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ESSAYS ON FINANCIAL STRUCTURE AND REGIONAL ECONOMIC DEVELOPMENT

Sefika Betul Esen

A thesis submitted in candidature for the degree of Doctor of

Philosophy at Bangor University



Bangor Business School

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Babama ve anneme...

To my father and mother...

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List of Abbreviations

ACMIIT	Association of Capital Market Intermediary Institutions of Turkey
AIRCT	Association of the Insurance and Reinsurance Companies of Turkey
BAT	Banking Association of Turkey
BIST	Borsa Istanbul
BRSA	Banking Regulation and Supervision Agency
CBRT	Central Bank of Republic of Turkey
CMB	Capital Markets Board of Turkey
EEC	European Economic Community
EU	European Union
FDI	Foreign Direct Investments
FYDP	Five-Year Development Plans
FX	Foreign Exchange
GAP	Guneydogu Anadolu Projesi – South-eastern Anatolia Project
GDP	Gross Domestic Product
GDPPC	Gross Domestic Product Per Capita
GMM	Generalized Method of Moments
GNP	Gross National Product
ICT	Information and Communication Technologies
IMF	International Monetary Fund
ISE	Istanbul Stock Exchange
ISI	Import Substitution Industrialization
ISIC REV3	International Standard Industrial Classification of All Economic
	Activities, Revision3
IV	Instrumental Variable
M&As	Mergers and Acquisitions
NOB	Number of Branches
NSSBF	National Survey of Small Business Finances
NTB	Non Tariff Barriers
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Co-operation and Development
OMO	Open Market Operations
PPD	Priority Province in Development
R&D	Research and Development
RDAs	Regional Development Agencies
ROA	Return on Asset
ROE	Return on Equity
SDIF	Savings Deposit Insurance Fund
SEDI	Socio-Economic Development Index
SEE	State Economic Enterprises
SMEs	Small and Medium-Sized Enterprises
SPO	State Planning Organization
TBMM	Grand National Assembly of Turkey
TOBB	Union of Chambers and Commodity Exchanges of Turkey
TURKSTATS	Turkish Statistical Institute
USSR	Union of Soviet Socialist Republics
VAR	Vector Autoregression
VECM	Vector Error Correction Model
WTO	World Trade Organization
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Abstract

The purpose of this thesis is to examine the relationship between banking activities and regional economic growth both theoretically and empirically. The first paper describes the evolution of the Turkish economy and the financial system at national and provincial levels. The economic and financial indicators are shown over the period between 1975 and 2013. In particular, the research sheds light on the nature of the imbalances in regional economic development across Turkey. By so doing, a background for the thesis is established, as the effect of centralisation in the banking system on regional growth is examined. The study finds that, despite the trend towards decentralisation that takes place in regional economic policies, the banking system adopts centralisation policies.

The second paper aims to assess the impact of banking institutions on regional growth by integrating a decisional variable associated with the branch banking system in a conventional endogenous growth model. The comparative analysis of the output growth of hierarchical and decentralised structures shows that the former causes capital to flow from poorer to richer regions, thus increasing economic disparities. The model considers the effect of the nature of information on the decision-making mechanisms within institutions. It predicts that, in the case of soft information, decentralised banks, also known as unit banks, benefit regional growth more than branch banks. These first-time predictions encourage policy makers to take the structure of the banking system into consideration when establishing fiscal and monetary policies in order to decrease regional imbalances created by centralised banking.

In the third paper, the model's implications are tested by means of GMM estimations, using a unique data set comprising 39 years of provincial demographic, socio-economic, and financial variables in Turkey. The research empirically shows that banking intermediation has a negative effect on provincial growth. The hierarchical nature of the Turkish banking system does not allow financial intermediaries to fulfil their role in promoting growth. Consolidations and concentration policies should be reconsidered, as such policies are generally in favour of centralisation, which is proven to be ineffective in regional convergence. The findings also imply that branch managers should be given more decision-making powers in order to better utilise locally generated information when approving/disapproving the projects, which would ultimately lead to a decrease in regional imbalances.

Chapter 1

General Introduction

1.1. Modern Theory of Economic Growth

The basic concepts of modern Economic Growth Theory were established with the rise of classical economic thinking (see Smith, 1776; Malthus, 1798; Ricardo, 1817; Ramsey, 1928; Schumpeter, 1934). The concepts of the Classical School basically focus on the relationship between diminishing returns and capital accumulation; the competitive behaviour and dynamics of market equilibrium; the interaction between income per capita and population growth; and the influence of technology on growth. Among those who developed Growth Theory, Schumpeter (1934) is the pioneer who introduced the idea that banks can have a stimulating effect on economic growth. He suggests that banks decide to fund entrepreneurs by giving loans to promote usage of the productive resources in the economy. Banks can also evaluate innovations and are able to provide the required ad-hoc finance.

In the early 20th century the unemployment level reached its highest level and the classical theories could not provide solutions to the problem of invigorating the economy (Griffiths and Kelley, 1999). Keynes (1936) built a framework for understanding changes in employment levels and production. He also introduced the principle of effective demand, which describes the intersection of aggregate supply and aggregate demand functions. Following the Keynesian approach, the Neoclassical School of thought emerged, which provides a basis for the most recent growth theories. In these theories, the main assumptions are constant returns to scale, aggregate capital stock, aggregate production functions and utility functions for representing consumers. These assumptions show that the neoclassical approach is mostly characterised by microeconomic systems. Harrod (1939) and Domar (1946) integrated Keynesian analysis in economic growth models. Their model, also known as the "Harrod-Domar model", suggests that there is a knife edge balance of equilibrium growth rate, created from the relationship between the natural rate of growth and warranted rate of growth in the long term. Another most important contribution to the Neoclassical School was made by Solow (1956) and Swan (1956). The assumptions of their model are constant returns to scale, diminishing returns to each input, and elasticity of substitution between the inputs. They show that the economy will evolve toward a steady state growth, independent from the initial capital-labour ratio (see also Cass, 1965, and Koopmans, 1965). Romer (1986) suggests that technological progress is endogenous in his technological change model. According to his model, under certain conditions, constant returns to economy-wide knowledge can generate endogenous growth. Lucas (1988), on the other hand, emphasises the importance of human capital. He makes a contribution to the understanding of the role of cities in economic growth. However, early Economic Growth Theory features very little in understanding the dynamics of cities.

Modern growth theories focus on examining the determinants of economic growth by means of aggregated models. Unlike general growth models, regional models can determine the relevance of contextual socio-economic and institutional characteristics. Most of the early regional growth theories were only extensions of neo-classical theories of international trade and national economic growth (Dawkins, 2003). One of the early studies that discussed city growth was conducted by Jacobs (1969), who stated that cities grow when they export some of their locally produced products and services. Imports also have benefits for the local economy, as some contribute directly to export production, while others are used in goods and services. Neo-classical economics show the imperfections and unbalanced spatial patterns in the markets. The regional development theories, describe the growth process as unbalanced and disequilibriating. For example, growth poles theories by Perroux (1955) and Myrdal and Sitohang (1957) state that growth is expected to occur only at certain points and has spillover effects. On the other hand, polarisation theories differentiate the core and the periphery. According to Lloyd and Dicken (1972), the core is abundant in capital and scarce in labour, while the periphery is vice versa. Therefore, there is labour immigration from the periphery to the centre.

According to traditional neoclassical thought, the economic system has a tendency to reach an equilibrium, both for regional markets and the relationship between the region and the rest of the economy. The differences in regional economic growth are caused by an initial inter-regional misallocation of resources. These disparities in output will eventually disappear in time and regional economies approach the common steady state. The convergence mechanism will be facilitated through the interregional flows of factors, as a result of a social and economic integration. In reality, however, a steady state characterised by stable growth is never realised. Regions, countries and country groups have portrayed increases and decreases in their per capita income, consumption and investment growth rates in the medium and long term. The purpose of this thesis is to establish the role (if any) that financial institutions play in causing regional economic disparities. The study finds that one of the factors driving regional imbalances is the banks, due to the absence of efficient redistribution of funds.

1.2. Theory of Economic Growth and Finance

Schumpeter (1934) underlines the positive role of financial development on economic growth. He points out the necessity of credit services because entrepreneurs need credit to carry out their projects. An alternative view comes from Robinson (1952), who argues that financial intermediaries responds to an increase in the demand for financial services, which follows and increases economic activity. There are a number of studies that follow Schumpeter's idea. For example, according to Gurley and Shaw (1955), the financial sector is able to overcome indivisibilities via mobilizing savings. These mobilized savings are channelled to productive sectors to finance investment projects, which leads to an increase in capital accumulation and higher growth of output.

Tobin and Brainard (1963) indicate that financial intermediaries enable entrepreneurs to improve their businesses by borrowing at lower rates and easing financial institutions' ability to evaluate investment projects. Financial intermediaries particularly banks evaluate different investment opportunities by assessing the associated risks so that funds are transmitted to the most profitable and promising projects. Therefore, the quality of investments is improved, which, in turn, has an expansionary effect on the economy.

In the 1970s, some economists (such as McKinnon, 1973, and Shaw, 1973) started to criticise the Keynesian idea, as they thought that it did not properly analyse the role of the financial system. In his model, McKinnon (1973) stresses the importance of sufficient amount of savings, accumulated as bank deposits, in materializing the investment and hence economic growth. Shaw (1973), on the other hand, focuses on the debt intermediation, which suggests that banking intermediation has an important impact on investment and growth, as it links the borrower and the lender.

With the evolution of the economic growth literature, more complex models have emerged, which incorporate financial institutions into endogenous growth models (see, for example, Diamond and Dybvig, 1983; Bencivenga and Smith, 1992; Pagano, 1993; Greenwood and Smith, 1997). The main difference between these models and the McKinnon-Shaw (1973) model is that endogenous growth models explicitly employ techniques as externalities to model financial intermediation, while the McKinnon-Shaw model takes financial intermediaries as an exogenously observed variable. Diamond and Dybvig (1983) show that banks allow investors to diversify their portfolios and hedge against risks. Financial intermediaries can effectively provide liquidity by properly matching the different maturity periods of loans through having the advantage of a large number of borrowers and lenders. Greenwood and Jovanovic (1990) use a theoretical model that examines the link between growth and income distribution, plus the relationship between financial structure and economic development. The main reason for a positive effect of financial structure on economic growth is the more effective investment and more efficient allocation of capital, since agents can have better clues about the nature of potential shocks that may affect specific projects.

Inspired by Diamond and Dybvig (1983), Bencivenga and Smith (1991) developed an endogenous growth model with multiple assets. They constructed a model in which the equilibrium behaviour of banks affects resource allocations in ways that have implications for real rates of growth, and provided a partial characterization of when economies with competitive banks will grow faster than economies that do not have such intermediaries. They first assumed the state of development of financial markets is typically viewed as exogenously determined by legislation. Secondly, in underdeveloped economies, banks essentially constitute the whole of organized financial markets. Moreover, the most important role of banks in promoting growth is viewed as providing liquidity, and hence improving the composition of savings. Their last assumption is that economies with developed financial systems grow faster than otherwise similar economies which lack those systems. They show that the growth rate would be higher by introducing an intermediary to the endogenous growth models in two ways; while one is a model of intermediation and growth, the other is an intermediation and growth model with variable savings. The first model assumes that there is no scope for the savings rate to vary, in order to emphasize it is not necessary for intermediation to change total savings out of income to stimulate growth. In the second model, they take savings as non-trivial. Nonetheless, in each case, the effect of banks on the rate of growth is positive within the model. Consequently, they find that, when conditions are provided under which the introduction of intermediaries shifts the composition of savings toward the capital, intermediation is growth promoting.

Pagano (1993) employs the AK (Cobb-Douglas) model in a fundamental endogenous growth model to show that the steady state growth rate positively depends on the percentage of savings diverted to investment. Hence, one of the ways financial growth affects real growth is by transforming savings to investment. Berthelemy and Varoudakis (1996) present a model with banks acting as Cournot oligopolists to show that the steady state growth rate depends positively on the number of banks or the level of competitiveness of the financial sector. They find, differently from other studies, that education is a prerequisite of growth and, when the educational system is not successful, financial deficiency is a complication.

There are other researchers who also propose the negative influence of banks on growth. For instance, Morck and Nakamura (1999) and Morck *et al.* (2000) point out that bankers' surveillance on corporate governance is to ensure corporate borrowers do not default on their debt. This raises doubt concerning the reliability of bankers, given that, besides knowledge-based assets, they may encourage risk-averse behaviour in investment undertakings and promote excessive investment in tangible assets. This can restrain firms' opportunities to expand and exert a negative influence on economic growth. Therefore, the banking sector can have a negative influence on economic growth.

Cecchetti and Kharroubi (2012) investigate how financial development affects aggregate productivity growth. They show, firstly, that the level of financial deepening is positive only up to a point, then it becomes a burden on growth, and, secondly, that "the faster the financial growth, the slower the economic growth". These two findings are based on a sample of developed and emerging economies. They bring a different point of view to the understanding of financial growth and economic development by proposing that the financial sector competes for resources with the rest of the economy in terms of not only physical capital but also highly skilled workers.

Some of the more recent studies have started to question whether the banking sector has over-expanded. In particular, research conducted for the European Union (EU) countries presented the over-expanded banking which might have negative impacts on economies (Pagano & ESRB Advisory Scientific Committee, 2014). Questions about the nexus between finance and growth have been raised since the 2008 global crisis: "*Are there limits to financial development for growth and stability?*", "*Is there a right pace of development?*" (Sahay et al., 2015). Especially in advanced economies, where the crisis originated, the financial sector has expanded and become more complex. Some researchers show that the effect of financial development on economic growth weakens at higher levels of financial development. If financial development proceeds too fast, deepening financial institutions can cause instabilities in the economy. Even if there is a positive effect, that lasts only up to a threshold, beyond which the effect becomes negative (Rousseau and Wachtel, 2011; Manganelli and Popov, 2013; Gambacorta et. al., 2014; Sahay et al., 2015).

Economists are seeking for an explanation of economic growth processes, particularly for under-developed countries. Within this context, regional economic growth gains importance in the development process. Furthermore, the role that money plays in the growth process for developing countries, as well as in particular regions of countries, is open to question (Dreese, 1974). The link between regional growth and banking organization structure is more vital, and receives wide coverage in this paper. The organizational structure of agents forms their incentives (Hart and Moore, 2005). The model developed by Samolyk (1989) indicates that regional heterogeneity in financial conditions is an important mechanism for the generation of region-specific fluctuations. According to her model, bank investment in risky projects relies on the quantity of bank capital and the return on risk-free and risky projects. Consequently, aggregate output decreases when capital is distributed from a state of equally capitalized banks to one where some banks are overcapitalized while others are undercapitalized.

On one hand, part of the related literature is based upon an argument that branch banking creates a more stable banking system, by capacitating banks to widen and diversify their depositor base (Samolyk, 1992). Jayaratne and Strahan (1997) focus on the effects of the restrictions on the efficiency of the banking system. They find that bank efficiency is enhanced greatly when restrictions on branching are lifted. Carlson and Mitchener (2002) focus on an alternative way through which branch banking impacts financial stability, in terms of increased competition. They find that states which adopted branching laws experienced fewer failures in the 1920s and during the early years of the Great Depression.

On the other hand, other studies argue that decentralised banking works for regional economies. Dewatripont and Maskin (1995) show that decentralization provides financial discipline. They construct a credit model where unprofitable projects may be financed due to adverse selection. They show that credit decentralization offers a way for creditors not to allocate funds to such projects, so discouraging entrepreneurs from undertaking them initially. Stein (2002) develops two approaches which are applicable to the banking industry. The first is a decentralized approach, which is most likely to be attractive when information about the project is soft and cannot be transmitted. The second approach relates to large hierarchical firms, which perform better when information can be hardened and passed along inside the firm.

1.3. Research Motivation and Objectives

This thesis aims to answer the question: how do banking activities affect regional development? This is achieved in three papers. The first paper reviews the historical evolution of the Turkish economy and financial system. The second paper suggests a theoretical model of the effect of the banking system on regional economic growth. The third paper empirically examines the relationship between the banking system and regional economies, using data on 67 provinces of Turkey, between 1975 and 2013.

To grasp the dynamics of the growth process in Turkey, the key turning points in its recent economic history are reviewed. Turkey provides a unique setting to analyse the role of hierarchically structured banks in regional growth. Different from many European countries, USA, Japan, and some emerging countries, Turkey currently has no local banks. The decision centres or head offices of most banks are located in one city: Istanbul, which is accepted as the centre of finance. Another reason it is uniquely placed for this study is the persistence of regional imbalances throughout the history of the Republic of Turkey, despite all the regional development policies to provide balanced resource allocation and growth rate. The hierarchical institutional structure of the Turkish banking system determines the provision of regional banking services, as well as regional economic development. Therefore, the thesis presents a background paper that provides a historical overview of the Turkish economy and banking. The study investigates how the economy of Turkey has developed at a national level, while regional disparities have remained or deepened throughout the 1975-2013 period.

