	0.208	0.200	0.106	0.0149	0.173	0.123	0.067
R^2-overall	0.219	0.00237	0.436	0.280	0.193	0.111	0.228	0.125	0.066

Note: The regression equation is estimated with random effect (RE) model, with time trend added. The regressions measure the impact MSMEs lending distributed by RDBs versus National Public Banks. The main independent variables are msme or percentage of MSMEs loans distributed by banks, rdb_national or dummy variable (1 is for RDBs and 0 for National Public Banks), and msme#rdb_national or interaction between variable msme and variable rdb_national. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from the years 2001–2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes $p < 0.1$. **Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 21. RDBs versus Private Banks

	(1) RDGP_cap	(2) agr	(3) unemp	(4) p1	(5) rural	(6) urban	(7) price	(8) nim	(9) NPL
msme	0.022	0.012	0.002	-0.001**	1.546	-0.013	-0.027	-0.259***	-0.013
	[0.021]	[0.008]	[0.002]	[0.000]	[1.087]	[0.020]	[0.020]	[0.065]	[0.008]
rdb_private	-1.343***	1.654***	-0.006	0.003	-3.287	-0.182	-0.008	0.153	-0.014
	[0.114]	[0.297]	[0.010]	[0.003]	[3.603]	[0.215]	[0.049]	[0.295]	[0.018]
msme#rdb_private	-0.013	-0.012	-0.013***	0.004***	-1.609	-0.005	0.065***	0.264***	0.010
	[0.027]	[0.033]	[0.003]	[0.001]	[1.117]	[0.023]	[0.021]	[0.068]	[0.008]
sanitation	0.674***	0.213*	0.040	-0.018***	-0.304	-0.314***	-0.077	0.265*	-0.011
	[0.193]	[0.109]	[0.025]	[0.004]	[0.260]	[0.120]	[0.047]	[0.153]	[0.030]
guest	-0.032	-0.069**	-0.002	-0.000	0.000	0.027*	0.002	-0.020	-0.000
	[0.032]	[0.028]	[0.002]	[0.001]	[0.020]	[0.014]	[0.009]	[0.019]	[0.005]
electric	0.441***	0.942***	0.096***	-0.044***	1.156***	-0.215**	-0.020	-0.457***	0.026
	[0.132]	[0.159]	[0.027]	[0.008]	[0.159]	[0.090]	[0.083]	[0.094]	[0.022]
rice	0.578**	0.192	-0.006	0.007	0.035	0.016	-0.037	0.005	-0.066***
	[0.270]	[0.124]	[0.028]	[0.006]	[0.248]	[0.116]	[0.073]	[0.145]	[0.025]
branch	-0.015**	-0.006	0.000	0.000	0.211***	0.052***	-0.010**	0.068	-0.003
	[0.007]	[0.005]	[0.001]	[0.000]	[0.072]	[0.019]	[0.004]	[0.053]	[0.004]
security	0.005	-0.035	0.004*	0.003*	-0.334**	-0.010	-0.011	-0.044	-0.017*
	[0.020]	[0.024]	[0.002]	[0.001]	[0.151]	[0.011]	[0.017]	[0.042]	[0.009]
Constant	0.839	-1.257***	0.075	0.044*	2.631	0.367	0.341	0.032	0.268***
	[0.982]	[0.369]	[0.103]	[0.023]	[3.080]	[0.335]	[0.254]	[0.632]	[0.083]
Observations	989	989	989	978	370	989	989	988	956
R^2-within	0.507	0.355	0.829	0.459	0.097	0.038	0.034	0.049	0.025
R^2-between	0.827	0.674	0.728	0.638	0.216	0.100	0.002	0.061	0.045
R^2-overall	0.802	0.632	0.719	0.596	0.201	0.106	0.013	0.038	0.007

Note: The regression equation is estimated with random effect (RE) model, with time trend added. The regressions measure the impact MSMEs lending distributed by RDBs versus Private Banks. The main independent variables are msme or percentage of MSMEs loans distributed by banks, rdb_private or dummy variable (1 is for RDBs and 0 for Private Banks), and msme#rdb_private or interaction between msme variable and rdb_private. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from the years 2001–2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes $p < 0.1$. **Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 22. RDBs versus Joint Venture Banks