To this end, the first paper analyses historical data for the Turkish economy and banking system since the early 1930s. The period after the 1970s is addressed in a more comprehensive manner because: firstly, the Turkish economy has been particularly shaped and enhanced since the 1970s, and, secondly, data are widely available after this period. This chapter links the historical evolution of development policies, crises, and relevant historical facts with the other chapters by sketching out a detailed picture of the socio-economic and banking activities of the country.

The second paper models how to reallocate domestic savings more efficiently to obtain a balanced distribution of wealth between regions. The study suggests a reformulated endogenous growth model with financial intermediation, changing the definition of the financial system, namely the banks. In particular, unit banking and branch banking to the original settings are proposed. Prior theoretical models have endeavoured to examine economic growth, disregarding variations in the financial system. In these models, financial intermediaries are generally treated as unitary and the characteristics of their internal structure are ignored. For instance, in Bencivenga and Smith (1991) and Levine (1991), finance stimulates long-term growth by influencing the risk of investing in high return projects. However, their assumptions are based on unitary financial systems and perfect information, which is not the case in the real world. Alternatively, Stein's (2002) theory suggests different organisational structures work differently under soft and hard information conditions. Taking the underlying principles from Bencivenga and Smith (1991) and Stein (2002), the current study focuses on the issue of regional growth in hierarchical and decentralised cases when information is soft.

The prevailing gap in the aforementioned literature on growth models with financial intermediaries is that they do not consider the case of regional growth in the presence of different banking systems and different types of information in an economy. The second paper addresses this gap by modelling the effect of a hierarchical and decentralised form of bank on regional growth. Providing theoretical insights on this issue helps establish understanding of whether financial institutions have decreased or increased regional inequalities.

The third paper involves an empirical test of the predictions of the model developed in the second paper, employing the Generalised Method of Moments (GMM) techniques for dynamic panel data on Turkish provinces between the years 1975 and 2013. The role of financial intermediaries in economic growth is well established in finance and growth literature. Strong evidence of the link between financial development and growth at the crosscountry level, industry level and firm level has been provided. However, existing theoretical and empirical studies are yet to emphasise the link between financial intermediation and growth at a regional level. Hasan et al. (2009), for example, criticises cross-country studies because the samples cover very different economies, which causes heterogeneity problems. A solution offered by Higgins et al. (2006) is to concentrate on regions to observe the variations within the countries.

The main assumption in the literature is financial capital is perfectly mobile among provinces and hence plays a passive role in regional economic growth. However, studies by Roberts and Fishkind (1979), Moore and Hill (1982), Dow (1987), Hutchinson and Mckillop (1990), Harrigan and Mcgregor (1997), Amos and Wingender (1993) and Greenwald et al. (1993) show that financial activities differ from region to region, and capital is not perfectly mobile. These studies mainly argue that the presence of informational imperfections creates conditions under which regional interest rates may differ from the national rates.

In the third paper, we argue that banks with hierarchical organisation may hinder the positive impact of financial intermediation on regional economic growth. For instance, decentralised banks are situated locally, close to the investors, while hierarchical banks serve their clients through a network of branch offices or alternative distribution channels and establish local decision-making procedures that guarantee quick but satisfying decisions rather than effective solutions. Moreover, hierarchical banks may have limited information about local investment opportunities. Therefore, they may ignore or reject profitable local investment opportunities. In this study, further evidence is provided of the link between financial intermediaries and economic growth, by taking into account the activities of banks at the provincial level. The research examines how the branching system impacts regional economic growth. More precisely, it investigates the contribution of each bank in each province, the decision-making mechanism, and influence of banks on the relationship between financial intermediation and local output.

1.4. Contributions

The thesis makes several contributions to the existing literature in relation to understanding the dynamics of regional economic development and financial intermediaries. Contributions to the literature can be summarized as follows:

Second chapter (first paper) provides a comprehensive and updated historical review of the Turkish economy and evolution of the Turkish banking system.

Third chapter (second paper) fills a gap in the literature by investigating the impact of banking services on provincial growth, considering the effect of the structure of the banking system on the decision-making mechanism from a theoretical point of view.

Fourth chapter (third paper) contributes to the established literature by empirically analysing the regional impact of a hierarchical banking system, with a new definition of banking intermediation provincial and national level, using a unique data set.

1.5. Research Structure

The thesis comprises a general introduction, three papers, and a general conclusion. It is organised as follows:

The *Introduction* (Chapter 1) presents the main characteristics of the whole thesis. It also reviews the theoretical rationale and background of modern economic development theories, finance and economic growth relation.

In *the first paper* (Chapter 2), the evolution of the Turkish economy and financial system is summarised and a descriptive analysis of the historical data provided. The socioeconomic variables of the Turkish economy at a local and national scale are described, covering the period between 1975 and 2013. Some issues related to the data collection process are also discussed. In the data collection stage, data were gathered in line with theories of local economic growth and financial development, to understand the processes of regional growth in Turkey. Data analysis shows the role of banks as the dominant financial intermediary in this uneven growth.

In *the second paper* (Chapter 3), following a comprehensive literature review, two models are developed that distinguish different banking systems, such as the branch banking system and unit banking system. The model is constructed by enhancing the conventional endogenous growth model with financial intermediaries. Analysis shows that, due to the effect of the branch banking system, the growth gap between less developed and more developed regions will be higher.

In *the third paper* (Chapter 4), the relationship between banking activities and local economic growth is empirically investigated. Therefore, related previous studies are first summarised; then empirical analysis is conducted, using a unique data set of Turkish provinces, which has not been previously employed in the literature. The impact of banking activities on regional inequalities is assessed by investigating whether the gap between loans and deposits has an effect on the regional Gross Domestic Product (GDP) per capita gap. The chapter also includes a methodology and data section and results section.

Finally, Chapter 5 presents the policy implications of the findings, shortcomings of the study, and future research suggestions.

Chapter 2

Turkish Economy and Financial System

2.1. Introduction

The Turkish economy is one of the oldest and more developed among other emerging markets. Although the country has economic advantages, the banking system is still relatively small and far behind that of the developed economies. The Turkish Banking industry has not been able to achieve the desired level of performance due to chronic inflation, large budget deficits, caused by substantial public sector borrowing, dollarisation in the economy, capital inadequacy, inefficient regulation and supervision, and, most importantly, economic and political instabilities since liberalisation in the 1980s (Altunbas et.al., 2009).

The background of the Turkish economy and banking system is introduced through chronological analysis since the establishment of the Republic of Turkey. Thus, it is possible to observe how an emerging market progresses over a period of decades in a highly volatile political and economic environment. Discussion is supported with evidence from relevant literature, while the economic and banking figures are demonstrated by employing a comprehensive and diverse dataset, collected at a national and regional level.

The main purpose of this chapter is to investigate whether the regional economic policies and banking system policies in Turkey operate under parallel agendas. By doing so, the background for the thesis is established, as the effect of centralisation on regional growth is examined. Although a trend towards decentralisation is seen in regional economic policies, the national banking system adopts centralisation policies.

First, the data collection process is described in detail. Then, a framework for the evolution of the Turkish economy is created, with political stages, such as institution building, democratic party rule, economy-wide planning experience, Turkey-EU relations, liberalisation, focusing on the 1990-2000 period, and 2001-2013 period. The background of the financial sector in Turkey is also summarised in four phases; the first one is the period between 1945 and 1960, the second is the planned period, 1960-1980, the third is the financial liberalisation era, the 1980s, and the last one is from the 1990s and 2000s. The regional development history in Turkey is then reviewed. Lastly, the regional economic, demographic, and banking figures are described, using the data collected.

2.2. Data Collection Process

The variables that have been used so far in cross-country analysis are quite diverse and comprehensive. However, to generate such a data set and to conduct within-country analysis is challenging due to the data limitations. For the analysis in this thesis, the most recent, provincial and national data available have been collected for the time period between 1975 and 2013. Many problems were encountered in the data collection, typing and organisation progress.

It was extremely difficult to obtain this such a wide data set, particularly for the data before the 2000s, as these figures were not in digital format. For this reason, several research trips were made to Ankara and Istanbul, where many governmental bodies were visited, including the Grand National Assembly of Turkey (TBMM); Ministry of Education, Ministry of Finance, Ministry of Economics, Ministry of Development, Central Bank of Republic of Turkey (CBRT) and Bank of Municipalities (Ilbank) Head Office, Turkish Statistical Institute. The libraries of the Istanbul Chamber of Commerce and Istanbul Chamber of Industry, The University of Istanbul, Marmara University, Middle East Technical University, Bilkent University and Central Library in Ankara were also visited to collect the related provincial data. Phone calls made to the Ankara Chamber of Commerce. In addition, the researcher corresponded with several chambers of commerce of other provinces through e-mail. Several phone calls were made and correspondence exchanged with the largest state, private and foreign-owned banks, and Banking Regulation and Supervision Agency (BRSA) in Turkey.

The data set is composed of provincial, national and bank level data. The study's main variables are growth variables (GDP, SEDI); demographic variables (population, migration, education level, employment level); other control variables (government expenditure, investment incentives, tax income and expenditure, opened and closed enterprises), sectoral exports and imports, and banking variables. Provincial and sectoral level real GDP series for the years between 1975 and 1986 were only available as hard copies and the data were typed to Excel sheets. For 1987-2001 and 2004-2013 periods, the data were derived from the TURKSTAT database. GDP data for 2002 and 2003 are not available from any official bodies so figures were calculated by using the interpolation method. Investment incentive data were obtained from the Union of Chambers and Commodity Exchanges of Turkey (TOBB) for the years between 2000 and 2013. (The data before 2000 is not available online; however, data

between 1980 and 2000 were provided by Nuri Yavan, Associate Professor in Ankara University Faculty of Languages History and Geography.)

Banking data includes the number of branches per bank per province, provincial deposits and loans, bank level balance sheet and income statement variables from BAT, BRSA and CBRT. Aggregated loans and deposits at the provincial level are regularly published by BAT and are available for the 1984–2013 period, yet the researcher needed to calculate the banking ratios per bank, as well as loan and deposit per bank, for each province by employing the weighted average method.

The organisation of the data was as demanding as the collection. Since figures were only available as hard copies, it was laborious having to type up all of the variables for each of the 81 provinces of Turkey for the years between 1975 and 2000. In particular, Government expenditure data was very scattered, as the records were kept separately for districts and different sub-sectors. Therefore, for each province, it was necessary to go through all the districts and sum up data for all sectors to calculate the provincial level data. Sectoral export and import data were two other challenging areas to transfer to the digital platform. The code numbers and the customs offices, as well as the classification of almost a hundred different chapters, kept changing for each four to five year time period. The researcher had to sum up data for the different customs offices of the same province and convert the chapters to a standard classification, ISIC REV3 (International Standard Industrial Classification of All Economic Activities, Revision3).

Priority provinces for development (PPD) are determined by delegated legislation. Therefore, the data for each year from 1975 to 2013 were released in Official Gazettes. All the Gazettes for this period were examined to find the new provinces added and those removed from the list. Provincial demographic statistics, particularly education data, were also typed from hard copies to Excel sheets for all 39 years.

The population data was prepared and provided by TURKSTATS. However, since the population census was carried out in every five years before 2007, some of the variables were calculated using the interpolation method.¹

Using the collected series, the researcher calculated and embedded five-year averages of all the variables (provincial per capita GDP, growth, the ratio of high school and university graduates in provincial population, employment rate, per capita public investment, per capita

¹ A summary table for data sources are included in Appendix.

deposits, per capita specialized loans and per capita total loans) into the digital map of Turkey by employing ARCGIS mapping programme. In 1975, there were 67 provinces in Turkey, whereas in 2013 the number increased to 81. Thus, in the digital maps, the borders were collapsed to represent the 1975 situation.

The table below summarises all the data employed in the study and their sources.

Table 2.1. Sources of the Data according to Institution

Data	Data Source	Location of
		the Source
Socio- economic development indices (hard copy)	Provincial socio-economic development indices in turkey (63-70) ² Provincial and regional socio-economic development index in 1970. ³ Provincial and regional socio-economic development index in 1980. ⁴ Provincial and regional socio-economic development index in 1984. ⁵ Provincial and regional socio-economic development index in 1990 ⁶ Provincial and regional socio-economic development index in 1996. ⁷ Provincial and regional socio-economic development index in 2003. ⁸ Socio-economic development index in 2004. ⁹ Provincial and regional socio-economic development index in 2011. ¹⁰ health and socio-economic development studies summary report (1960- 2010) ¹¹	Republic of Turkey Ministry of Development
provincial government expenditures (hard copy)	Provincial government expenditure (1963-1981) ¹² Provincial government expenditure in 1982 ¹³ . Provincial government expenditure in 1983 ¹⁴ . Provincial government expenditure in 1984 ¹⁵ . Provincial government expenditure in 1985 ¹⁶ Provincial government expenditure in 198617. Provincial government expenditure in 1987 ¹⁸ . Provincial government expenditure in 1988 ¹⁹ . Provincial government expenditure in 1989 ²⁰ . Provincial government expenditure in 1990 ²¹ .	Republic of Turkey Ministry of Development

² Türkiye'de İller İtibariyle Sosyo-Ekonomik Gelişmişlik Endeksi (1963-1970)- Pub no. DPT: 1282-SPDZ: 52-1972

³ İllerin gelişmişlik Düzeylerinin Saptanmasında Bir Yöntem Denemesi (Taksonomi), Devlet Planlama Teşkilatı (1972). Ankara, Pub. No. SPO:1252

⁴ Hacıhasanoğlu, B. 1980. İller için Bir Gelişmişlik Göstergesi ve Sıralama. Başbakanlık Devlet Planlama Teşkilatı.

⁵ İl ve İlçelerin Ekonomik ve Sosyal Gelişmişlik Seviyelerinin Tespiti Araştırması, DPT, (1985), KOYB:30.

⁶ İllerin Ekonomik Ve Sosyal Gelişmişlik Seviyelerinin Tespiti Araştırması, DPT. (1991), KÖYBKGM.

⁷ Dinçer, B. & Özaslan, M. 1996. İllerin Sosyo-Ekonomik Gelişmişlik Sıralaması Araştırması. 2. Bsm, DPT, BGYUGM.

⁸ Dinçer, B., Özaslan, M., & Kavasoĝlu, T. 2003. *İllerin ve Bölgelerin Sosyo-Ekonomik Gelişmişlik Sıralaması Araştırması* (2003). TC Başbakanlık Devlet Planlama Teşkilatı.

⁹ İlçelerin sosyo-Ekonomik Gelişmişlik Sıralaması Araştırması. DPT, 2004, Ankara.

¹⁰ T.C. Kalkınma Bakanlığı (2011), İllerin ve Bölgelerin Sosyo-Ekonomik Gelişmişlik Sıralaması Araştırması (SEGE-2011), Ankara, (2013).

¹¹ Varlık, M. 2010. Türkiye'de Sağlık ve Sosyo-Ekonomik Gelişmişlik Araştırmaları (İller ve Bölgeler İtibariyle Göstergeler ve Bulgular) Özet Rapor (1960-2010), State Planning Organisation,

¹² Kutbay, C. (1982). Kamu Yatırımlarının Kalkınmada Öncelikli Yöreler ve Diğer İller İtibariyle Dağılımı: 1963-1981. State Planning Organization, Ankara.

¹³ SPO (1982), 1982 Programme, Investment Projects. Pub no. SPO: 1807, Ankara.

¹⁴ SPO (1983), 1983 Programme, Investment Projects. Pub no. SPO: 1887, Ankara.

¹⁵ SPO (1984), 1984 Programme, Investment Projects. Pub no. SPO: 1944, Ankara.

¹⁶ SPO (1985), 1985 Programme, Investment Projects, Ankara.

¹⁷ SPO (1985), 1986 Programme, Investment Projects. Ankara.

¹⁸ SPO (1987), 1987 Programme, Investment Projects. Ankara.

¹⁹ SPO (1988), 1988 Investment Programme. Ankara.

²⁰ SPO (1989), 1989 Investment Programme. Ankara.

²¹ SPO (1990), Sixth Five Year Plans (1990-1994) 1990 Investment Programme. Ankara.