	(1) RDGP_cap	(2) agr	(3) unemp	(4) p1	(5) rural	(6) urban	(7) price	(8) nim	(9) NPL
msme	-0.039	0.039	0.039	-0.001	0.003	0.003	0.005	0.005	-0.005
	[0.024]	[0.025]	[0.025]	[0.002]	[0.003]	[0.004]	[0.026]	[0.011]	[0.013]
rdb_joint	-1.480***	1.787***	1.787***	0.006*		0.012	0.037	0.024	0.009
	[0.118]	[0.300]	[0.300]	[0.004]		[0.015]	[0.029]	[0.020]	[0.006]
msme#rdb_joint	0.041	-0.038	-0.038	0.003		0.008	0.027	-0.011	0.004
	[0.027]	[0.026]	[0.026]	[0.002]		[0.006]	[0.029]	[0.014]	[0.012]
sanitation	0.439***	0.435***	0.435***	-0.023***	-0.099***	-0.074***	-0.126***	-0.012	0.023
	[0.063]	[0.123]	[0.123]	[0.004]	[0.023]	[0.019]	[0.038]	[0.021]	[0.017]
guest	0.012	-0.086***	-0.086***	-0.001	-0.010***	0.006	-0.006	-0.005	-0.001
	[0.023]	[0.029]	[0.029]	[0.001]	[0.004]	[0.004]	[0.006]	[0.006]	[0.003]
electric	0.223**	0.831***	0.831***	-0.027***	-0.011	-0.135***	0.144***	0.025	-0.021**
	[0.089]	[0.143]	[0.143]	[0.006]	[0.016]	[0.013]	[0.034]	[0.021]	[0.010]
rice	0.494***	0.268	0.268	0.002	-0.047**	-0.037**	-0.058	0.085***	-0.047***
	[0.185]	[0.191]	[0.191]	[0.007]	[0.023]	[0.015]	[0.105]	[0.028]	[0.015]
branch	0.009	-0.021	-0.021	-0.001*	-0.006	0.004**	0.005	0.006	-0.005
	[0.009]	[0.013]	[0.013]	[0.001]	[0.005]	[0.002]	[0.006]	[0.004]	[0.003]
security	0.042	-0.164**	-0.164**	0.008***	0.021*	0.001	0.094**	-0.059***	-0.031***
	[0.058]	[0.066]	[0.066]	[0.003]	[0.011]	[0.009]	[0.041]	[0.012]	[0.011]
Constant	1.252*	-1.467***	-1.467***	0.049**	0.459***	0.332***	0.230	-0.243**	0.209***
	[0.690]	[0.530]	[0.530]	[0.024]	[0.080]	[0.064]	[0.351]	[0.100]	[0.049]
Observations	429	429	429	421	319	429	429	429	421
R^2-within	0.555	0.379	0.379	0.508	0.745	0.656	0.312	0.134	0.083
R^2-between	0.770	0.624	0.624	0.498	0.109	0.253	0.310	0.137	0.001
R^2-overall	0.705	0.530	0.530	0.448	0.187	0.241	0.266	0.138	0.025

Note: The regression equation is estimated with random effect (RE) model, with time trend added. The regressions measure the impact MSMEs lending distributed by RDBs versus Joint Venture Banks. The main independent variables are msme or percentage of MSMEs loans distributed by banks, rdb_joint or dummy variable (1 is for RDBs and 0 for Joint Venture Banks), and msme#rdb_joint or interaction between msme variable and rdb_joint. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The observation period started from the years 2001–2016. The robust standard error is applied. Standard errors are in parentheses. *Denotes $p < 0.1$. **Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 23. RDBs versus Foreign Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	RDGP_cap	agr	unemp	p1	rural	urban	price	nim	NPL
msme	-0.152*	0.074	0.006	-0.006*	0.005	-0.027***	-0.009	-0.046***	0.061***
	[0.082]	[0.088]	[0.014]	[0.003]	[0.004]	[0.010]	[0.021]	[0.012]	[0.024]
rdb_foreign	-1.476***	1.817***	-0.032*	0.020***		0.013	0.118***	-0.002	-0.001
	[0.155]	[0.312]	[0.020]	[0.006]		[0.021]	[0.043]	[0.014]	[0.020]
msme#rdb_foreign	0.158**	-0.068	-0.013	0.008**		0.037***	0.036*	0.041***	-0.063***
	[0.074]	[0.091]	[0.013]	[0.004]		[0.010]	[0.021]	[0.012]	[0.023]
sanitation	0.476***	0.481***	-0.015	-0.024***	-0.096***	-0.073***	-0.081**	-0.006	0.019
	[0.060]	[0.136]	[0.021]	[0.004]	[0.022]	[0.019]	[0.032]	[0.020]	[0.020]
guest	0.021	-0.081***	0.002	-0.000	-0.009**	0.006	-0.002	-0.006	-0.001
	[0.022]	[0.028]	[0.002]	[0.001]	[0.003]	[0.004]	[0.007]	[0.006]	[0.002]
electric	0.223***	0.851***	0.065***	-0.022***	-0.010	-0.128***	0.146***	0.013	-0.003
	[0.079]	[0.184]	[0.021]	[0.006]	[0.017]	[0.019]	[0.026]	[0.019]	[0.009]
rice	0.391**	0.282	-0.032	0.003	-0.047**	-0.043***	-0.075	0.096***	-0.025
	[0.191]	[0.212]	[0.027]	[0.007]	[0.023]	[0.016]	[0.112]	[0.023]	[0.022]
branch	0.013	-0.016	0.003	-0.006***	-0.007	0.002	-0.020	0.011**	-0.004
	[0.029]	[0.042]	[0.004]	[0.002]	[0.005]	[0.006]	[0.013]	[0.005]	[0.007]
security	0.077	-0.163*	0.001	0.007**	0.025**	0.001	0.119***	-0.059***	-0.031**
	[0.073]	[0.094]	[0.009]	[0.003]	[0.012]	[0.008]	[0.042]	[0.015]	[0.013]
Constant	1.524**	-1.600***	0.195**	0.041*	0.451***	0.346***	0.230	-0.254***	0.138*
	[0.705]	[0.608]	[0.095]	[0.023]	[0.082]	[0.070]	[0.374]	[0.086]	[0.075]
Observations	373	373	373	373	306	373	373	373	369
R^2-within	0.560	0.381	0.698	0.523	0.736	0.658	0.415	0.195	0.078
R^2-between	0.696	0.509	0.542	0.396	0.105	0.182	0.236	0.113	0.121
R^2-overall	0.622	0.393	0.551	0.378	0.183	0.200	0.237	0.106	0.085

Note: The regression equation is estimated with random effect (RE) model, with time trend added. The regressions measure the impact MSMEs lending distributed by RDBs versus Foreign Banks. The main independent variables are msme or percentage of MSMEs loans distributed by banks, rdb_foreign or dummy variable (1 is for RDBs and 0 for Foreign Banks), and msme#rdb_foreign or interaction between msme variable and rdb_foreign. The dependent variable is RGDP_cap (regional GDP per capita), agri (the income per per capita for agricultural sector), unemp (unemployment rate), p1 (poverty gap index), rural (the percentage of the poor people in the rural area), urban (the percentage of the poor people in the urban area), price (the price of lending or interests gain over total loans), nim (net interest margin), NPL (non-performing loans). The robust standard error is applied. Standard errors are in parentheses. The observation period started from the years 2001–2016. *Denotes $p < 0.1$. **Denotes $p < 0.5$. *** Denotes $p < 0.01$

Table A4- 24. Seemingly Unrelated Regression Dependent (in relation to cost efficiency)

	RGDP_cap	agr	unemp	p1	RGDP_25	rural	urban	price	nim	NPL
msme	-2.374**	-3.376***	0.044	0.020	1.921***	0.384**	0.235**	-0.140	0.006	0.014
	[0.936]	[1.173]	[0.050]	[0.036]	[0.737]	[0.185]	[0.106]	[0.207]	[0.106]	[0.053]
cost_eff	-1.204*	-2.488***	0.005	-0.019	1.420***	0.119	0.132*	0.302**	0.302***	-0.023
	[0.678]	[0.849]	[0.037]	[0.026]	[0.534]	[0.134]	[0.077]	[0.150]	[0.077]	[0.038]
msme#cost_eff	2.656**	3.957***	-0.069	-0.019	-2.191**	-0.440*	-0.267**	0.160	-0.034	-0.016
	[1.164]	[1.458]	[0.063]	[0.045]	[0.917]	[0.231]	[0.131]	[0.257]	[0.132]	[0.065]
sanitation	1.094***	0.116	-0.007	-0.039***	-0.953***	-0.029	-0.195***	-0.249***	-0.081***	0.049***
	[0.252]	[0.316]	[0.014]	[0.010]	[0.199]	[0.050]	[0.029]	[0.056]	[0.029]	[0.014]
guest	0.061*	-0.071	-0.002	0.001	0.076***	-0.011*	0.009**	-0.014*	-0.005	-0.005**
	[0.035]	[0.043]	[0.002]	[0.001]	[0.027]	[0.007]	[0.004]	[0.008]	[0.004]	[0.002]
electric	0.180	-0.231	0.052***	-0.020***	-0.804***	-0.196***	0.084***	0.277***	0.119***	-0.036***
	[0.194]	[0.242]	[0.010]	[0.008]	[0.152]	[0.038]	[0.022]	[0.043]	[0.022]	[0.011]
rice	1.769***	2.347***	-0.022	-0.037**	-1.481***	-0.262***	-0.306***	0.200**	0.196***	-0.032
	[0.416]	[0.521]	[0.022]	[0.016]	[0.328]	[0.082]	[0.047]	[0.092]	[0.047]	[0.023]
branch	0.135***	-0.132**	0.014***	-0.002	-0.161***	0.018**	-0.031***	0.016*	0.004	0.001
	[0.044]	[0.055]	[0.002]	[0.002]	[0.034]	[0.009]	[0.005]	[0.010]	[0.005]	[0.002]
security	1.592***	0.986***	0.032***	0.018***	-0.953***	0.127***	-0.087***	0.200***	-0.033*	0.010
	[0.175]	[0.219]	[0.009]	[0.007]	[0.138]	[0.035]	[0.020]	[0.039]	[0.020]	[0.010]
Constant	-5.950***	-5.598***	0.122	0.214***	6.373***	1.238***	1.328***	-1.048***	-1.000***	0.190**
	[1.657]	[2.076]	[0.089]	[0.064]	[1.306]	[0.328]	[0.187]	[0.366]	[0.188]	[0.093]

Table A4- 25. Seemingly Unrelated Regression Dependent (in relation to profit efficiency)