	Provincial government expenditure in 1991 ²² . Provincial government expenditure in 1992 ²³ . Provincial government expenditure in 1993 ²⁴ . Provincial government expenditure in 1994 ²⁵ . Provincial government expenditure in 1995 ²⁶ . Provincial government expenditure in 1996 ²⁷ . Provincial government expenditure in 1997 ²⁸ . Provincial government expenditure in 1998 ²⁹ . Provincial government expenditure between 1999 and 2013 ³⁰ . Digital source. GDP deflators between 1975 and 2013, digital source ³¹ : obtained from	
Provincial investment incentives	ministry of development website. Provincial investment incentives since 1990 ³² Provincial investment incentives between 1968 and 1998 ³³ Provincial investment incentives between 1980 and 2000 provided by associate professor Nuri Yavan from Ankara University Faculty of Languages, History and Geography. Provincial investment incentives 2000 – 2013 ³⁴ .	Ministry of Economy
Provincial GDP by industry and sector (Hard Copy)	Provincial GDP by industry and sector between 1987 and 1994 ³⁵ . Provincial GDP by industry and sector 1995-1996 ³⁶ . Provincial GDP by industry and sector 1997 ³⁷ . Provincial GDP by industry and sector 1998-1999 ³⁸ . Provincial GDP by industry and sector 2000 ³⁹ . Provincial GDP by industry and sector 2001: Digital data provided by TURKSTATS.	TURKSTATS
Provincial GDP	Provincial GDP 1987-2001 and 2004-2013 TURKSTATS website (regional statistics)	TURKSTATS
Provincial GDP	Provincial GDP provincial GDP by industry and sector 1975, 76, 77, 78 ⁴⁰	Istanbul University Main Library
Provincial GDP	Provincial GDP provincial GDP by industry and sector 1979, 80, 81, 82, 83, 84, 84, 85, 86 ⁴¹ .	Istanbul Chamber of Industry

²² SPO (1991), Sixth Five Year Plans (1990-1994) 1991 Investment Programme, Ankara.

²³ SPO (1992), Sixth Five Year Plans (1990-1994) 1992 Investment Programme, Ankara.

²⁴ SPO (1993), Sixth Five Year Plans (1990-1994) 1993 Investment Programme, Ankara.

²⁵ SPO (1994), Sixth Five Year Plans (1990-1994) 1994 Investment Programme, Ankara.

²⁶ SPO (1995), 1995 Investment Programme, 2 Ocak 1995 Tarih, 22159, Mükerrer Resmi Gazete, Ankara.

²⁷ SPO (1996), Seventh Five Year Plans (1996-2000) 1996 Investment Programme, Ankara.

²⁸ SPO (1997), Seventh Five Year Plans (1996-2000) 1997 Investment Programme, Ankara.

²⁹ SPO (1998), Seventh Five Year Plans (1996-2000) 1998 Investment Programme, Ankara.

 ³⁰ <u>http://www2.Kalkinma.gov.tr/kamuyat/il.html</u>, accessed May 2014.
 ³¹ <u>http://www.kalkinma.gov.tr/Pages/EkonomikSosyalGostergeler.aspx</u> accessed 2015

³² İl Bazında Yatırım Teşvikleri Edition: 1. Ankara: Hazine Dış Ticaret Müsteşarlığı, 1991.

³³ Duran, Mustafa (1998), Türkiye'de Uygulanan Yatırım Teşvik Politikaları (1968-1998), Hazine Müsteşarlığı Araştırma ve İnceleme Dizisi, No. 19, Ankara: Hazine Müsteşarlığı

³⁴ <u>http://www.economy.gov.tr</u> accessed on 15/08/2015

³⁵ Gross Domestic Product By Provinces 1987-1994, State Institute of Statistics Prime Ministry Republic of Turkey- Pub no. 2066, October 1997

³⁶ Gross Domestic Product By Provinces 1995-1996, State Institute of Statistics Prime Ministry Republic of Turkey- Pub no. 2230, March 1999

³⁷ Gross Domestic Product By Provinces, 1997, State Institute of Statistics Prime Ministry Republic of Turkey- Pub no. 2276, August 1999

³⁸ Gross Domestic Product By Provinces, 1998-1999, State Institute of Statistics Prime Ministry Republic of Turkey- Pub no. 2515, December 2001, Ankara

³⁹ Gross Domestic Product By Provinces, 2000, State Institute of Statistics Prime Ministry Republic of Turkey- Pub no. 2582, May 2002, Ankara

⁴⁰ Erdogan, Ö. 1980. Turkiye Gayri Safi Yurtici Hasilasi (Iller Itibariyle) - Kaynak ve Yontemler (1975-1978). Basbakanlik Devlet Istatistik Enstitusu.

⁴¹ Erdogan, Ö. 1988. Turkiye Gayri Safi Yurtici Hasilasinin iller itibariyle Dagilimi 1979-1986, Istanbul Sanayi Odasi

	NOTE: Provincial GDP data for 2002 and 2003 are not published by the statistical authorities and academia. Therefore this data was calculated by author employing "Bootstrap Method"	
Provincial demographic figures; provincial employment by industry and sector (hard copy)	Provincial employment by industry and sectors 1975 ⁴² Provincial employment by industry and sectors 1980 ⁴³ Provincial employment by industry and sectors 1985 ⁴⁴ Provincial employment by industry and sectors 1990, 2000, 2007, 2008, 2009, 2010, 2011, 2012, 2013: digital data accessed form website of turkstats ⁴⁵ .	TURKSTATS
Provincial export and import (hard copy)	Provincial international trade according to international standard industrial classification (ISIC) in 1984 ⁴⁶ Provincial international trade according to ISIC in 1985 ⁴⁷ . Provincial international trade according to ISIC in 1986 ⁴⁸ . Provincial international trade according to ISIC in 1987 ⁴⁹ . Provincial international trade according to ISIC in 1988 ⁵⁰ . Provincial international trade according to ISIC in 1989-2013: Digital data provided by TURKSTATS. (Data set classified and reshaped by author according to ISIC REV 2) Provincial international trade between 2002 and 2013; digital data downloaded from TURKSTATS web site.	TURKSTATS
Provincial national education statistics	Provincial national education statistics primary education 1977-78 ⁵¹ . Provincial national education statistics primary education 1978-79 ⁵² . Provincial national education statistics primary education 1979-80 ⁵³ . Provincial national education statistics primary education 1980-81 ⁵⁴ . Provincial national education statistics primary education 1981-82 ⁵⁵ . Provincial national education statistics primary education 1982-83 ⁵⁶ . Provincial national education statistics primary education 1983-84 ⁵⁷ . Provincial national education statistics primary education 1983-84 ⁵⁷ . Provincial national education statistics primary education 1984-85 ⁵⁸ . Provincial national education statistics primary education 1984-85 ⁵⁸ .	TURKSTATS

⁵¹ Milli Eğitim İstatistikleri İlköğretim 1977-78, DIE, yay no. 906, August 1980, Ankara

⁴² Census of Population Social and Economic Characteristics of Population 26.10.1975, Publication, State Institute of Statistics Prime Ministry Republic of Turkey, No. 988, May 1982, Ankara

⁴³ Census of Population Social and Economic Characteristics, 12.10.1980, Publication, State Institute of Statistics Prime Ministry Republic of Turkey, No. 1072, May 1984, Ankara

⁴⁴ Census of Population Social and Economic Characteristics 20.10.1985, Publication, State Institute of Statistics Prime Ministry Republic of Turkey, No. 1369, April 1989, Ankara

⁴⁵ See, <u>www.turkstat.gov.tr</u>

⁴⁶ Foreign Trade Statistics, Prime Ministry State Institute of Statistics 1984, Ankara, April 1986, Pub no. 1149, Ankara

⁴⁷ Foreign Trade Statistics, Prime Ministry State Institute of Statistics 1985, Ankara, April 1987, Pub no. 1217, Ankara

⁴⁸ Foreign Trade Statistics, Prime Ministry State Institute of Statistics 1986, Ankara, March 1988, Pub. no. 1253, Ankara

⁴⁹ Foreign Trade Statistics, Prime Ministry State Institute of Statistics 1987, Ankara, April 1989, Pub. no. 1388, Ankara

⁵⁰ Foreign Trade Statistics, Prime Ministry State Institute of Statistics 1988, September 1990, Pub. no. 1430, Ankara

⁵² Millî Eğitim İstatistikleri İlköğretim 1978-79, DIE, yay no. 937, March 1981, Ankara

⁵³ Milli Eğitim İstatistikleri İlköğretim 1979-80, DIE, yay no. 961, December 1981, Ankara

⁵⁴ National Education Statistics Primary Education 1980-81, Prime Ministry State Institute of Statistics, Pub. No. 1030, January 1983, Ankara.

⁵⁵ National Education Statistics Primary Education 1981-82, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1056, January 1984, Ankara

⁵⁶ National Education Statistics Primary Education 1982-83, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1102, November 1984, Ankara

⁵⁷ National Education Statistics Primary Education 1983-84, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1176, April 1986, Ankara

⁵⁸ National Education Statistics Primary Education 1984-85, Prime Ministry State Institute Of Statistics, Turkey, Pub. No. 1191, September 1986, Ankara

⁵⁹ National Education Statistics Primary Education 1982-83, Prime Ministry State Institute Of Statistics, Turkey, Pub. No. 1232, May 1987, Ankara

Provincial national education statistics general secondary education 1976-	
78^{60} .	
Provincial national education statistics general secondary education 1978-	
79^{61} .	
Provincial national education statistics general secondary education 1979-	
80^{62} .	
Provincial national education statistics general secondary education 1980-	
81 ⁶³ .	
Provincial national education statistics general secondary education 1981-	
82^{64} .	
Provincial national education statistics general secondary education 1982-	
83 ⁶⁵ .	
Provincial national education statistics general secondary education 1983-	
84 ⁶⁶ .	
Provincial national education statistics general secondary education 1984-	
8567.	
Provincial national education statistics general secondary education 1985-	
8668.	
Provincial national education statistics higher education 1978-1979 ⁶⁹ .	
Provincial national education statistics higher education 1979-80 ⁷⁰ .	
Provincial national education statistics higher education 1981-82 ⁷¹ .	
Provincial national education statistics higher education 1982-83 ⁷²	
Provincial national education statistics formal education 1986-87 ⁷³ .	
Provincial national education statistics formal education 1987-88 ⁷⁴ .	
Provincial national education statistics formal education 1988-89 ⁷⁵ .	
Provincial national education statistics formal education 1989-90 ⁷⁶ .	
Provincial national education statistics formal education 1990-91 ⁷⁷ .	
Provincial national education statistics formal education 1991-92 ⁷⁸ .	

⁶⁰ Milli Eğitim İstatistikleri Ortaöğretim 1976-78, DIE, yay no. 938, March 1981.

⁶¹ Millî Eğitim İstatistikleri Ortaöğretim 1978-79, DIE, yay no. 972, Ankara, January 1982

⁶² Milli Eğitim İstatistikleri Ortaöğretim 1979 – 80, DIE, yay no. 968, Ankara, January 1982.

⁶³ National Education Statistics General Secondary Education 1980 – 81, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1082, January 1984, Ankara.

⁶⁴ National Education Statistics General Secondary Education 1981-82, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1075, June 1984, Ankara

⁶⁵ National Education Statistics General Secondary Educations 1982-83 School Year, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1125, April 1985, Ankara

⁶⁶ National Education Statistics General Secondary Educations 1983-84 School Year, Prime Ministry State Institute Of Statistics, Turkey, Pub. No. 1181, April 1986, Ankara

⁶⁷ National Education Statistics General Secondary Educations 1984-85 School Year, Prime Ministry State Institute Of Statistics, Turkey, Pub. No. 1227, March 1987, Ankara

⁶⁸ National Education Statistics General Secondary Educations 1985-86 School Year, Prime Ministry State Institute Of Statistics, Turkey, Pub. No. 1257, December 1987, Ankara

⁶⁹ Millî Eğitim İstatistikleri Yükseköğretim 1978-1979, DIE, yay no. 925, Ankara, 1980

⁷⁰ Milli Eğitim İstatistikleri Yükseköğretim 1979-80, DIE, yay no. 967, Aralik 1981, Ankara

⁷¹ National Education Statistics Higher Education 1981-82, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1058, January 1984, Ankara

⁷² National Education Statistics Higher Education 1982-83, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1101, November 1984, Ankara

⁷³ National Education Statistics Formal Education 1986-87, Prime Ministry State Institute Of Statistics, Turkey, Pub. No. 1291, October 1988, Ankara

⁷⁴ National Education Statistics Formal Education 1987-88, Prime Ministry State Institute Of Statistics, Turkey, Pub. No. 1391, October 1989, Ankara

⁷⁵ National Education Statistics Formal Education 1988-89, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1452, October 1991, Ankara

⁷⁶ National Education Statistics Formal Education 1989-90, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1491, December 1991, Ankara

⁷⁷ National Education Statistics Formal Education 1990-91, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1592, June 1993, Ankara

⁷⁸ National Education Statistics Formal Education 1991-92, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1681, June 1994, Ankara

	Provincial national education statistics formal education 1992-93 ⁷⁹ .	
	Provincial national education statistics formal education 1993-94 ⁸⁰ .	
	Provincial national education statistics formal education 1994-95 ⁸¹ .	
	Provincial national education statistics formal education 1995-96 ⁸² .	
	Provincial national education statistics formal education 1996-97 ⁸³ .	
	Provincial national education statistics formal education 1997-98 ⁸⁴ .	
	Provincial national education statistics formal education 1998-99 ⁸⁵ .	
	Provincial national education statistics formal education 1999-`00 ⁸⁶ .	
	Provincial national education statistics formal education 2000-`01 ⁸⁷ .	
	Digital data of provincial number of school, classroom, enrolled students,	
	teachers, literacy rate, primary school, secondary school, high school,	
	undergraduate, postgraduates provided by TURKSTATS.	
	Digital data: provided by TURKSTATS ⁸⁸ . National education statistics	
	formal education 2001-'02, 2002-'03, 2003-'04, 2004-'05, 2005-'06,	
	2006-`07, 2007-`08, 2008-`09, 2009-`10, 2010-`11, 2011-`12, 2012-`13.	
	Digital data provincial population between 1927 and 2000 provided by	
Provincial	TURKSTATS.	
Population-	Provincial immigration and emigration between 1977 and 2013; digital	TUDVCTATC
Immigration-	data is provided by TURKSTATS.	IUKKSIAIS
Emigration	Provincial population according to gender and according to administrative	
-	units. Digital data provided by TURKSTATS between 1935 and 2013.	
Provincial	Digital data of provincial census of industry and business establishments	
Census of	(newly established and closed) 1965-2009 provided from TURKSTATS.	
Industry and	Digital data: 2009-2013 of provincial census of industry and business	TUDVCTATC
Business	establishments the union of chambers and commodity exchanges of	IUKKSIAIS
Establishment	Turkey TOBB web site ⁸⁹ .	
S		
National	GDP and GDP per capita, national stats between 1923 and 2013 obtained	
Socio-	from TURKSTATS website.	
Economic and		TURKSTATS
Demographic		
Data		
Provincial Tax	Provincial Tax income and expenditure between 1990 and 2013	Ministry of
Income	downloaded from website of Ministry ⁹⁰	Finance
Interest rates	Interest rates on deposit before 1996 was provided by CBRT.	Central Bank of
on Deposit	Interest rates on deposit since 1996 obtained from CBRT website. ⁹¹ The	The Republic
and Loan	data set reflects the lower bound of interest rate is defined by the bank	of Turkey

⁷⁹ National Education Statistics Formal Education 1992-93, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1739, July 1995, Ankara

⁸⁰ National Education Statistics Formal Education 1993-94, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1867, May 1996, Ankara

⁸¹ National Education Statistics Formal Education 1994-95, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 1895, February 1997, Ankara

⁸² National Education Statistics Formal Education 1995-96, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 2078, December 1997, Ankara

⁸³ National Education Statistics Formal Education 1996-97, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 2221, March 1999, Ankara

⁸⁴ National Education Statistics Formal Education 1997-98, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 2304, May 2001, Ankara

⁸⁵ National Education Statistics Formal Education 1998-99, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 2536, May 2002, Ankara

⁸⁶ National Education Statistics Formal Education 1999-`00, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 2755, January 2004, Ankara

⁸⁷ National Education Statistics Formal Education 2000'01, Prime Ministry State Institute of Statistics, Turkey, Pub. No. 2897, June 2004, Ankara

⁸⁸ www.turkstat.gov.tr

⁸⁹ http://www.tobb.org.tr/BilgiErisimMudurlugu/Sayfalar/KurulanKapananSirketistatistikleri.php

⁹⁰ https://www.maliye.gov.tr/Sayfalar/Eng/AnaSayfa.aspx

 $^{^{91}} http://www.tcmb.gov.tr/wps/wcm/connect/TCMB+EN/TCMB+EN/Main+Menu/STATISTICS/Banking+Data/Maximum+Interest+Rates+on+Deposits$

	which charges the lowest level of interest and the higher bound is	(CBRT)
	determined by the bank which charges the highest interest on the deposits.	
	(maximum) interest rates on credits and monthly interest rates on credits	
	are obtained after correspondence with the bank and from electronic data	
	delivery system of central bank. ⁹²	
Priority	Priority provinces for development classification between 1970 and 2013	
provinces for	Priority provinces for development between 1975 and 2001 is obtained	
development	from Ministry of Development website ⁹³ .	
classification	Priority provinces for development 2001 ⁹⁴ .	
(Hard Copy)	Priority provinces for development 2002 ⁹⁵ .	
	Priority provinces for development 2003 ⁹⁶ .	
	Priority provinces for development 2004 ⁹⁷ .	
	Priority provinces for development 2005 ⁹⁸ .	Official Corretta
	Priority provinces for development 2006 ⁹⁹ .	Official Gazette
	Priority provinces for development 2007 ¹⁰⁰	
	Priority provinces for development 2008 ¹⁰¹ .	
	Priority provinces for development 2009 ¹⁰² .	
	Priority provinces for development 2010 ¹⁰³ .	
	Priority provinces for development 2011 ¹⁰⁴ .	
	Priority provinces for development 2012 ¹⁰⁵ .	
	Priority provinces for development 2013 ¹⁰⁶ .	