	RGDP_cap	agr	unemp	p1	RGDP_25	rural	urban	price	nim	NPL
msme	-2.879***	-2.563*	0.076	0.075*	3.574***	0.557***	0.037	-0.610**	-0.537***	0.071
	[1.088]	[1.386]	[0.059]	[0.042]	[0.850]	[0.215]	[0.124]	[0.237]	[0.125]	[0.062]
profit_eff	-2.071***	-0.608	-0.008	-0.022	0.986**	0.032	-0.116	-0.718***	-0.410***	0.050
	[0.643]	[0.819]	[0.035]	[0.025]	[0.502]	[0.127]	[0.073]	[0.140]	[0.074]	[0.036]
msme#profit_eff	2.914**	2.577*	-0.095	-0.076*	-3.729***	-0.574**	-0.015	0.669***	0.572***	-0.077
	[1.192]	[1.518]	[0.064]	[0.046]	[0.931]	[0.235]	[0.135]	[0.260]	[0.137]	[0.068]
sanitation	1.197***	0.201	-0.007	-0.037***	-1.007***	-0.030	-0.195***	-0.233***	-0.077***	0.048***
	[0.250]	[0.319]	[0.014]	[0.010]	[0.195]	[0.049]	[0.028]	[0.055]	[0.029]	[0.014]
guest	0.044	-0.064	-0.003*	-0.000	0.066**	-0.016**	0.007*	-0.022***	-0.008**	-0.005**
	[0.035]	[0.045]	[0.002]	[0.001]	[0.028]	[0.007]	[0.004]	[0.008]	[0.004]	[0.002]
electric	0.157	-0.326	0.054***	-0.019**	-0.749***	-0.184***	0.093***	0.292***	0.130***	-0.037***
	[0.191]	[0.243]	[0.010]	[0.007]	[0.149]	[0.038]	[0.022]	[0.042]	[0.022]	[0.011]
rice	1.724***	2.113***	-0.020	-0.036**	-1.352***	-0.245***	-0.288***	0.256***	0.238***	-0.036
	[0.408]	[0.520]	[0.022]	[0.016]	[0.319]	[0.081]	[0.046]	[0.089]	[0.047]	[0.023]
branch	0.147***	-0.123**	0.015***	-0.001	-0.170***	0.019**	-0.031***	0.016*	0.003	0.001
	[0.043]	[0.055]	[0.002]	[0.002]	[0.034]	[0.009]	[0.005]	[0.009]	[0.005]	[0.002]
security	1.494***	1.079***	0.028***	0.013*	-1.042***	0.107***	-0.101***	0.129***	-0.069***	0.013
	[0.179]	[0.228]	[0.010]	[0.007]	[0.140]	[0.035]	[0.020]	[0.039]	[0.021]	[0.010]
Constant	-4.723***	-6.151***	0.130	0.225***	6.186***	1.259***	1.478***	-0.307	-0.524***	0.138
	[1.703]	[2.169]	[0.092]	[0.066]	[1.330]	[0.336]	[0.193]	[0.371]	[0.195]	[0.097]

Table A4- 26. Seemingly Unrelated Regression Dependent (in relation to variable share)

	RGDP_cap	agr	unemp	p1	RGDP_25	rural	urban	price	nim	NPL
msme	-0.317***	-0.278	0.098*	0.055	2.683***	0.415**	-0.018	-0.491**	-0.488***	0.113*
	[0.102]	[0.997]	[0.058]	[0.041]	[0.762]	[0.206]	[0.121]	[0.232]	[0.123]	[0.059]
share	0.024	1.182**	0.009	-0.038	0.288	-0.079	-0.159**	-0.625***	-0.371***	0.083**
	[0.259]	[0.588]	[0.034]	[0.024]	[0.450]	[0.122]	[0.072]	[0.137]	[0.073]	[0.035]
msme#share	0.388	0.050	-0.120*	-0.054	-2.744***	-0.416*	0.046	0.539**	0.517***	-0.123*
	[0.427]	[1.090]	[0.064]	[0.045]	[0.835]	[0.226]	[0.133]	[0.254]	[0.135]	[0.065]
sanitation	1.172***	0.151	-0.007	-0.037***	-0.987***	-0.027	-0.193***	-0.235***	-0.078***	0.047***
	[0.252]	[0.318]	[0.014]	[0.010]	[0.195]	[0.049]	[0.028]	[0.055]	[0.029]	[0.014]
guest	0.057*	-0.050	-0.003*	-0.001	0.060**	-0.016**	0.007*	-0.021***	-0.008*	-0.004**
	[0.035]	[0.044]	[0.002]	[0.001]	[0.027]	[0.007]	[0.004]	[0.008]	[0.004]	[0.002]
electric	0.173	-0.353	0.054***	-0.019**	-0.738***	-0.182***	0.094***	0.291***	0.129***	-0.037***
	[0.194]	[0.243]	[0.010]	[0.007]	[0.149]	[0.038]	[0.022]	[0.042]	[0.022]	[0.011]
rice	1.580***	2.054***	-0.021	-0.036**	-1.329***	-0.241***	-0.287***	0.253***	0.237***	-0.037
	[0.413]	[0.520]	[0.022]	[0.016]	[0.319]	[0.081]	[0.046]	[0.089]	[0.047]	[0.023]
branch	0.137***	-0.134**	0.015***	-0.001	-0.166***	0.020**	-0.030***	0.016*	0.003	0.000
	[0.044]	[0.055]	[0.002]	[0.002]	[0.034]	[0.009]	[0.005]	[0.009]	[0.005]	[0.002]
security	1.634***	1.165***	0.028***	0.012*	-1.075***	0.102***	-0.103***	0.133***	-0.067***	0.015
	[0.175]	[0.224]	[0.010]	[0.007]	[0.139]	[0.035]	[0.020]	[0.039]	[0.020]	[0.010]
Constant	-6.173***	-7.619***	0.116	0.237***	6.758***	1.351***	1.513***	-0.383	-0.555***	0.111
	[1.636]	[2.118]	[0.092]	[0.065]	[1.317]	[0.335]	[0.193]	[0.371]	[0.195]	[0.096]

Table A4- 27. Correlation matrix of residuals

	RGDP_cap	agr	unemp	p1	RGDP_25	urban	rural	price	nim	NPL
RGDP_cap	1.000									
agr	0.737	1.000								
unemp	0.156	-0.001	1.000							
p1	-0.257	-0.399	0.015	1.000						
RGDP_25	-0.460	-0.508	0.126	0.150	1.000					
urban	-0.175	-0.185	-0.072	0.246	0.310	1.000				
rural	-0.338	-0.465	0.059	0.879	0.271	0.257	1.000			
price	0.263	0.071	-0.210	0.062	-0.194	-0.187	0.000	1.000		
nim	0.238	0.086	-0.331	0.005	-0.175	-0.094	-0.020	0.804	1.000	
NPL	0.269	0.265	0.251	0.004	-0.085	-0.048	0.070	-0.233	-0.217	1.000

Breusch-pagan test of independence: Chi2 (10)= 1307.935, Pr=0.000. Source: Researcher's result using StataMP 14

Chapter Five

Thesis Conclusion

This thesis examines the role of the regional development bank (RDBs). The investigative chapters involved an empirical analysis of how the RDBs deal with political influence, how geographical factors affect the RDBs' attitude, and how the RDBs' support to the MSME sector might effectively spur the regional economy. Throughout the thesis, we used a carefully constructed dataset, some of which are collected manually. We used a unique dataset that included banks' financial statements at the regional (provincial) level, and geographical information for each region.

The second chapter investigated the impact of politics in lending distribution by RDBs in Indonesia. It addressed questions regarding how political motives affect the distribution of lending in RDBs, and does it involve the higher authorities at the national level, or it is a deliberate decision by RDBs? By observing three different periods (a year before the election, the election year, and a year after the election), we found that non-allied RDBs tended to be more aggressive in distributing loans closer to election years, while the allied RDBs seemed to focus on approaching the small business sector, as the number of loans increased significantly during election years. A coalition government may make the allied government more confident that they can retain their power, and therefore the politicians might try to cultivate a reputation as being those who care for the underclass, and who provide employment in their region by granting more loans to small businesses. Interestingly, we detected clientelism in allied RDBs once the election ended, affecting the spread of non-performing loans from the RDBs. Similar findings were also noted when more politicians were sitting as commissioners – the volume of loans increased but the was not followed by increased interest payments. In addition to supporting political lending, the non-allied RDBs needed to reduce their investments in proportion to financing their political lending; but we did not find a robust conclusion about the Central Government's intervention.

The third chapter examined the role of the RDBs by considering the geographical situation across regions and whether their behaviour was different compared to the non-RDBs in each region. This paper provided an insight: that the RDBs' loans, including the loans to MSMEs, are disproportionally distributed depending on the particular region's wealth. This disproportionate lending shows that lending by RDBs predominates (or, at least, is greater than the non-RDBs) in regions that have lower levels of income (RGDP per capita). Concerning their geographic location, the RDBs' loans tend to be stable across all the regions compared to the non-RDBs; hence, it makes the RDBs' lending appear to be higher than the non-RDBs' lending in remote locations, as the number of non-RDBs lending is greater than the RDBs, and it was growing faster than the RDBs in parallel with the increasing of the endowment level and the closer the distance to the financial centre. Therefore, this chapter also demonstrated that the non-RDBs' lending pattern is highly connected with their influence of the neighbouring regions' economy, in which their neighbours will gain more benefit than their home region, while the RDBs' seem to mitigate the capital drain due to the differing endowments with the neighbouring regions.

The fourth chapter examined whether the role of the RDBs in encouraging the MSME through their lending was able to contribute to the regional economy, as this sector is very dependent on the banks' support, but at the same time has a big issue in accessing financial support from banks. This chapter revealed that the loans distributed by the 'better' banks (proxied by profit efficiency) was significantly affecting the regional GDP (overall) and was influencing the income of the agriculture sector as well. The MSME's loans did not improve the income of the low-income class, but the increasing in the MSMEs loans costs of the NPLs of the RDBs that have better efficiency (proxied by profit efficiency). Concerning with the banking market, the RDBs' support to the MSMEs in less-concentrated banking market has a crucial impact in affecting the regional GDP (overall), pushing the income of the agricultural sector and effectively lowering the unemployment level. On the other hand, the loans themselves seemed to increase the poverty gap within regions, and the disparity across regions. The less-developed regions might have related to the higher risk that the RDBs have; and hence, they seemed to work harder to control the NPL. In contrast, the interest income seemed to be less for the RDBs operating in less-concentrated regions than in the high concentrated region. Observing the potential for spill-over, we found that the MSME loans from cost-efficiency oriented RDBs are highly affected by the spatial dependence, and it explains why the impact of this type of RDB does less to encourage the economy of its home region. Instead the profit efficiency-oriented banks are effective in preventing the MSME loans spilling over, and as a consequence, it is effective in improving the home regional income.

Following table provide the main outcomes of the empirical chapters.

Table 5- 1. The Main Outcomes of the Empirical Chapters

Variable	Description	Interpretation	Estimation	Effect
Working Paper 1 – Politics and the behaviour of the Regional Development Banks				
RDB Loans	Negative influence pre and on election period. Positive influence post-election period	Regions that have aligned with the National Government increased their volume of loans after the election took place (post-election).	Fixed effect model	Strong
		Regions that have not aligned with the national government lend more in the run-up to elections.	Fixed effect model	Strong
	Positive influence pre-election period. Negative influence post-election period	Banks ruled by incumbents tend to increase lending one year before elections and lower the amount of lending post-election.	Fixed effect model	Weak
	Positive influence on-election period.	Banks that have more politicians sitting on the commissioner's board lend more in the run up to elections.	Fixed effect model	Strong
RDBs Loans to MSME	Positive influence pre and on election period. No significant influence post-election.	Allied RDBs increased their lending to MSME in the run-up to elections.	Fixed effect model	Strong
Price of Loans	Negative influence post-election	Allied RDBs lower the price of loans in post-election period.	Fixed effect model	Strong
Price of Deposit	No significant influence at any stage of the election period	RDBs do not change their price of deposit to attract more depositors.	Fixed effect model	Strong