⁹² http://evds.tcmb.gov.tr/index en.html

⁹³http://www3.kalkinma.gov.tr/PortalDesign/PortalControls/WebIcerikGosterim.aspx?Enc=83D5A6FF03C7B4FC0B6C44 5B8568FF66

⁹⁴http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2000/10/20001017.htm&main=http://www.resmigazete.gov.tr/eskiler/2000/10/20001017.htm, 2000/1390, Bakanlar kurulu 21.09.2000 yılı Kararı.

⁹⁵http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2001/10/20011017m2.htm&main =http://www.resmigazete.gov.tr/eskiler/2001/10/20011017m2.htm, 17 October 2001 ÇARŞAMBA Sayı: 24556, 2. Mükerrer, Bakanlar Kurulu Kararı.

⁹⁶http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2002/10/20021017m1.htm&main =http://www.resmigazete.gov.tr/eskiler/2002/10/20021017m1.htm, 17 October 2002 Thursday Sayı: 24909 (Mükerrer), Bakanlar Kurulu Kararı.

⁹⁷http://www.resmigazete.gov.tr/eskiler/2003/10/20031021.htm&main=http://www.resmigazete.gov.tr/eskiler/2003/10/20031021.htm, 2003/1021, Mükerrer, Bakanlar Kurulu Kararı.

⁹⁸http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2004/10/20041001.htm&main=ht tp://www.resmigazete.gov.tr/eskiler/2004/10/20041001.htm, 19 October 2004 SALI Sayı: 25618,Bakanlar Kurulu Kararı.
⁹⁹http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2005/10/20051019-

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¹⁰⁰ http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2006/10/20061019-

^{8.}htm/20061019.htm&main=http://www.resmigazete.gov.tr/eskiler/2006/10/20061019-8.htm, 19 October 2006 Thursday Resmî Gazete Sayı: 26324 Bakanlar Kurulu Kararı.

¹⁰¹ http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2007/10/20071018-1.htm/20071018.htm&main=http://www.resmigazete.gov.tr/eskiler/2007/10/20071018-1.htm, 18 October 2007, Resmî Gazete Sayı: 26674, Bakanlar Kurulu Kararı.

¹⁰² http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2008/10/20081018-4.htm/20081018.htm&main=http://www.resmigazete.gov.tr/eskiler/2008/10/20081018-4.htm, 18 October 2008, Cumartesi Resmî Gazete Sayı: 27028, Bakanlar Kurulu Kararı.

¹⁰³http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2009/10/20091017M1-

^{1.}htm/20091017M1.htm&main=http://www.resmigazete.gov.tr/eskiler/2009/10/20091017M1-1.htm, 17 October 2009 Saturday Resmî Gazete Sayı: 27379, (Mükerrer) Bakanlar Kurulu Kararı.

¹⁰⁴http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2010/10/20101017-1.htm/20101017.htm&main=http://www.resmigazete.gov.tr/eskiler/2010/10/20101017-1.htm, 17 October 2010 Resmî Gazete Sayı: 27732 Bakanlar Kurulu Kararı.

¹⁰⁵ http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/eskiler/2011/10/20111018M1-

^{1.}htm/20111018M1.htm&main=http://www.resmigazete.gov.tr/eskiler/2011/10/20111018M1-1.htm, 18 October 2011 Tuesday Resmî Gazete Sayı: 28088 (Mükerrer) Bakanlar Kurulu Kararı.

¹⁰⁶ http://www.resmigazete.gov.tr/eskiler/2006/10/20061019-8.htm, 19 October 2006, Thursday, Resmî Gazete Sayı: 26324 Bakanlar Kurulu Kararı.

Banking activities	Regional and national banking data including; balance sheets, income statements and ratios of banks, provincial banking data; number of branch, provincial loans and deposits between 1975 and 2013 ¹⁰⁷ . NOTE: The regional banking data are consolidated among banks. The amount of loans and deposits are not publicly available per bank for each region. Fortunately BAT shares the number of each bank's branches per province. Therefore weighted averages of provincial loans and deposits are calculated using the number of branches per province.	Banking Association of Turkey
	are calculated using the number of branches per province	

¹⁰⁷ Banks in Turkey 1975. The Banks Association of Turkey, 1976, Istanbul. Banks in Turkey 1976. The Banks Association of Turkey, 1977, Istanbul. Banks in Turkey 1977. The Banks Association of Turkey, 1978, Istanbul. Banks in Turkey 1978. The Banks Association of Turkey, 1979, Istanbul. Banks in Turkey 1979. The Banks Association of Turkey, 1980, Istanbul. Banks in Turkey 1980. The Banks Association of Turkey, 1981, Istanbul. Banks in Turkey 1981. The Banks Association of Turkey, 1982, Istanbul. Banks in Turkey 1982. The Banks Association of Turkey, 1983, Istanbul. Banks in Turkey 1983. The Banks Association of Turkey, 1984, Istanbul. Banks in Turkey 1984. The Banks Association of Turkey, 1985, Istanbul. Banks in Turkey 1985. The Banks Association of Turkey, 1986, Istanbul. Banks in Turkey 1986. The Banks Association of Turkey, 1987, Istanbul. Banks in Turkey 1987. The Banks Association of Turkey, 1988, Istanbul. Banks in Turkey 1988. The Banks Association of Turkey, 1989, Istanbul. Banks in Turkey 1989. The Banks Association of Turkey, 1990, Istanbul. Banks in Turkey 1990. The Banks Association of Turkey, 1991, Istanbul. Banks in Turkey 1991. The Banks Association of Turkey, 1992, Istanbul. Banks in Turkey 1992. The Banks Association of Turkey, 1993, Istanbul. Banks in Turkey 1993. The Banks Association of Turkey, 1994, Istanbul. Banks in Turkey 1994. The Banks Association of Turkey, 1995, Istanbul. Banks in Turkey 1995. The Banks Association of Turkey, 1996, Istanbul. Banks in Turkey 1996. The Banks Association of Turkey, 1997, Istanbul. Banks in Turkey 1997. The Banks Association of Turkey, 1998, Istanbul. Banks in Turkey 1998. The Banks Association of Turkey, 1999, Istanbul. Banks in Turkey 1999. The Banks Association of Turkey, 2000, Istanbul. Banks in Turkey 2000. The Banks Association of Turkey, 2001, Istanbul. Banks in Turkey 2001. The Banks Association of Turkey, 2002, Istanbul. Banks in Turkey 2002. The Banks Association of Turkey, 2003, Istanbul. Banks in Turkey 2003. The Banks Association of Turkey, 2004, Istanbul. Banks in Turkey 2004. The Banks Association of Turkey, 2005, Istanbul. Banks in Turkey 2005. The Banks Association of Turkey, 2006, Istanbul. Banks in Turkey 2006. The Banks Association of Turkey, 2007, Istanbul. Banks in Turkey 2007. The Banks Association of Turkey, 2008, Istanbul. Banks in Turkey 2008. The Banks Association of Turkey, 2009, Istanbul. Banks in Turkey 2009. The Banks Association of Turkey, 2010, Istanbul. Banks in Turkey 2010. The Banks Association of Turkey, 2011, Istanbul. Banks in Turkey 2011. The Banks Association of Turkey, 2012, Istanbul. Banks in Turkey 2012. The Banks Association of Turkey, 2013, Istanbul. Banks in Turkey 2013. The Banks Association of Turkey, 2014, Istanbul.

2.3. Introducing the Turkish Economy

Following the establishment of the Republic of Turkey in 1923, successive governments have faced serious challenges in the reconstruction of a war-torn economy. The renegotiation and servicing of a very large external debt, and dismantling of the remaining portions of capitulations, have been among the problems that needed to be resolved (Celasun and Rodrik, 1989). This section will discuss the evolution of the Turkish Economy since institution building in the early stages of its establishment to recent times.

2.3.1. Institution building: 1923-1950

In the early years of establishment, the majority of financial institutions and existing small industries and private enterprises were not very strong due to the lack of technological skills and capital, in spite of the attempts of politicians to support the private sector¹⁰⁸. The influence of continental European, principally German, economic thought was very strong, and still has a significant impact on the Turkish Economy and political structure. For this reason, the state was the leading actor in the production of goods and services. State Economic Enterprises (SEEs) were founded to meet the deficit of capital accumulation. Private enterprises also started to emerge and manifest themselves via contracts with the state (Öniş, 2003).

Turkey instituted a new set of policies which placed an emphasis on importsubstituting industrialization in order to offset the adverse impact of the global economic depression. The policies were successful in resource mobilization and generated growth. Major investment projects were implemented within the framework of the first industrial plan in the 1934-38 period, with the new formulation of an official ideological position, called etatism¹⁰⁹ (statism). Etatism played an important role in the savings generations and in carrying out key entrepreneurial functions in industrial growth and technological improvement. This considerable anti-market bias foreign trade regime and financial system lasted until the liberalisation episode of the 1980s.

¹⁰⁸ "The Encouragement of Industry Law" (Teşvik-i Sanayi Kanunu) in 1927.

¹⁰⁹ Etatism is a mixed economy system that is midway between Soviet- style comprehensive planning and a Western-style market economy system. Etatism was accepted by the Turkish government as an economic policy following the Great Depression of 1929. With the new policy, the Turkish state had the power to intervene for economic development and the formation of a national economy through banking and state-led industrial investments and transportation investments, especially, railway building. See Birtek (1985) for more information.

During World War II (WW2), Turkey started to lose political energy and, faced with the subversive effects of the war, experienced a severe commodity crisis, black markets and high inflation, in spite of politicians' efforts to stay neutral, while leaning towards the allied powers.

After the war, Turkey obtained access to Marshall Plan aid, which was partly based on defence considerations. However, the conditions of the foreign aid programs required a policy shift in economic priorities from industrial development towards primary production, as called for by the newly emerging perceptions of the optimal division of labour in Europe. Furthermore, against the backdrop of rising domestic discontent with one-party rule, the government initiated change toward a multi-party parliamentary system.

A draft five-year plan was aborted and industrialisation objectives were pushed aside in late 1940. Government policies began to support agricultural expansion and free enterprise, following a major exchange rate adjustment in 1946. Annual GDP growth rates have been estimated at 7.4 percent, 1.2 percent, and 7.39 percent for the periods 1923-1938, 1938-48, and 1948-53, respectively (Celasun and Rodrik, 1989).

2.3.2. Democratic Party Rule and Economy-Wide Planning : 1950-1973

The Turkish parliament shifted from one-party rule to the multi-party era with the general elections in May 1950. Subsequent to WW2, privatization emerged, while agriculture and infrastructure development, foreign capital entry, foreign aid, as well as trade liberalisation, were encouraged. The Turkish economy grew rapidly in the early 1950s with the help of a sharp rise in agricultural output and primary exports. State investments increased, especially in the irrigation, textile, energy, transport, iron and steel, rubber, cement, and sugar industries. An 11.1 percent growth rate was achieved until 1953.

However, this rise paused when the massive crop failure happened in 1954. Gross National Product (GNP) growth fell to 4 percent per year during 1953-58. Inflation rates increased as a result of the central bank financing of public enterprise deficits and agricultural support purchases. An International Monetary Fund (IMF) stabilization and devaluation program was introduced mid-1958, also supported by a substantial package of external financial assistance and debt consolidation under a multilateral agreement (Celasun and Rodrik, 1989).

Another reason for the declining performance of the economy was the utilization of the Central Bank's resources to fund government investments. Moreover, insufficient foreign currency reserves for imports of inputs caused a high devaluation rate of the domestic
currency from TL 2.8/USD to TL 9/USD (Banking Association of Turkey (BAT), 1999a). A Democratic Party ruling led to a military intervention in May 1960.

The rapid and uncontrolled expansion of the Turkish economy started in the period between the 1950s and 1960s, resulting in the country's first major macroeconomic crisis of the post-war period. The liberalization policies of the Democratic Party came to an end in the early 1960s with the introduction of a 20-year-programme called Import Substitutions Industrialization (ISI) after the military coup (Öniş, 2003).

Turkey once again was able to achieve higher rates of economic growth through trade restrictions, government-determined interest rates, and an overvalued foreign currency regime (in order to maintain low costs for supported sectors). The Turkish government promoted industrialisation, particularly supporting the manufacturing sector (Altunbas et al., 2009).

One of the most notable characteristics of this period was its plans and annual programmes required by new economy-wide planning policies. The State Planning Organization¹¹⁰ (SPO) was founded in 1960 to develop regional economic policies via the creation of five-year development plans (FYDP)¹¹¹. The plans consist of consolidation of government accounts, balanced macroeconomic projections, and sector-level consistency projects. Besides providing the compulsory guidelines for the public sector, the plans were indicative for the private sector (Fry, 1971).

¹¹⁰ The Undersecretariat of the State Planning Organisation was restructured as the Ministry of Development in 2011 with Decree Law No. 641.

¹¹¹ Detailed information about FYDPs is given in the regional growth section.



Figure 2.1. National GDP Annual Growth Rate, 1963-1973

With this new planning strategy, the style and effectiveness of economic development policy improved considerably from 1962 onward, giving a greater importance to noninflationary resource mobilization and industrialization. Average annual GDP growth for 1963-73 increased to 6.7 percent. As seen in Figure 2.1, the decline starts in 1963, from 9.07 percent to 2.82 percent in 1965. In 1966 there is a sharp increase to 11.2, which is the best figure for the period. The second highest growth rate is observed in 1972, with 7.43 percent.

During the first (1963-67) and the second plans (1968-72), the policy emphasis on domestic savings performance was successful, resulting in economy-wide marginal savings ratios of 32 and 26, respectively. Moreover, the public sector share in total domestic savings was about 45-50 percent, which shows the leading role of the government in development programs.

An IMF-supported stabilization program was adopted in August 1970, involving a maxi-devaluation in order to prevent the emergence of a payments crisis. The liberalization targets of this program were largely abandoned after the partial intervention of the military in March 1971. Although it was not a complete takeover, the intervention produced a highly unstable political and economic structure after 1971 (Celasun and Rodrik, 1986).

In the positive atmosphere of the worldwide economy and a trade boom in the early 1970s, with devaluation Turkey experienced an increase in exports, as well as an expansion in GNP from 1971 to 1973. Another notable development was the surge in remittances from Turkish workers abroad, whose emigration had accelerated in the late 1960s.

A third plan (1973-77) was adopted in the light of an unprecedented rise in foreign exchange reserves with the objective of import-substituting industrialization in capitalintensive sectors. The planned growth was seen as part of a major national effort to broaden the productivity of the country for more effective integration with the European Economic Community (EEC).

By the late 70s, the oil shock and the Cyprus crisis hit Turkey, and growth suffered heavily, with two years of real contraction, and income distribution turned against urban workers and the peasantry. Turkey found itself in a major debt crisis, which involved several years of chaotic negotiations with creditors and long cycles of rescheduling agreements to resolve. In spite of economic growth in the period 1963-1973, a series of problems arose consecutively, including the failure of the ISI regime, due to the high dependency of industrial production on the import of inputs. This caused a serious foreign exchange shortage, and was followed by problems in the balance of payments.

2.3.3. Turkey-European Union Relations and Liberalisation Era (1973-1989)

Turkey and the EU negotiated and signed the Association Agreement, also known as the Ankara Agreement, in September 1963, which envisaged two consecutive stages (preparatory and transitional) before Turkey's full membership status. Upon the completion of the preparatory stage, the Additional Protocol was signed in November 1970, which became effective at the beginning of 1973. The protocol specified the ground rules for the transitional stage, which projected the establishment of a customs union before full membership.

Turkey and the EU mutually agreed to remove tariff and nontariff barriers (NTBs) for manufactured exports, except for trade of textiles and clothing, in which Turkey had a comparative advantage¹¹². This trade later came under the EU textile policy in the framework of the Multi-Fiber Agreement. The EU contributed a gradual opening of the Turkish economy to European competition, contrary to the established policy of planned national economic development by way of import substitution (Kramer, 1996).