Table 5- 2. (Continued)

Variable	Description	Interpretation	Estimation	Effect
Asset	No robust relationship found at any stage of the election period.	There is no indication of National Government's involvement in RDBs during the election period.	Fixed effect model	Strong
Security	No robust relationship found at any stage of the election perio.d	There is an unclear conclusion about the investment strategies during the election period.	Fixed effect model	Weak
Working Paper 2 – Does geography influence the RDBs lending?				
Loans per capita	Regional GDP per capita has negative influence on loans (per capita)	The RDBs provide more support to the regions that have less endowment. In contrast, the non-RDBs tend to provide more lending when the regions are rich.	Random effect model	Strong
	Distance has positive influence on loans (per capita)	The RDBs provide more support to the remote regions; while the non-RDBs tend to lend more to the regions close to the financial centre.	Random effect model	Strong
Loans to MSME per capita	Regional GDP per capita has a negative influence on loans (per capita).	The RDBs provide more support to the regions that have less endowment. In contrast, the non-RDBs tend to provide more lending when the regions are rich.	Random effect model	Strong
	Distance has a positive influence on loans (per capita).	The RDBs provide more support to the remote regions; while the non-RDBs tend to lend more to the regions close to the financial centre.	Random effect model	Strong
Spillover (spill2)	Spillover has positive influence on loans (per capita).	The non-RDBs tend to lower their quantity of loans in the regions that are surrounded by the wealthier neighbouring regions.	Random effect model	Strong

Table 5- 1. (Continued)

Variable	Description	Interpretation	Estimation	Effect
Working Paper 3 – The Regional Development Banks (RDBs) and Micro and Small Medium Enterprises (MSMEs)				
Regional GDP (per capita)	The interaction between variable MSME (loans to MSME) and profit efficiency has a positive influence on the regional GDP.	Lending (to MSME) distributed by the efficient banks improves the regional GDP.	Random effect model	Strong
	The interaction between variable MSME (loans to MSME) and market concentration has a positive influence on the regional GDP.	Lending (to MSME) distributed by RDBs that have a bigger market concentration improves the regional GDP.	Random effect model	Strong
Regional GDP in Agriculture sector (per capita)	The interaction between variable MSME (loans to MSME) and profit efficiency has a positive influence in agriculture sector.	Lending (to MSME) distributed by the efficient banks improve the income in agriculture sector.	Random effect model	Strong
	The interaction between variable MSME (loans to MSME) and market concentration has a positive influence in agriculture sector.	Lending (to MSME) distributed by RDBs that have a bigger market concentration improves income in the agriculture sector.	Random effect model	Strong
Unemployment	The interaction between variable MSME (loans to MSME) and profit efficiency has a negative influence on unemployment.	Lending (to MSME) distributed by the efficient banks lowers the unemployment level.	Random effect model	Strong
	The interaction between variable MSME (loans to MSME) and market concentration has a negative influence on unemployment.	Lending (to MSME) distributed by RDBs that have a bigger market concentration lowers unemployment.	Random effect model	Strong

Table 5- 1. (Continued)

Variable	Description	Interpretation	Estimation	Effect
Net interest margin (NIM)	The interaction between variable MSME (loans to MSME) and profit efficiency has a positive influence on NIM.	Lending (to MSME) distributed by the efficient banks increases their NIM.	Random effect model	Strong
	The interaction between variable MSME (loans to MSME) and market concentration has no impact on NIM.	Lending (to MSME) distributed by RDBs that have a bigger market concentration has no impact on NIM.	Random effect model	Strong
Non-Performing Loans (NPL)	The interaction between variable MSME (loans to MSME) and profit efficiency has a positive influence on NPL.	Lending (to MSME) distributed by the efficient banks increases their NPL.	Random effect model	Strong
	The interaction between variable MSME (loans to MSME) and market concentration has a negative impact on NPL.	Lending (to MSME) distributed by RDBs that have a bigger market concentration lowered the NPL.	Random effect model	Strong

5.1 Limitations and recommendations

The research in this thesis is timely and offers recommendations for bank regulators, especially for the government and the central bank. The results provide an insight about how the regional public banks or RDBs implement their roles through their capacity as an intermediary in order to mitigate the credit rationing caused by the failure of the market. In this thesis, however, we focused on the political, geographical, and opaqueness issues of MSMEs.

Common to all empirical studies, there are limitations with the data. This thesis has constructed a rich dataset, which partially hand collected, especially for the first empirical chapter (in chapter two), such as the data for defining the alignment status, the incumbent status, and the background of the politicians. Although this thesis was able to present these unique types of data, examining the possibility that political lending might be strongly prevalent in the run-up to regional elections may not be the whole story. This study placed an emphasis on regional elections and defined the alignment and the incumbent status referred to the regional leader (governor), yet political lending might also appear in connection with the regency or municipality authorities, such as the regent or the major, although the scope of their authority is less than a governor's authority. In addition, it may possible to see that a regent or a major might exploit the RDBs in supporting their regency or municipality elections. Future research should consider including the political lending in regency or municipality level and testing what channel that mostly used by them in obtaining their objectives, political lending.