The effect of etatism on the economy started to decrease considerably after the liberalisation policies of the 1980s. The economic policy evolved from etatism, which involves a highly regulated and controlled mixed economy, to a neoliberal free market

¹¹² Since Turkey EU relations is area very complicated, only a brief summary of the first stages of integration is provided. See "Öniş (2003) for more information.

economy, integrated with rest of the world. The economy adopted a new adjustment policy with a greater reliance on export expansion and market forces, which produced an exportoriented recovery and acceptable degree of creditworthiness. The new policies were implemented with an export drive and foreign capital inflow, and were strongly backed by the IMF, World Bank, and OECD consortium.

In order to resolve the problems that emerged in the 1970s, a package of economic stability measures was adopted in January 1980, and is known as the January 24 Decisions. The first objective of the reform program was the stabilization of the economy; the second was the amendment of the inward-oriented import strategy to an export-oriented one (Aricanli and Rodrik, 1990).



Figure 2.2. Annual Growth Rate between 1980 and 1989

Figure 2.2 presents the GDP growth rate between 1980 and 1989. It can be seen that there was an upward trend, with small fluctuations, until 1987, when the rate reached its peak at 9.49 percent. Subsequently, in 1988, it dropped sharply to just 2.32 percent.

The complementary role of the private sector was also observed in this period. The new focus of public investments, therefore, was infrastructure activities; for example, transportation, communication and energy. Later, in 1987, these changes helped Turkey's application for full membership of the EU. The private investment to GNP ratio rose from 12.8 percent in the 1980s to 18.1 percent in the 1990s. However, the same progress was not

Source: World Bank

observed in the public investment to GNP ratio, which fell from 8.8 to 6.2 percent by the end of the 1980s, due to macroeconomic instabilities (Ismihan et al., 2002).

Günçavdi et al. (2003) point out that the exchange rate regime was changed significantly from the fixed rate regime to a flexible one, with increased dependence on market forces. The government not only promoted exports but also eliminated quantitative controls on imports, such as the licensing system and quotas. The resource gap between savings and investments, as a share of GNP, dropped from 5.2 percent between 1977 and 1980, falling to 1.2 percent in 1981-1983, and 0.6 percent between 1984 and 1988.



Figure 2.3. Annual Export Growth between 1970 and 2014

Source: TSTATS

Turkey received new lending and debt relief between 1980 and 1984. External debt began to increase again when debt relief terminated in 1984. For this reason, domestic borrowing rose dramatically at high real rates of interest (Boratav and Akyuz, 2002).

Figure 2.3 illustrates the export performance of Turkey between 1970 and 2014. As can be seen, the highest export growth within this period is observed in 1981. Apart from 1983, 1986 and 1989, Turkey experienced positive growth rates between 1980 and 1990.

After 1984, the government introduced new reforms, in order to consolidate the liberal economic system. These changes can be summarised as: a decline in government intervention, relaxation in foreign exchange, and creation of trade and tax regulations in favour of market liberalisation. The incentives targeted foreign direct investments (FDI) and the government

started to privatize the SEEs. Moreover, controls on market interest rates were lifted to support private savings (Demir, 2002). The new changes were, in fact, mostly reflected in regional plans that identified potential sectors for the acceleration of development and effective use of local resources¹¹³.

2.3.4. Recent Times (1990 - 2015)

The characteristic feature of the 1990s is a high degree of fluctuation in annual GDP growth rates (see Figure 2.4). The Gulf crisis created a problems for Turkey, since economic relations with Iraq were seriously damaged. A second shock hit the economy in 1994, after the mismanagement of interest rate programmes.



Figure 2.4. Annual Growth Rate of GDP between 1990 and 2000

On the other hand, Turkey developed diplomatic and economic relations with the independent Turkic states of Azerbaijan, Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan, after the demise of the Soviet Union in December 1991 (Onder, 2008).

Moreover, the EU-Turkish customs union came into force in December 1995 because of the proposal to transport Caspian oil to Turkey, and then to Europe¹¹⁴. This was an important step in Turkey's liberalization of foreign trade. The price ceilings on goods and

Source: World Bank

¹¹³ Regional reforms are discussed in detail in further sections.

¹¹⁴ Importance of the large Caspian oil reserves and the intermediary role of Turkey was acknowledged by a declaration of the European Council, at the biannual summit meeting of the EU's heads of state and government, at its Lisbon Meeting in June 1992. It was stated that "the Turkish role in the present European political situation is of the greatest importance".

services, and other distortions in product markets, were removed and the financial sector was deregulated.

The Turkish state's ability to provide direct support to high-tech exports was restricted due to certain regulations after the World Trade Organization (WTO)'s agreements (following the Uruguay trade round), and the EU customs union agreement (Onder, 2008). Thus, Turkey exported relatively low tech type of goods.

The government declared 1996 as "the year of the SMEs" and aimed to utilize their export potential. Industrial policy was modified to subsidize the research and development (R&D) and marketing activities of SMEs. For this reason, Eximbank was instructed to allocate a greater share of credit to these firms because SMEs are adaptable to economic changes and innovations, and have a high potential to create jobs¹¹⁵.

Although, Turkey started to develop relations with non-EU and Asian countries (for example, Russia) after the mid-1990s. However, due to Turkey's increased gas imports, cheap Chinese textile exports, and the Asian and Russian crises after 1997, many sectors, such as construction and leather, were damaged.

Furthermore, failure to control fiscal deficits became a major problem in a volatile economy with very high inflation rates. Altinkemer (2001) argues that another weakness was the exceptional treatment of state banks, which created duty loss. Alper and Onis (2003) also state that Turkey did not accomplish a steady macroeconomic environment and a sound regulatory basis for capital account deregulation to provide a sustainable economic growth.

A three-year macroeconomic program was introduced with the contribution of the IMF to promote a more stable environment for economic growth at the end of 1999. However, this program collapsed in early 2001. Turkey then had to adopt another stabilization program under the supervision of the IMF and World Bank to strengten the economy.

The liquidity crisis of 2000 severely affected the economy. Barely one year later, in 2001, the Turkish lira came under pressure, and the country suffered its most serious financial and economic crisis since WW2. According to Ozkan (2005), one main reason for the vulnerability was the weak external position, caused by excessive levels of debt payments. There was also a loss of competitiveness due to high inflation rates, which were a clear symptom of the coming currency crisis. Another reason for the crisis was the record levels of

¹¹⁵See: the 7th five-year plan 1996-2000,

http://www.kalkinma.gov.tr/Lists/Kalknma%20Planlar/Attachments/3/plan7.pdf

interest rates on domestic borrowing, which placed a burden on public finances and had consequences for the banking system which was already fragile.

In May 2001, a new IMF stand-by agreement was signed by the government. The economic programme was put into practice, consisting of new measures addressing export, SMEs and the financial problems of companies. Thanks to the new programme, improving innovation systems and encouraging new entrepreneurs became significant factors in the policy agenda. Innovations, investments and exports were highlighted and positioned in the new industrial policy. New regulations went into effect on July 6, 2001, setting out the support of R&D activities as sources of innovation in production.

In order to develop a general framework for industrial policy, the "Industrial Policy for Turkey" document was prepared in 2003, relying on the 8th FYDP. In addition to the internal policies, two Accession Partnership Documents were also accepted by the European Commission in this period.

Turkey was required to develop the classification of the Nomenclature of Territorial Units for Statistics (NUTS) as a basis for the introduction of Regional Development Agencies (RDAs). The EU also demanded the development of a national policy aiming to reduce regional imbalances and adoption of a legal framework that would facilitate the implementation of EU regional policy (European Commission, 2003a). Fortunately, these tight monetary and fiscal policies did not have any restrictive effect on economic growth. In contrast, they contributed positively to economic growth by means of improving public balances and promoting sustainable price stability.

Structural reforms and positive circumstances in international markets helped the Turkish economy to grow markedly in the period between 2004 and 2006. Figure 2.5 shows that, except for the crisis year 2001, positive growth rates were observed, with the highest rate of 9.36 percent occurring in 2004.



Figure 2.5. Annual GDP Growth Rate between 2001 and 2008

Source: World Bank

The rise in productivity was another of the remarkable indicators of structural change in the Turkish economy between 2002 and 2006. Productivity per worker increased and became an important element supporting GDP growth.

In early 2007, however, the uncertainty in domestic markets and increasing real interest rates in 2006 had negative effects on the economy. EU membership became increasingly problematic. France, supported by Germany, proposed privileged partnership as an alternative to full membership. Over this period, Turkey continued to specialise in standard technologies and export-based growth strategy. On the macro-basis, a significant shift towards growth has been realized, where macroeconomics has become more dependent on monetary policy.



Figure 2.6. GDP Growth Rate in the 2009-2015 Period

Figure 2.6 illustrates the GDP growth rate between 2009 and 2015. Following a negative value in 2009, the rate reached a peak of 9.16 percent in 2011, and fell to its lowest level in 2012 with 2.2 percent. The 2008 crisis hit Turkey with a decline of the real GDP by 4.82 percent. After the fluctuations in 2010 and 2011, GDP growth dropped to 2.12 percent and 4 percent in 2012 and 2013, respectively. Apart from 2009, investment expenditure claims about 20 percent of the GDP. Private savings fell below 10 percent by 2013.

Furthermore, monetary policy targeted inflation, whereby the CBRT aimed to attain price stability at a low rate of inflation by using the policy interest rate instrument. Therefore, the overall ascendance of finance over the real economy is observed within this period. The persistence of real interest rates caused an attraction of flows of short-term finance capital over 2003 and 2008, which also continued in the 2010s. CBRT decided to keep the current account deficit to GDP ratio below the 6 percent threshold through the use of unconventional measures to fight the financial instabilities associated with external debt financing. Nevertheless, the current account deficit to GDP rose to 10 percent by 2012. Fortunately, the burden of external debt as a ratio to the GNP was maintained at approximately 45 percent, due to both the rapid growth of the GNP and appreciation of the Lira over the period.

Turkey's post-crisis adjustment follows the steps of many developing countries, which are dependent upon foreign capital and conditioned to maintain investor confidence and international creditworthiness (Erinç and Ünüvar, 2016). For this reason, the new policies will continue to be restricted to a balanced budget, constant fiscal expenditures, and contractionary monetary policy, alongside an ex-ante commitment to high real interest rates, unless the necessary measures are taken.

To sum up, the global financial crisis has shown that there are lessons for the Turkish Economy to learn, as it is a financially open economy with many vulnerabilities. The policymakers not only need to guard against domestic crises but also against financial instabilities from outside the country, especially if a policy of openness is adopted. Another lesson is that Turkey's dominant growth strategy can neither be sustained nor raise enough employment. Therefore, Turkey has, in particular, to learn to reduce its reliance on external borrowing (Rodrik, 2012).

	Between 2001 &2008 Crisis	Global Crisis & After Crisis Period						
	2003-2008	2009	2010	2011	2012	2013		
GDP per capita (USD)	10444	8561	10003	10428	10459	10807		
GDP growth (percent)	5.88	-4.82	9.15	8.77	2.12	4.00		
Consumption expenditure as percent of GDP	69.84	71.46	71.69	71.18	70.19	70.87		
Investment expenditure as percent of GDP	21.78	14.93	19.52	23.55	20.13	20.62		
Private savings as percent of GDP	16.90	18.00	12.30	10.70	11.60	9.70		
Budget balance as percent of GDP	-3.25	-5.50	-3.60	-1.40	-2.10	-1.20		
Non-interest budget balance as percent of GDP	4.60	0.05	0.75	1.88	1.34	2.02		
Public domestic debt stock as percent of GDP	35.50	34.64	32.11	28.42	27.27	25.81		
Exports (bn \$)	84.79	109.64	120.91	143.39	163.22	163.37		
Imports (bn \$)	132.54	134.49	177.31	232.53	228.55	243.39		
Current account balance (bn \$)	-26.16	-13.40	-45.42	-75.08	-48.49	-65.07		
Current account balance (percent of GDP)	-4.75	-2.27	-6.30	-9.70	-6.17	-7.40		
Total external debt (bn \$)	202.67	268.93	291.91	303.91	339.04	389.50		
Total external debt (percent of GDP)	39.91	43.73	39.85	39.34	43.07	47.29		
Consumer prices (annual change)	11.81	6.50	6.40	10.40	6.16	7.32		
Real interest rate	11.80	0.01	0.01	-0.02	-0.44	-0.74		
Exchange rate	88.70	87.70	79.37	89.29	86.21	87.72		

 Table 2. 2. Comparison of Macroeconomic Variables between the two crises and after

 the crisis period

Source: Turkish Statistical Institute (TURKSTATS), Ministry of Development database, and CBRT

2.4. Background of Financial Sector in Turkey

As one of the largest emerging economies, Turkey is one of the oldest hubs of economic activity and has historic links with the markets of Asia and Europe. Nevertheless, the Turkish financial system has been little explored. In this section, an overview of the evolution and structure of the Turkish financial sector are presented.

The financial sector in Turkey is composed of five fundamental elements. The first consists of the regulatory institutions, such as the Banking Regulation and Supervision Agency, Security Exchange Commissions, and Treasury Insurance Supervisory Agency. A second element is the financial institutions, including the banking industry, capital market institutions, insurance companies, and other financial institutions (factoring companies, leasing companies, consumer financing companies). Thirdly, the financial sector has monetary authorities: the CBRT and Treasury. A fourth element comprises the associations, such as the Bank Association of Turkey and Participation Bank Association of Turkey. The last component is the stock exchange market, also known as Borsa Istanbul (BIST). In the following sections, the evolution of the Turkish financial system will be discussed in detail in the light of historical events.

Among all the components in the Turkish financial system, the banking sector carries out almost all of the capital and money market transactions and activities in the economy. Figure 2.7. illustrates that the largest share in the financial system belongs to the banking sector at all times. There is not a strong alternative that could meet the funding needs of the investors within the financial sector other than the banks.



Figure 2.7. Balance Sheet Size of Turkish Financial Institutions (2002 - 2010)

Source: BRSA, ACMIIT, CMB, AIRCT, CBRT Financial stability reports; 2007, 2008, 2009, 2010.

There are three main factors that explain why the banking sector plays such an important role in the Turkish financial system. Firstly, to fund development plans and annual programmes, banks were the intermediaries that turned resources into long-term investments. Secondly, the policy makers extensively adopted continental European banking regulations. Thirdly, there has been a lack of efficient capital markets.

In this study, the Turkish banking system is investigated by analysing four stages of development. These stages are classified as; the 1945 to 1960 period; the planned period, 1961 to 1980; the liberalisation period, 1980 to 2000; and the deregulation period, 2001 to 2013.

2.4.1. 1945-1960 Period

The small and local banks having low capital disappeared during the second half of the 1940s. Four privately owned national banks: Yapı Kredi Bankası (1944), Türkiye Garanti Bankası (1946), Akbank (1948), and Türkiye Kredi Bankası (1948), were established due to the need for national banks after WW2. Three of these private banks supported the expansion of the Turkish Economy and became strong in the sector.

In the early 1950s, the new trend was the rapid increase in the number of private banks, which reached 30. The largest of these were Demirbank, formed in 1953, Sekerbank and Vakıfbank, 1954. This explosion in branch banking is generally explained by interest rate controls (Gormez 2008). In 1958, the banks came together to establish Turkish Bankers Association.

In the first half of the 1950s, the transition of economy policies from nationalisation to privatisation led to fast growth after the global political turmoil during wartime. However, in the second half of the 1950s, due to the weaknesses of fiscal policies, inflation rates increased sharply. The Central Bank was distributing reserve requirements to finance government deficits, with short-term advances of up to 15 per cent of the budget. Soon after these policies, a banking crisis occurred in 1958. Many banks went bankrupt, and some were forced to consolidate through mergers and acquisitions (M&As).

2.4.2. 1960-1980: Planned Period

After the military coup in 1960, the new order changed the liberal economic policies to heavily regulated import-substitution growth strategies. Until the 1980s, the financial system operations were shaped by state-led strategies, similar to those applied in the real economy.

The bank-dominated system had been an instrument in planned industrialisation policies since the late 1960s. The period between 1960 and 1980 become prominent with high reserve requirements, controlled interest rates, directed credit programmes, and other strict restrictions on financial intermediation (Boratav and Akyuz, 2002). As a result, these financial policies, to protect the system, put a high burden on the banking system by reducing competitiveness and increasing inefficiency (Denizer, 1997).

Branch banks started to expand faster in this period. Among branch banks, "holding banking" dominated. Having a bank was seen as the only choice by industrial conglomerates to finance potential investments. The value of operating banks rose since there was a limitation on new banking licences. However, the state banks¹¹⁶ did not have difficulty in starting their operations, hoping that they would create strong sectoral development in their

¹¹⁶ State Investment Bank and State Tourism Bank.

field. Another exception was the opening of the American- Turkish Foreign Trade Bank. Non-Turkish citizens were allowed to open foreign exchange accounts.

Growth was affected negatively due to the lack of financial innovation, and strict interest and foreign exchange controls. Central Banking activities, such as convertible accounts, which gave a right to generate an indexed asset on hard currencies to banks, were not successful in generating a sustainable environment for banking. Moreover, nationalised foreign exchange risks added to the cost of payment system crises via contingent liabilities. Unfortunately, the gains of the planned period were extinguished by the two external oil crises, and the number of banks decreased from 59 to 44.

2.4.3. The 1980s: Financial Liberalisation

The financial liberalization reform programme was launched in 1980. This programme allowed free entry to the market and relaxed the strict controls on interest and exchange rates, which attracted a significant number of foreign and domestic banks into the system. The number of commercial banks increased from 43 in 1980 to 79 in 2000 (BAT, 2008). Not only did the number of domestic banks increase, but 14 new foreign banks also opened within this period. Therefore, the Turkish banking sector experienced significant changes after the new entries. This included, for example, becoming more integrated into the global markets via improved technology (Denizer, 1997).

After financial reform the Turkish banks gained in efficiency. The elimination of restrictions on fund flows also enabled the banking system to borrow in foreign exchange, which relieved the capital shortage in the country (Isik and Hassan, 2002). Nevertheless, some problems occurred due to these sudden changes. For instance, the capital flows led to dollarization in banks, which could not be diverted into productive investments. Banks financial intermediation also declined due to the increasing needs of the public sector. Banks started to borrow from abroad to fulfil government's bids for more funds. The Central Bank's low foreign exchange rates policy caused huge risks to the banking system (Gunalp and Celik, 2006).

The CBRT was determining deposit rates while interest rates on loans were set freely in a highly volatile inflation environment. Therefore, capital adequacy ratios were eroded. Moreover, because of a lack of supervision and regulation, bankers' crises occurred, which caused loss of confidence in 1983. Following the crisis, Istanbul Bank, Ortadogu Iktisat Bank, Hisar Bank, Workers' Credit Bank, and Bagbank went bust in 1984. Banking Law was revised once again and the CBRT introduced new policies to provide financial stability in the second half of the 1980s. Another remarkable new development was the establishment of the Istanbul Stock Exchange in 1986.

Financial stability was subsequently lost again, despite all attempts, resulting in the bankruptcy of Töbank in 1987, and Caybank and Anadolu Bank in 1988. The speed of dollarization increased rapidly due to the daily devaluations and foreign exchange deposits of local depositors, as well as Turkish workers abroad. The Turkish Lira suffered devaluation against the US dollar and Deutsche Mark.

The 1980s financial reform was not able to achieve the desired results. Its main shortcomings were macroeconomic uncertainty and the burden that public sector borrowing placed on financial markets. As a result, following the crisis in 1982, Turkey had to adopt a more cautious approach to financial reform. New regulations were developed for the functioning of financial markets and for the supervision of financial institutions (Atiyas and Ersel, 1995).

The Capital Markets Board (CMB) and Savings Deposit Insurance Fund (SDIF) were established in 1983. The former is responsible for promoting and regulating securities markets. Moreover, foreign currency deposits were allowed in 1984, and, thus, the determination of the exchange rate was progressively liberalized. In 1985, a new banking law was enacted.¹¹⁷

2.4.4. From 1990 to 2013

The liberalisation regulations led to a significant amount of foreign capital inflow to the country. By the 1990s, the number of foreign banks also increased rapidly in the banking system. As a result, the outlook of the banking system, which used to be state oriented, was transformed. However, the foreign funds could not be channelled to productive investments. Instead, they were used to finance government budget deficits.

Half of the existing public banks in 1991 were privatized, and 15 banks (including a public bank) failed over the 1991-2001 period. However, the average number of branches per bank did not change significantly. There were 7786 domestic bank branches in the sector by 2000. It is observed that the number of branches per bank has been higher in Turkey compared with the banking systems in EU countries. For example, there were 99 branches per bank in

¹¹⁷ 7129 sayili Bankalar Kanunu (Banking Law No. 7129).

Turkey in 2000, but only 24 branches per bank in the EU countries. This is because banks in Turkey have been free to open new branches of private banks. The only condition is that if they want to open more than ten branches, they need permission from the Treasury. State banks also have to obtain an allowance from the Ministry of Finance to open a new branch.

The ratio of bank assets and bank deposits to the nominal GDP was 46.86 per cent and 26.40 per cent respectively in 1991 and increased to 83.71 per cent and 54.94 per cent over a decade. Credits provided by commercial banks increased from 20.56 per cent of GDP to 27.46 per cent in the same time period. BAT (2008) reported that the ratio of total credit to total deposits decreased steadily until the 2000s, from approximately 84 per cent to 50 per cent. The new rules and regulations were introduced in order to address the structural weakness of the banking system due to the liberalization programme in the 1980s. The CBRT and the Treasury had been responsible for banking supervision and regulation. However, the regulatory environment was not efficient enough to implement the rules and regulations, and moral hazard was created by extensive government guarantees on deposits (Celasun et al., 1999).

Because of the high level of instability, foreign entry to the banking sector remained under 10 per cent, despite the openness of the sector. Interest rates rose to more than 20 per cent due to the mismanagement of inflation. The CBRT introduced new instruments in order to counteract the financial instability. These instruments were Open Market Operations (OMO), liquidity controls, and a discount window. Monetary policies failed to control inflation by 1993, although they were successful at the beginning of the 1990s. The accumulated financial stress caused a destructive banking crisis in 1994. TYT Bank, Impexbank, Netbank and Marbank were the large banks among those that failed. Nevertheless, while this crisis was adversely impacting the banking sector, money and capital markets started to gain importance. Moreover, with the support of the IMF, new regulations were adopted to stabilise the financial system in April 1994. The CBRT law was changed, with the aim of reducing the rate of advances to the Treasury from 15 per cent to 3 per cent.

Unfortunately, the 1990s were also lost years in terms of banking and financial development. Not only national policy failures, but also several external factors (including the Gulf War, USSR collapse, European Exchange Rate Mechanism failure, and major earthquake disaster in 1998) negatively affected the financial situation of the country. Short-term rescue policies came to an end in 1999 when exchange rate based stabilisation regulations were announced. These were expected to stabilise the economy; however, the changes were not successful due to unfulfilled promises.

The Turkish banking system again started to become unstable, which resulted in the 2001 crisis. The system was unable to finance the needs of a growing economy, due to the low level of capital accumulation in the country. After the crisis of 1994, the banking system was again severely impacted by the domestic crisis of February 2001. By the end of 2000, more than 10 banks had become bankrupt due to systemic risk and inevitable devaluation. Overnight, interest rates rose to above 15,000 per cent, while GNP declined by 4 per cent. Eventually, the IMF was again asked to intervene. The programme developed with the IMF included a long list of measures adopted with the aim of restructuring the banking sector after the 2001 crisis. In order to rescue the Turkish Economy, the IMF stepped in and provided financial assistance with a net worth of 20.4 billion US Dollars (Yeldan, 2006).

The country has implemented strict strategies to reduce the fiscal deficits. The influence of the state on the economy has been restrained through a major privatisation program. Government financing problems were the main reason for the fragilities in the Turkish banking system, and this has been addressed by significantly reducing the government's debt stock. The consecutive policy measures, which include international regulatory standards, have partly solved the weaknesses of the system. An autonomous Banking Regulatory and Supervisory Agency (BRSA) has been established to supervise and regulate the banking sector, taking over these functions from the Treasury. In addition, a number of state and privately owned banks have been liquidated through M&As, and 20 banks were transferred to the SDIF between 1997 and 2003. Thanks to these reforms, the quality of bank assets has increased due to the reduction of credit risk. Moreover a significant fall has been observed in non-performing loans. Relative stability in the economy provided continuous growth in the last decade. The 2008 global crisis had a severe but relatively shortterm effect on the economy. Non-performing loans increased in the crisis year yet the levels very quickly returned back to the pre-crisis levels. The quality of assets was not affected significantly.

	1960	1970	1980	1990	2000	2010	
Wholesale price index 1968=100	73	117	2063	71234	13361552	142900000	
USD/TL exchange rate	9	15	89	2927	671765	1540000	
GDP (TL Bn)	47	208	5303	393060	125970544	359548636364	
RATIOS (percent)							
Total assets/ GDP	41.5	43.5	31.4	43.3	82.6	85.2	
Deposits/ GDP	16.9	18.3	15.4	24.3	54.3	31.1	
Loans/GDP	21.0	23.3	16.8	20.4	27.2	42.3	
Capital Adequacy Ratios							
(Shareholders' equity + Tot. income) /	15.2	87	5 5	10.1	6.0	12.4	
Tot. assets	13.2	0.7	5.5	10.1	0.9	13.4	
(Shareholders' equity + Tot. income)	35 3	16.3	10.0	13.3	8 2	16.6	
/(Deposits + Non-deposit Funds)	55.5	10.5	10.0	15.5	0.2	10.0	
Net working capital / T. assets	2.4	-0.7	0.7	2.2	-1.7	10.3	
Asset Quality							
Tot. loans / Tot. assets	50.5	53.7	53.7	47.0	32.9	52.9	
Permanent assets / Tot. assets	12.8	9.5	4.8	8.0	14.8	3.1	
FX assets / FX liabilities	-	-	-	88.1	75.9	85.5	
Liquidity							
Liquid assets / Tot. assets	23.3	20.9	31.2	32.8	32.2	32.8	
Liquid assets / (Deposits + Non-deposit	54.2	39.1	56.5	43.1	37.9	40.6	
funds)							
Profitability							
Net income / Average tot. assets	1.7	0.2	1.7	2.8	-3.6	2.2	
Net income / Average tot. shareholders'	12.8	2.4	40.2	36.0	-89.8	16.5	
equity							
Net income / Average share capital	15.9	2.8	40.1	62.3	-71.9	47.6	
Income - Expenditure Structure							
Net interest income / Average tot. assets	2.5	2.5	5.4	6.4	3.5	3.5	
Interest income / Interest expenses	190.5	183.7	181.8	135.5	127.7	204.2	
Non-interest income / Non-interest expenses	86.4	48.2	55.8	57.7	19.8	76.5	
Tot. income / Tot. expenses	120.0	102.7	111.1	112.2	95.8	253.4	

Table 2.1. Comparative Macroeconomic Variables and Banking Ratios

Source: BAT, TSTATS

The banking system ratios from 1960 to 2010 are illustrated in Table 2.3. This shows the Asset to GDP ratio increased over the years, except for 1980. In 2013, the ratio reached its highest level at 85.2. Among the asset quality ratios, the Loans to Asset ratio remained almost constant, except for 2000. Loans to Assets ratio fell to 32.9 in 2000, then increased to 52.9 in 2010. There is a 3 percent decline in the first decade, the liquidity ratio started increasing in the following decade up to 31.2 per cent and then levelled off around 32 per cent. Income to asset ratio, apart from 2000, shows the profit was on the positive side and rose to 2.2 per cent. Finally, the interest income ratio nearly more than doubled in the third decade, while it decreased by nearly a half in 2010.



Figure 2.8. National Growth Figures between 1972 and 2013

Source: World Bank

Along with the economic reforms, the more healthy financial system provided the country with higher GDP rankings. Figure 2.8 demonstrates the five-year averages of GDP from 1972. It shows that the growth rate in the 1972-1976 period was 6.8 per cent, the second highest figure. This fell to the lowest level, with a percentage of 1.3, in 1977-1981. After 1982, another very low growth rate of 1.5 per cent is observed in 996-2001, while 7.2 per cent, in 2002-2006, is the highest figure within the whole period. However, this fell to 3.5 per cent in the subsequent five years.

The policies pursued after 2001 shaped the public financing regularities and banking sector. However, the problems of the sector and the structural problems of real economy, including import-led growth and high levels of current account deficits, while a lack of strategic development policies represented potential threats to the economy (Saltoglu, 2013). Therefore, Turkish banking needed further measures for resolution

Following the crisis of 2008, foreign exchange risk left the markets, and incentives were put in place to promote responsible investment decisions. The goals of the new economic programme were to restructure the economy with prudent fiscal and monetary policies, sustaining low inflation rates, making the economy less fragile against shocks and crises, ensuring more even income distribution, and preparing a conducive environment for domestic and foreign investments (Gormez, 2008).

After developments, a more positive environment started to attract foreign investors into the banking system. The foreign participation rate increased to above 30 per cent due to mergers and acquisitions. The CBRT formed the Monetary Policy Committee to help with the monetary policy framework. As a result, the inflation rate declined to single digits, rapid credit growth was observed, and the customer base of banks was enlarged.

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2013
Deposit Banks	51	46	44	40	40	47	56	55	61	34	32	32
State-owned	14	12	12	12	12	12	8	5	4	3	3	3
Private	20	23	22	23	24	20	25	32	28	17	11	11
Foreign	5	5	5	5	4	15	23	18	18	13	17	17
Local	12	6	5	-	-	-	-	-	-	-	-	-
SDIF	-	-	-	-	-	-	-	-	11	1	1	1
Dev. and Invest. Banks	0	2	2	2	3	3	10	13	18	13	13	13
Participation Banks	-	-	-	-	-	-	-	-	-	4	4	4
Total	51	48	46	42	43	50	66	68	79	51	49	49

Table 2.2. Number of Banks in Turkey

Source: BAT

Table 2.4 shows the number of banks operating in Turkey. There were 51 banks in 1960; the number reached a peak of 79 in 2000, and fell to 49 in 2013. It can be clearly seen that number of state banks fell from 14 in 1960 to 3 in 2013, which also shows the decreasing influence of the state in the banking sector. Moreover, except for the sudden fall after the 2000 crisis, an increase in foreign entry is also observed, from 5 in the 1960s and 70s to 17 by 2010.

Table 2.3.	Number	of Branch	ies in	Turkey
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	1975	1980	1985	1990	1995	2000	2005	2010	2013
Deposit Banks	4499	5864	6286	6543	6219	7660	6228	9423	10902
State-owned	1770	2490	2841	2975	2875	2865	2035	2744	3364
Private	2712	3374	3325	3455	3240	3960	3799	4582	5304
Foreign	14	105	120	113	104	121	393	2097	2233
Local	3	-	-	-	-	-	-	-	-
Dev. and Invest. Banks	6	6	6	17	25	31	19	13	40
Participation Banks	-	-	-	-	-	-	4	4	4
Total	4605	5975	6292	6560	6244	7837	6247	9465	10942

Source: BAT

As illustrated in Table 2.5, the number of branches has been increasing since the 1975, except for the crisis years of 1994 and 2001. The total number was 10,942 in 2013, an increase of 3005 over a 13-year period. This rise in the number of branches is completely referred to the deposit banks group. The branch number for private banks rose by 1344, and 499 for state-owned deposit banks; the branches of foreign banks increased by 2112 in the same period. However, compared with developed countries, the size of the banking sector was still small in Turkey in 2013, in spite of all the efforts to develop it.

The banking sector has entered a rapid growth period since 2009. This upward trend also continued in 2013. The asset size of the banks increased by 20.3 percent from 2012 to 2013. This growth was mainly driven by loans and banks replacing a significant portion of their securities with loans. The Assets to GDP ratio rose to 103.1 per cent by 2013.

The highest increase in the Loans to GDP ratio has been observed since 2009. Because of the easing in accessing non-deposit funds and credit demand increasing, Turkey posted historic highs of Loan to Deposit ratios. As seen from Fig 2.9, credits exceeded deposits for the first time in Turkey's history (FSR, 2013).



Figure 2.9. Total Loans and Deposits in Turkish Banking System

Source: Authors' calculations based on BAT data.

The banking sector presented a better outlook in 2013. Utilization of non-deposit funding sources increased and the loans to deposits ratio rose above 110 per cent in 2013. In fact, as clearly observed from the figure above, in 2013 loans reached a level higher than

deposits for the first time since 1975. The Turkish economy has demonstrated the highest increases in loans to GDP ratios among other emerging markets since 2009.

Banks extended project funding loans for privatization and public infrastructure investments. In addition, interest rates reached historic lows. The banking sector has managed to maintain a sound structure in terms of asset quality and capital adequacy since 2009. A slight capital outflow occurred in emerging markets, including Turkey, when uncertainties increased over global monetary policies later in 2013. Another interesting development within this period was the increase in SME loans in Turkish Lira.