Associated to one of the political variables, first TR or incumbent, we define incumbent as the elected governors of every province who were re-elected for a second term. However, the limitation of this study is that it only analyses those governors who are re-elected for a second term. This means that we do not capture those elected governors who run for a second election but do not win. This may yield different findings about the political influence of RDBs.

As we focus on observing the role of the RDBs, as public banks locate at regional level, it is important to consider the existence of the national 'public banks', namely Bank Rakyat Indonesia (BRI), Bank Nasional Indonesia (BNI), Bank Tabungan Negara (BTN) and Bank Mandiri that are located across various regions in Indonesia. The national banks have total assets of approximately 40% (Mourougane, 2012) and they have many branches across regions; hence, the role of the BRI to the MSME sector might be clearer cut. The commercial banks account for approximately 80% of the loans, and BRI dominates the sector (Mourougane, 2012). BRI has an operational advantage because of its extremely wide network of branches, enabling it to reach rural villages. This makes the market very challenging for any newcomer. A comparative study between these two public banks at a regional level would provide a broad understanding about the role of each type of public bank in effectively supporting the intermediary process in Indonesia, focusing on their similarities and differences. As these two banks are public banks – with BRI having a national focus and RDBs having a regional focus – it is possible that the implementation of these two banks' activities might cancel each other out, and the RDBs would be in a weaker position as they have significantly fewer assets compared to BRI.

Related to one of the political variables, first TR or incumbent, we define incumbent as the elected governors of every province who were re-elected for a second term. However, the limitation of this study is that it only analyses those governors who are re-elected for a second term. This means that we do not capture those elected governors who run for a second election but do not win. This may yield different findings about the political influence of RDBs.

Focusing on the geography issue to explain the lending behaviour of the RDBs compared to non-RDBs in chapter three (3), we applied the Euclidian distance to measure the distance between regions and to classify the neighbours of each region. Moreover, this method estimates the distance between two points and measures the length of a segment connecting the two points. The Pythagorean Theorem can be used to calculate the distance between two points. Hence, the method may not effectively estimate the distance between regions since the method is based on the 'ordinary' straight-line distance. Consisting of groups of islands, the distance between regions may not be as simple as using straight-line method. It is possible that with the Euclidian method, certain regions seem to have neighbouring regions that are separated by water or sea. Hence, future study may consider a better measurement that may capture the landscape of Indonesia.

In addition to the geography chapter (located in chapter three), we employed three main geographical indicators: the regional GDP, the distance (from the capital city or Jakarta) and the spillover variables to estimate the lending pattern of the two banks (RDBs and non-RDBs). Due to the multicollinearity problem (see appendix A3-12 and A3-13), we ran each variable separately to avoid bias in estimating the estimator of the model.

Furthermore, if the true model is

$$y = \beta_1 X + \alpha_1 Z + \gamma_1 Q + \epsilon$$

Where y is lending volume, X is regional GDP, Z is distance from the capital city and Q is spillover, then estimating a restricted specification will create an omitted variables bias as the excluded variables correlated to the included variables (Heckman, 1979), or in this case, the factors that influence the lending and the geographical variables are excluded from the regression analysis. If the effect of the excluded variables manifests in the error term and correlates with the endogenous choice construct and the outcome variable, it may bias the results.

5.2 Matters arising for Public Policy

This section reviews the main results of this thesis in relation to role of the RDBs in implementing their mandates in their home region. Since 1962, the RDBs have been established with a mission to encourage the development of their region. However, referring to the report by OJK (2016), it has been noted that their contribution to the regional economy is still small (30% of the regional GDP), as most of the loans are consumptive loans, which have a lower short-term impact on the economy. The Indonesian government, the Central Bank of Indonesia (BI) and the Indonesian financial services authority (OJK) together with the Regional Development Bank Association (ASBANDA) realised that the RDBs have issues with corporate governance, risk management, and a lack of sufficient infrastructure. Hence, the GOI launched a transformation programme called the BPD Regional Champion (BRC) on the 21st of December 2010 to improve the RDB's contribution to their regional economy[1]. The BRC consists of three main pillars: the first pillar is maintaining and enhancing banking resilience; the second pillar is playing the role of an agent of regional development; and the third pillar is increasing the ability to serve the community, especially in the more remote regions. In order to implement the first pillar, RDBs are committed to increasing capital and increasing efficiency to achieve an adequate level of profitability, so that they can provide competitive interest rates to the public. To implement the second pillar, the RDBs, as an agent for regional development, target a larger portion of credit in productive sectors and enhance the intermediary function, especially MSMEs, through collaborations with rural banks through

[1] The completed information is available at https://www.bi.go.id/id/ruang-media/siaran-pers/Pages/sp_125710.aspx

linkage programmes and APEX banks. Finally, to implement the third pillar, as a form of improving the ability to serve the needs of the community, RDBs will have a standardisation and quality improvement programme for human resources supported by the expansion of the office network to support the establishment of an inclusive financial system (financial inclusion) by increasing access to the widest range of local communities through the creation of products and services that are increasingly varied and superior. In order to achieve these three targets, there are six strategies that will be pursued to improve the effectiveness of business processes and risks: improving product development; service management; marketing development; network management; portfolio management; and strengthening liquidity and capital.[2]