Year	Regulation
1980	Interest rates deregulation.
1983	Establishment of The SDIF at the CBRT.
1985	Banking Law No: 3182 was enacted.
1985	Legislation for banks to keep specific loan loss provisions in relation to their past unpaid loans.
1986	The ISE was established.
Jan-87	Removal of the interest rate restrictions on the corporate bonds. New requirement for banks to submit their independently and externally audited financial statements to the CBRT.
Feb-87	Starting of OMO by CBRT.
1988	Termination of deposit interest rates regulation by CBRT.
1989	Liberalisation of foreign exchange operations and international capital movements.
1991	Establishment of the secondary market for Treasury bond and bills.
1992	Beginning of Turkish Interbank Clearing System and Electronic Fund Transfer (EFT) system operations. Adoption of Basel-I Accord.
1994	Recognition of The SDIF. Transfer of the supervision and regulation of banks to the Treasury and the CBRT.
1999	Banking Law No: 4389 was enacted.
2000	Establishment of The BRSA.
2001	Introducing the Banking Sector Restructuring Program by The BRSA.
2002	Initiation of Financial Restructuring Program.
2003	Formation of a coordination committee with representatives of the BAT.
2004	Adoption of New Capital Adequacy Agreement (Basel-II) and capital adequacy arrangements (CAD-III) under the EU legislation was adopted.
2005	Banking Law No: 5411 was enacted.
2009	Full adoption of the Basel-II Accord.
Oct-09	The Istanbul International Finance Project with the "Action Plan" was approved.
2010	Approval of The Basel-III Accord.
2012	Banking Law No: 5411.

 Table 2.4. Chronological Order of the Banking Regulations between 1980 and 2013

Source: Ozyildirim and Onder (2008), Mamak et al. (2013), and Birkan and Akdogdu (2016)

2.5. Regional Economy in Turkey

This section introduces the regional financial and development characteristics of Turkey. The historical background is also presented by employing the data collected.

Turkey comprises 81 provinces, grouped in 12 Regions and 26 Sub-regions, according to NUTS¹¹⁸. In fact, the number of provinces has changed since 1989 with the newly established provinces. In accordance with the aim of this study, to examine the regional development of provinces between 1975 and 2013, the provincial data are clustered back to the original number, 67, in the starting year 1975¹¹⁹. As a result, more comprehensive and comparable results are obtained. In addition, growth differences related to provincial boundary changes are eliminated.

One of the main areas of concern in Turkey is the differences between regions, as well as within regions, in terms of economic development and banking activities. Provinces have different competitiveness levels, depending on their regional potential. A decline in the level of prosperity and increase in inequalities and out-migration is observed clearly, especially moving from west to east. Furthermore, migration from east to west and inequalities in salaries, the unbalanced rise in urbanization also affect regional disparities (Gezici, 2011; Celebioglu and Dall'erba, 2009; Elveren and Galbraith, 2008; Kirdar and Saracoglu, 2007). The imbalance in income distribution mostly favours the western provinces. The distribution of GDP across regions highlights the dominance of these provinces, such as Istanbul, Izmir, Ankara and Kocaeli.

Following general discussion of the regional/provincial imbalances in the light of the data, the next section summarizes the regional policies to examine the attempts to decrease these imbalances.

2.5.1. Regional Development Policies

Since the early establishment of the Turkish Republic, regional economic development policies and practices have been implemented to address the imbalances between the western and eastern regions. The literature shows that not all the redistribution policies achieved the aim of increasing convergence across regions. The regions of Turkey

¹¹⁸ Defined in agreement between Eurostat and Turkish authorities in 2002.

¹¹⁹ A table of the newly defined provinces and their original correlatives is included in the appendix.

that received most of the funds did not grow faster than the more developed western regions. (Gezici and Hewings, 2004). For instance, Önder and Özyıldırım (2010), employing σ and β convergence analyses (following Barro and Sala-i-Martin, 1997), find no evidence for income and growth convergence across both provinces and functional regions in Turkey from 1980 to 1997. They further suggest a high level of spatial dependence. Therefore, the level of regional per capita GDP growth was highly related to the neighbouring provinces and disparities were still obvious between the east and west. Another study, conducted by Gezici et al. (2011), using Priority Provinces in Development (PPDs), indicates that PPDs did not grow faster than core-developed provinces, and the majority remained poor regions.

Underdevelopment results from lack of both human and capital resources, thus the state should provide those resources to support development in underdeveloped regions. The policy ideas for these regions was not effective. The main reason is the majority of underdeveloped regions are dependent on agricultural production, but, instead of implementing agricultural modernization policies, the state has adopted large scale industrial projects (Sertesen, 2011).

Turkish traditional regional policies were determined by the state until the 1960s (before the planning period). The share of agriculture in GDP started to decrease while traditional heavy industry gained importance, which in turn led an increase in unemployment rates in the regions. The state was the main actor to cope with the problems of infrastructure caused by massive immigration to urban centres. Therefore, according to Tekeli (2004), the nation-state was expected to manage the economy, be responsible for the inequalities, and be in charge of the allocation of resources in the development process.

The concept of regional development gained more importance after the establishment of the State Planning Organization (SPO) in 1963. Therefore, the current study mainly focuses on the years after the planning period. The establishment of the SPO started "the planning experience" of Turkey. In this period, state influence on development was substituted by endogenous development dynamics. The nation state could no longer maintain the regional policies. Local potential, networks and institutions within regions became more prominent.

Regional and local aspects became crucial in regional development. As a consequence, the participation of local governments in the decision-making process was encouraged. Moreover, the regional development concept gained more importance during the planned period. Hence a new policy was implemented, suggesting a move from the regions to local areas (Eraydin, 2002).

Policy makers constructed development plans for five-year periods. The first Five Year Development Plan (FYDP) covers 1963-1967. The plan was the initial step to consider regional assessments in development progress. The second FYDP (1968-1972) focused more on the regional inequality problems caused by rapid urbanization. Investment to less developed regions was encouraged. PPDs¹²⁰ were defined for the first time in 1968, to target investments in those underdeveloped regions and to accelerate the process of regional convergence.

All provinces of Eastern and South-eastern Anatolia, as well as a few western cities, have been given public priority. These PPDs have changed from year to year¹²¹. They share common characteristics, such as: relatively low GDP per capita, high population growth, high out-migration rates, high agricultural employment, and low industrial employment. Main policies included increasing public investment, with particular emphasis on infrastructure, and providing investment incentives to the private sector in PPDs. Despite the governments' attempts to develop PPDs, research shows that they do not grow faster than core-developed provinces. Moreover, most remained poor. The main reason for the failure of the policies is the lack of required infrastructure (Yıldırım et al., 2009).

The major aim of the 3rd FYDP (1973-1977) was continue to stimulate the development of less developed regions. For this purpose, the number of PPDs was increased. The planning approach shifted after the 1980s with the effect of the free market economy policy. The 4th FYDP (1979-1983) mostly included channelling the resources in order to strengthen sectors in the regions. Five provinces, Gaziantep, Denizli, Çorum, Kayseri and Konya (also known as the "Anatolian Tigers"), showed substantial growth among all the provinces of Turkey after the 1980s (Eraydin, 1998).

With the 5th FYDP (1985-1989), potential sectors were specified to accelerate the development and the effective use of local resources. To achieve this, 16 regions were formed as "Staging of Settlement Centres in Turkey". Businesses were encouraged to set up their operations in less developed regions by provision of various financial incentives. Another specification introduced in the plan was the concept of "Specialized Industrial Zones".

¹²⁰ See the appendix for PPDs from 1975 to 2013.

¹²¹ Number of PPDs changes each year. For further information see the table of priority provinces in the Appendix.

Meanwhile, in 1989¹²², the SPO launched work for the South-eastern Development Project (GAP). The aim of the project was to support sectoral and provincial relationships in the region (GAP, 2011). Adiyaman, Batman, Diyarbakir, Gaziantep, Kilis, Mardin, Sanliurfa, Siirt and Sirnak provinces were involved in the project.

The 6th FYDP (1990-1994) aimed to adopt EU regional policies into the Turkish regional policy agenda. The development plans aimed to attract new investments to the provinces. Therefore, government investment expenditures and investment incentives were used as the main instruments of regional policy. The dynamics of regional growth caused a shift from capital accumulation to human capital between the 1950s and 1990s. However, this trend slowed due to the dominance of technology and innovation from the 1990s. Decentralisation of power increased, while the power of the centralist nation state declined. Policy makers started to realise that direct investment was no longer valid for local development (Ersoy, 2013).

The 7th FYDP (1996-2000), included more comprehensive regional development policies. The plan mostly focused on SMEs, taking into account the spatial dimensions of the policies. Industries were differentiated across the country, depending on the characteristics of the regions. Several new regulations came into force¹²³ in order to support the foundation and administrative processes of Research and Development (R&D) activities. University and industry collaborations were also encouraged in relatively developed regions.

Ozturk (2002) claims that the south-eastern and eastern provinces of Turkey were the most underdeveloped regions for many years because of ineffective policies applied by Turkish governments. Therefore, new projects, such as GAP, were viewed as more promising for the development of the regions, as they were long-term and exceeded governments' periods of rule.

Before the EU candidacy period, in addition to the GAP master plan, other regional development agencies were initiated. First, the Zonguldak-Bartın-Karabük Project was set up to improve investment opportunities in coal mining (an abundant natural resource of the region). The second project was the Eastern Anatolia Project, involving Ağrı, Bingol, Bitlis, Elazig, Erzincan, Erzurum, Gumushane, Hakkari, Kars, Malatya, Mus, Tunceli, Van,

¹²² The GAP Regional Development Administration was established, to accelerate the implementation of the project, upon the Government Law Decree (GLD) no. 388 published in the Official Gazette no. 20334, dated 6 November 1989.

¹²³ Organized Industrial Zones (OIZs) Law No.4562, Supporting Research and Development Activities Law No.5746, Technology Development Zones Law No. 4691.

Ardahan, Bayburt and Igdir. This project was designed to promote economic, social and cultural unity, as well as ensuring the region's sustainable development. The third project was the Eastern Black Sea Project¹²⁴, for Ordu, Giresun, Trabzon, Rize, Artvin, Gümüşhane and Bayburt provinces. This aimed to realize sustainable development and improve transportation, telecommunication and urban infrastructure, and enhance soil productivity. The fourth master project was the Yeşilırmak Basin Development Project, for Amasya, Çorum, Samsun and Tokat provinces. The main targets were effective management of natural resources, prevention of erosion and determination of water pollution in the region (SPO, 2001).

The cluster concept appeared for the first time in *the* 8th *FYDP* (2001-2005). Sectoral priorities and spatial dimensions were considered in formulating the regional development plans. Human capital and technology were given more attention in strategic regional planning. Local entrepreneurship and mobility of resources were also encouraged. In this period the influence of EU regional policies was observed (Ersoy, 2014).

The Nomenclature of Territorial Units for Statistics (NUTS) system of the EU was adopted in 2002. The NUTS were grouped according to their economic, social, cultural and geographical properties. The NUTS levels were defined for three stages: 81 provinces in NUTS-3, 26 sub-regions in NUTS-2, 12 regions in NUTS-1.

The EU also asked Turkey to develop a national economic and social policy aimed at reducing regional imbalances. A legal framework was adopted to facilitate the implementation of EU regional policy (Commission, 2003).

The influence of EU policies continued in the 9th FYDP (2007-2013). With the plan, leading sectors were identified as "attraction centres", to stimulate regional productivity. The provinces defined as attraction centres were Diyarbakir, Sanliurfa, Elazig, Malatya, Kayseri, Sivas, Erzurum, Gaziantep, Konya, Samsun, Trabzon and Van. These provinces have the potential to grow and provide services to neighbouring provinces. The aim was particularly to enhance competitiveness and employment within the regions. The shift from centrally orchestrated policies to decentralisation regulations became more obvious.

¹²⁴ Within the framework of Reconstruction Law No. 3194 and Decree Law No. 540. This project prepared with the technical cooperation with Japanese International Cooperation Agency (JICA)

2.5.2. Regional Economic and Demographic Figures

This section highlights some features of the socio-economic structure of the provinces, based on data collected in the study. First, the GDP figures are presented, then the demographic variables, such as population, migration, and educational indicators. Lastly, the economic activities in the provinces are summarised. These include: start-up and closed enterprises, government consumption, investment incentives. Detailed tables for each indicator in the data set are provided in the Appendix.

GDP per capita



Figure 2.10. The Top Four Provinces in GDP Per Capita

Source: Authors' calculations based on Özötün (1980,1988), TSTATS.

The graph above depicts the variation in GDP per capita between 1975 and 2013 for the four provinces that have the highest per capita GDP. Even though Istanbul has the highest overall GDP between 1975 and 2013, it is observed that Kocaeli has the highest level of GDP per capita among all the provinces of Turkey. Per capita GDP figures were quite dissimilar between the first four provinces and the rest of the country. In the 1975-1979 period the real GDP per capita of the one of the richest provinces, Kocaeli, was 6.79 times higher than that of the poorest province, Bingol. In the 2010-2013 period, Bolu has the highest GDP per capita, 10.16 times greater than the province with the lowest value, Hakkari.

The maps (see Appendix) demonstrate the values of GDP in western regions and along the coastal provinces seem to have increased. Although the highest GDP ratios were in two large provinces, Istanbul and Ankara, there was a decline in per capita income due to a relatively large number of immigrants. On the other hand, the provinces located in the east, especially starting from the Ankara's eastern boundaries, remained below the country's average in terms of both GDP and GDP per capita.

2.5.2.1. **Demographic Figures**

The most populated provinces, such as Istanbul, Ankara, Izmir and Bursa, are located in the western part of the country. Approximately 18 per cent of the national population lives in Istanbul (TURKSTATS, 2015). The highest population growth rate is also seen in the western provinces¹²⁵.

Istanbul has the highest number of immigrants at all times, especially in 2005-2009 and 2010-2013, when almost half a million people migrated to Istanbul. The provinces with the next highest levels of immigration are Ankara, Izmir, Konya, Adana and Bursa. Istanbul also has the highest number of emigrants, followed by Ankara, Izmir, Giresun and Kahramanmaras. Corum, Kocaeli, Mardin and Sivas also enter the first five sometimes. However, if the ratio of emigrants to the total population is considered, Hakkari, Cankiri, Bilecik, Sivas, and Artvin have the highest percentage of emigrants.

Until the 2000 the highest level of literacy was in Istanbul. The provinces with the next highest levels are Ankara, Eskisehir, Kirklareli and Izmir. Tekirdag and Kocaeli were two other provinces share first five with others. In the following two five-year periods, Ankara had the highest level of literacy, followed by Istanbul. Subsequently, in 2010-2013, Antalya became the first province in terms of literacy rate, followed by Canakkale, Tekirdag and

¹²⁵ See the tables in the Appendix.

Ankara. The lowest level, however, belongs to Hakkari in the period 1995-1999, Agri in 2000-2004, Siirt in 2005-2009. In 2010-2013, Sanliurfa had the lowest level of literacy.

Another human capital indicator is number of postgraduate qualifications, which was the highest in Ankara at all times, followed by Istanbul, Aydin, Izmir, Samsun and Bursa. In some years, Hatay, a southern province, and Diyarbakir, Kahramanmaras and Van, eastern provinces, were also in the top five in terms of postgraduates. In each five-year period, there has been a different province with the lowest level: Bingol, Artvin, Gumushane, Bingol, Artvin, Rize, Kastamonu, Zonguldak, respectively.

2.5.2.2. Industrial Figures

In all the five-year periods, the highest number of start-up enterprises are in Istanbul, followed by Ankara, Izmir, Konya, Adana and Bursa, respectively. Although there was an increasing trend from 1973 to 2013, in the 2000-2004 period the number decreased in all provinces. The lowest number of start-ups, however, was shared among Bilecik, Bitlis, Bingol, Cankiri, Gumushane, Hakkari, Mus, Sinop, and Tunceli.

The number of closed enterprises were fewer than start-ups in almost all provinces. Again, the largest numbers of these enterprises were in Istanbul, Ankara, Konya, Bursa, Izmir and Antalya. The lowest number, just one, was observed in Usak in the 1975-1979 period. The highest increase in closed enterprises was observed in 2004-2009.

Most government expenditure was in Ankara in 1975-1979. In the second five-year period, this shifted to Afyonkarahisar, but, in all other periods, Istanbul received the highest amount of government expenditure, followed by Ankara. On the other hand, the regions with the lowest level of spending differed, and included provinces in the east and west. Over the time periods, those receiving the least expenditure were: Usak, Burdur, Erzincan, Usak, Mus, Nevsehir, Kirsehir, Erzincan, respectively.

The highest level of investment incentives¹²⁶ was given to Istanbul at all times. The lowest level was received by the following provinces in each of the five-year periods, respectively: Bilecik, Bilecik, Bilecik, Sinop, Hakkari, Kastamonu and Tunceli.

2.5.3. Regional Banking Activities

The Turkish banking system provides a unique example. The single financial centre is Istanbul and there is a lack of regional banking. Ozyildirim and Onder (2008) highlight the

¹²⁶ Investment Incentive data is available from 1980.

centralized nature of banking activity in Turkey, suggesting that local deposits do not always translate into local credit operations.