However, connected with the findings from this thesis, there are several important highlights that need to be taken into consideration by the decision makers or policy makers in increasing the capacity of the RDBs. The evidence presented in the second chapter shows that RDBs are still vulnerable, with preferential lending related to politics. The tendency of the regional leaders to misuse the RDBs' funds for political gain is strongly evident, not only in the regions that have aligned themselves with the winning national party, but also for the regions that were led by the non-winning party governor. Political loans undoubtedly threaten the intermediation process. The RDBs tended to increase their lending but at a cheaper price, not only before the election but also after the election. Employing a robust analysis, the evidence showed that the potential for political lending increased when the commissioners sitting on RDBs' boards had a political background or were actually politicians. Therefore, the programme to improve the RDBs' role should include a reform of the commissioning structure, as although the proportion of the politicians sitting as commissioners has decreased, and most of the RDBs on the island of Java no longer include commissioners that are also politicians (they are mostly banking industry professionals), some regions still have a large proportion of politicians on their commissioners' boards. Regarding political lending, the OJK should consider building an alliance with the Indonesian anti-corruption eradication commission (KPK) in order to set some sort of monitoring scheme in place, both during and after elections; as it might easily indicate such a loan, especially with the implementation of the simultaneous regional elections after

[2] See https://www.ojk.go.id/id/kanal/perbankan/berita-dan-kegiatan/publikasi/Pages/Program-Transformasi-BPD.aspx

year 2015. As has been shown, the impact of the loans may reduce the funds distributed to their region.

In accordance with the findings in Chapter 3, it was shown that the RDBs tended to keep to their role of being regional banks. By observing the difference with non-RDBs, the support of the RDBs is disproportionate regardless of the endowment and the distance from the financial centre. The non-RDBs tend to significantly reduce their loans (per capita) due to the lower levels of endowment and if the regions are further from the strategic location. However, by using spatial analysis, this chapter documented that the RDBs' loan distribution was less affected by favourable conditions around the region; the RDBs' existence is important in supporting their regions, especially less-developed regions. Their commitment to maintaining their support for their region regardless of the geographical factors should be supported by the GOI. Currently, the RDBs are also allowed to open branches outside their particular regions. Working ambitiously to expand their size, the expansion might show a negative side to the target region if the deposits collected are not re-distributed to their regions and are instead lent to other regions that are more favourable geographically. This may sharpen the disparity and agglomeration at the same time. The government should, therefore, set certain regulations and monitoring schemes in place in order to make sure that this outcome can be prevented.

The report from OJK (2016) stated that the contribution of the RDBs' productive credit is still less than 30% of GDP. Nevertheless, the loans to MSMEs have been effective in increasing the regional GDP if they are delivered by an efficient bank or banks that have a better intermediation process. The impact is very pronounced in the agricultural sector, as shown by the evidence presented in Chapter 4 of this thesis. Unfortunately, this improvement does not seem to apply to the low-income regions. The same thing happens when we examine the role of the RDBs in less-concentrated banking market; the poverty gap within the region increased and the MSMEs loans tend to encourage the middle and upper regional economy. The less-concentrated banking market can be interpreted as being the less-developed regions, due to the fact that most of these less-concentrated regions are mostly in the eastern part of Indonesia; and in these regions, the size of the RDBs (in comparison to the total number of commercial banks in that region) is slightly larger compared to the size of the RDBs in densely populated areas, such as those on Java. Hence, the potential returns may not be as large as those in wealthier regions. Realising that the MSMEs characteristic is risky, and that they are dealing with risky conditions due to the lower levels of income or economic activities in aggregate (compared to the rich regions), the RDBs seem to tightly monitor NPLs. Their efforts to control NPL might be connected with the rule announced by the BI circular letter No.15/35/DPAU, dated 29th August 2013 (concerning Lending or Financing by Commercial Banks and Technical for the Development of Micro, Small and Medium Enterprises). BI stated that details for the procedures for the imposition of sanctions stated for banks that cannot meet the credit or financing ratio of MSMEs according to the stages specified and have NPLs of more than 5%.[3] Encouraging lending to riskier areas but asking to have a controllable risk might lead the RDBs to target certain sectors that have less risk. With their status as regional public banks, the OJK might force them to be the front line in helping this sector; but without a good mechanism and support from GOI it is possible that another problem may be created in this region, namely disparity both within and across regions. In addition, when observing the impact of spatial dependence across regions, the GOI should be concerned about the potential of having capital drain in poor regions. The increasing size of credit might have less impact on the regional economy if the banks tend to direct the funds outside the regions. Hence, understanding the spatial circumstances may help the central government create policies that can facilitate the spatial issues. The ability to see the variations in banking performance will help in evaluating and formulating monetary policies that not only benefit the metropolitan area but also encourage growth in those small or remote areas that are still lagging.

Furthermore, we can conclude that, despite the facts shown in the second chapter, RDBs seem to do good a job as a regional intermediator. Regardless of the discrepancies across regions, their existence contributes significantly to the growth of low endowment and remote regions. They also consistently provide lending to their regions, although they might have an opportunity to gain more by lending to their wealthier neighbours. Hence, the GOI should enlarge its support and provide a system that enables the banks to implement their social and development mandate undoubtedly and grow at the same time.

[3] In addition, in the regulation No. 17/12/PBI/2015, dated June 25th 2015 (as the amendment of BI Regulation No. 14/22/PBI/2012, dated December 21, 2012), regarding the Granting of Credit or Financing by Conventional Banks and Technical Assistance in the Framework of Micro-, Small- and Middle-Scale Business Development, BI stated that it would impose administrative sanctions on banks that failed to fulfil the required credit ratio.

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