There is no particular reason why concentration and centralisation towards national banking in Turkey leads to loss of local and regional financial autonomy. There is no regulation against regional banking, nor any restrictions on establishing new deposit banks. However, since the 1930s, lack of capital followed by structural problems in banking caused highly centralised control over the treasury. It can be concluded that the volume of economic activity has always been the highest in the Marmara region (especially Istanbul), where the banking sector has grown fastest. Therefore, the banks' tendency to maximise profits and minimize costs has led them to concentrate in the most developed provinces (see Gál, Z. (2004).

The main focus of this study is banking activities, since the efficient allocation of financial capital provided by banks has a significant influence on regional investments. When banks cause a capital flow from underdeveloped to highly developed regions, uneven regional economic growth problems arise. This section is devoted to the introduction of banking figures at the provincial level, employing a unique data set, with data for 1975 to 2013. Most of the data was typed from hard copies, and provincial loans and deposits were calculated by employing the weighted average method¹²⁷.

As discussed previously, the banking system is the dominant financial intermediation in Turkey. There are deposit banks, investment and development banks, and participant banks operating branches in the country. Until the early 1980s, there were also regional banks located in a few cities, such as Adapazarı Emniyet Bank in Sakarya, Afyon Terakki Servet Bank in Afyonkarahisar, Akşehir Bank in Konya, Caybank in Rize, Denizli İktisat Bank in Denizli, Elazıg İktisat Bank in Elazig and Saglık Bank in Isparta. However, these banks started to merge with others. The investment and development banks are not allowed to collect deposits. Therefore, due to the interests of this study, only deposit banks are investigated.

Deposit banks are classified into three categories in terms of ownership, namely: state, private and foreign ownership. Of these, most of the private banks are operating in business-intensive provinces. State banks have branches all over the nation and they mostly specialize in SME funding, agriculture and construction sectors. Foreign markets, however, have a small market share.

¹²⁷ Table of data sources included in the Appendix.



 Table 2.5. Regional Distribution of Bank Branches According to Ownership 2015

Source: "SNL" https://www.snl.com

Three of the state and three of the private banks had branches in all 81 provinces of Turkey by the year 2013. Seven banks, five of which are foreign owned, operate only in one province, Istanbul (BAT, 2014). The table above illustrates the distribution of the branches of the three largest deposits banks according to ownership, across the country. It can be clearly seen that Ziraat Bank, the largest state-owned bank, has the highest number of branches, followed by Halk Bank and Vakıf Bank. Of the privately owned banks, Isbank has the largest number of branches, and IngBank among the foreign-owned. It is apparent from the table that there is a concentration of branches, especially for private and foreign banks, in western provinces. Istanbul and its environs held approximately 40 per cent of all the bank branches.

As expected, banking activities also have been the highest level in the western region with over 50 per cent of granted bank credits since 1975. Bank credits per capita in the region increased by 1.7 per cent, as compared with a 1.2 per cent annual growth rate for all of Turkey.

The level of deposits collected in Istanbul was by far the highest, followed by Ankara and Izmir. In general, provinces in the south-west region were above the national average, while eastern provinces (to the east of Ankara) remained below. Even though the level for Ankara approached Istanbul's in some periods, Istanbul always had the highest level of deposits collected. Some major provinces, Izmir, Konya, Adana, Antalya, Bursa, usually maintained a level above the national average. However, most provinces remained below the average¹²⁸.

The Financial Centre Istanbul provided most of the credits. The gap can be seen clearly, especially in the 2000-2004 period, by observing the credit per capita of Istanbul, \$4686.53, and of Mus, \$496.16. In the 1980-1984, 1985-1989 and 2005-2009 time periods, Izmir and Mugla overtook Istanbul.

Table 2.6. Five Years Average Loan Distribution; Istanbul vs Turkey

Loan Distribution	1975-79	1980-84	1985- 89	1990-94	1995-99	2000-04	2005-09	2010-13
Istanbul	18.68	23.49	20.73	26.15	31.34	34.65	31.59	29.69
Turkey	81.32	76.51	79.27	73.85	68.66	65.35	68.41	70.31

Source: BAT and Authors' calculations based on BAT.

The table above shows that, throughout the sample period, on average Istanbul receives almost 30 per cent of the loans alone. In the 1975-1979 period, 18.68 per cent were allocated to Istanbul. The figure reached a peak of 34.65 in 2000-2004, then decreased to 29.68 in 2010-2013.

¹²⁸ See the Appendix to compare the changes on the map.



Figure 2.11. Loans (\$) Per Capita: Highest vs Lowest Province

Per capita loans per province are represented in Fig 2.11. This demonstrates the considerable gap between Istanbul-Izmir-Mugla and Mus-Van-Sanliurfa in terms of loan allocation. With the exception of Izmir in 1980-1984 and 1985-1989, and Mugla in 2005-2009, the highest level of loans per capita was allocated to Istanbul. The lowest level was given to Mus for the first, second and last three five-year periods. In 1985-1989 and 1990-1994, Sanliurfa and, in 1995-1999, Van were allocated the lowest amounts of loans per capita. In summary, the highest level of loans was allocated to western provinces, while the lowest was received by eastern provinces.

Source: BAT and authors' calculations based on BAT.


Figure 2.12 Deposits (\$) Per Capita: Highest vs Lowest Province

Fig. 2.12 shows that, for the first and second five-year periods, the highest levels of deposits were collected in Istanbul. In later periods, this was followed by Izmir, Istanbul (three periods successively), Mugla and Artvin, respectively. Mus, Van and Sanliurfa received the lowest amounts of deposits within the entire 1975-2013 period.





Source: TSTATS, BAT and authors' calculations based on TSTATS

Source: BAT and authors' calculations based on BAT

Fig. 2.13 illustrates the GDP, loan and deposit evolution in Istanbul and Ankara between 1975 and 2013.¹²⁹ Until the last couple of years, deposits exceeded loans. In both Ankara and Istanbul, GDP showed a modest increase until 2001, and then increased dramatically following the same pattern as deposits and loans. In 2013, the GDP of Ankara reached 50m, whereas in Istanbul it was over 150m. Deposits and loans were also nearly three times higher in Istanbul. Ankara had a much lower deposit and loan level when compared to Istanbul, even though it is the second largest province.



Figure 2.14. GDP (\$100000), Deposits and Loans for Adana, Bursa, Izmir and Konya (Highest four provinces after Istanbul and Ankara)

Source: TSTATS and authors' calculations based on BAT

Following Ankara, other major provinces Adana, Bursa, Izmir and Konya are indicated in the same plot above (Since the figures are very low compared with Ankara, these provinces are not illustrated with Ankara and Istanbul). These provinces are also above the average for the country.

¹²⁹ See table in the Appendix for each region's share of GDP.

Figure 2.15. GDP, Deposits and Loans (\$1000000) for Bingol, Bitlis, Hakkari and Tunceli (Lowest provinces in GDP)



Source: TSTATS and authors' calculations based on BAT

Finally, Fig. 2.14 above illustrates the four provinces with the lowest levels of GDP, loans and deposits. As can be clearly seen, the differences between the level of deposits and loans are relatively higher in these eastern provinces¹³⁰.

¹³⁰ See Appendix 2.7.1. for GDP, loans and deposits for eight provinces: Denizli, Hatay, Sakarya, Trabzon, Elazig, Kars, Malatya and Tokat.

2.6. Conclusion

This chapter has summarised the history of the Turkish economy and banking system since the establishment of the Republic of Turkey. In particular, the period between 1975 and 2013 was discussed in detail at national and regional levels, based on the data collected for this period. Discussion has focused on how an emerging market has progressed over the decades under a highly volatile political and economic situation.

The Turkish economy and banking system have undergone major crises and transformations over the 1975–2013 period. This chapter demonstrates developments in the economy and banking under sub-periods when major transformations have taken place. In the early years of establishment, the state played an important role in savings generation and in carrying out key entrepreneurial functions to promote industrial growth and technological improvement, which imparted a considerable anti-market bias towards foreign trade regime and financial system until the liberalisation period in the 1980s. There were strict restrictions on financial intermediation, which gave rise to pressure in the banking system due to reduced competitiveness and increasing inefficiency. However, this period also saw the emergence of branch banks, which started to expand quickly.

After the 1980s, new economic policies were introduced, causing a shift from a heavily regulated and controlled mixed economy to a neoliberal economy. One of the main reasons for this change was the adoption of criteria under the European Union Candidacy process. The effects of new regional development policies were seen in the five-year plans that were drawn up to take account of the unique economic structure of every region. Concurrently, the banking system was also affected by the new policies and a significant number of foreign and domestic banks entered into the system. However, the funds could not be channelled to productive investments, instead being used to finance government budget deficits.

The 1990s were years of high fluctuations in terms of economic indicators. Several international and domestic crises affected the country's economy. The Turkish banking system also started to become unstable and was unable to finance the needs of a growing economy, due to the low level of capital accumulation in the country. Eventually, the 2000-2001 crisis hit the economy severely, becoming the most serious financial and economic crisis since WWII. The policy programme of the IMF, however, improved public balances and sustainable price stability. Structural reforms and positive circumstances in international markets then helped the Turkish economy to grow substantially by 2013. By the end of the

1973-2013 period, an overall decrease in the number of banks and a significant increase in the number of branches can be observed. A significant trend towards centralisation of the banking system is, therefore, evident.

One important issue in Turkey is the disparities between provinces in terms of economic development and banking activities. A decline in the level of prosperity and an increase in inequalities have been clearly observed since the mid-1970s, especially moving from west to east. The data shows that the redistribution policies were not fully successful at driving convergence across provinces. It can be argued that one of the main reasons for this is the ineffective banking system, which carried out almost all of the capital and money market transactions and activities in the economy. For instance, when provincial loan and deposit data are examined, it is notable that deposits were not redistributed to productive investments.

Overall, the observations can be summarised as follows: at a national level, there is an improvement in overall socio-economic and banking indicators. There has been an improvement in some provinces, particularly in western provinces. However, in general, regional discrepancies have persisted, in particular in eastern and south-eastern regions since the beginning of 1975. The regional financial disparities increased alongside the economic differences between the provinces. Finally, the decentralisation trend that took place in regional economic policies did not reflect on banking system policies. On the contrary, the banking system became more centralised. Before the 1980s, small local banks all disappeared, either by closing or becoming branches of larger commercial banks. Overall, the economic and banking data for Turkish provinces summarised in this chapter form the basis of the theory and empirical papers presented in this study.

2.6. Appendix

2.6.1. Additional Figures





Source: Authors' calculations based on Özötün (1980, 1988), TSTATS and BAT.

Figure 2.6.1.2. GDP, Loans and Deposits for Elazig, Kars, Malatya and Tokat



Source: Authors' calculations based on Özötün (1980, 1988), TSTATS and BAT

2.6.2. Additional Tables

Provinces	5	1975	1980	1985	1990	1995	2000	2005	2010	2013
1. A	diyaman	+	+	+	+	+	+	+	+	+
2. A	fyonkarahisar	+	+	_	-	-	-	-	-	-
3. A	Agri	+	+	+	+	+	+	+	+	+
4. A	masya	_	-	+	+	+	+	+	+	+
5. A	Artvin	+	+	+	+	+	+	+	+	+
6. E	Bilecik	+	+	_	-	_	-	-	-	-
7. E	Bingol	+	+	+	+	+	+	+	+	+
8. E	Bitlis	+	+	+	+	+	+	+	+	+
9. E	Bolu	+	+	_	-	_	-	-	-	-
10. E	Burdur	+	+	_	-	_	-	-	-	-
11. C	Canakkale	+	+	_	-	_	+	+	+	+
12. C	Cankiri	+	+	+	+	+	+	+	+	+
13. C	Corum	+	+	+	+	+	+	+	+	+
14. E	Denizli	+	-	_	-	_	-	-	-	-
15. E	Divarbakir	+	+	+	+	+	+	+	+	+
16. E	Elazig	_	+	+	+	+	+	+	+	+
17. E	Erzincan	+	+	+	+	+	+	+	+	+
18. E	Erzurum	+	+	+	+	+	+	+	+	+
19. 0	Baziantep	_	+	_	_	_	_	_	_	-
20. 0	firesun	+	+	_	_	_	+	+	+	+
21. 0	iumushane	+	+	+	+	+	+	+	+	+
22. F	lakkari	+	+	+	+	+	+	+	+	+
23 K	Cahramanmaras	+	+	+	+	+	+	+	+	+
24 K	Cars	+	+	+	+	+	+	+	+	+
25 K	Castamonu	+	+	+	+	+	+	+	+	+
26. K	Cirklareli	_	+	_	_	_	_	_	_	_
27. K	Cirsehir	+	+	_	_	_	_	+	+	+
28. N	/alatva	_	+	+	+	+	+	+	+	+
29 N	/ardin	+	+	+	+	+	+	+	+	+
30. N	Aus	+	+	+	+	+	+	+	+	+
31. N	Jevsehir	_	+	_	_	_	+	+	+	+
32. N	ligde	+	+	_	_	_	+	+	+	+
33. 0)rdu	+	+	_	_	_	_	+	+	+
34. R	lize	_	_	_	_	_	+	+	+	+
35. 8	amsun	_	_	_	_	_	+	+	+	+
36. 8	anliurfa	+	+	+	+	+	+	+	+	+
37. 8	biirt	+	+	+	+	+	+	+	+	+
38. 8	linop	+	+	+	+	+	+	+	+	+
39 S	livas	+	+	+	+	+	+	+	+	+
40. T	okat	+	+	+	+	+	+	+	+	+
41. T	rabzon	-	-	-	_	_	+	+	+	+
42. T	unceli	+	+	+	+	+	+	+	+	+
43. I	Jsak	+	+	-	_	_	-	-	_	_
44. V	/an	+	+	+	+	+	+	+	+	+
45. Y	ozgat	+	+	+	+	+	+	+	+	+
46. 7	Conguldak	-	-	-	+	+	+	+	+	+
If the prov	ince is priority t	he value is +.	- otherw	ise. This	data is	obtainer	l from tl	ne Offici	al Gazet	te of
the Repub	lic of Turkev.		••				••			÷

Table 2.6.2. PPDs since 1975

Name of the New Province	Originated From	Year of Separation
Aksaray	Nigde	1989
Bayburt	Gumushane	1989
Karaman	Konya	1989
Kirikkale	Ankara	1989
Batman	Siirt	1990
Sirnak	Siirt	1990
Bartin	Zonguldak	1991
Ardahan	Kars	1992
Igdir	Kars	1992
Yalova	Istanbul	1995
Karabuk	Zonguldak	1995
Kilis	Gaziantep	1995
Osmaniye	Adana	1996
Duzce	Bolu	1999

Table 2.6.3. Table of Newly Established Provinces

Table 2.6.4. Start-up Enterprises

	1975-1	6261	1980-1	1984	1985-198	39	1990-19	94	1995-199	60	2000-2	004	2004-20	60	2010-20)13
1 st G	Istanbul	6382	Istanbul	6516	Istanbul	9880	Istanbul	14317	Istanbul	22352	Istanbul	20728	Istanbul	34092	Istanbul	40492
roup ¹³	Ankara	2567	Ankara	2095	Ankara	4211	Ankara	5477	Ankara	7728	Ankara	7482	Ankara	12916	Ankara	13319
31	Izmir	1535	Izmir	1314	Izmir	2250	Izmir	3761	Izmir	5052	Izmir	3932	Izmir	5084	Izmir	5206
	Konya	1169	Konya	1005	Konya	1336	Bursa	1636	Antalya	3134	Antalya	3076	Antalya	5061	Antalya	4444
	Adana	1094	Adana	835	Adana	1310	Antalya	1493	Bursa	2567	Bursa	1867	Bursa	2952	Bursa	2866
2 nd C	Trabzon	430	Denizli	311	Kocaeli	474	Manisa	525	Samsun	808	Samsun	632	Manisa	1093	Balikesir	1135
iroup	Denizli	425	Kars	306	Mugla	448	Tekirdag	463	Tekirdag	753	Hatay	605	Zonguldak	955	Manisa	1127
	Aydin	417	Kocaeli	282	Eskisehir	408	Sakarya	422	Eskisehir	699	Tekirdag	552	Hatay	943	Sanliurfa	1115
	Sakarya	412	Eskisehir	279	Sakarya	400	Zonguldak	412	Sakarya	637	Zonguldak	505	Samsun	784	Diyarbakir	901
	Diyarbakir	410	Erzurum	273	Maras	394	Diyarbakir	380	Diyarbakir	630	Sakarya	484	Sakarya	778	Sakarya	900
3 rd G	Nevsehir	246	Agri	195	Kutahya	249	Mardin	240	Edirne	393	Nigde	266	Kutahya	410	Mardin	451
Group	Ordu	244	Elazig	181	Sanliurfa	247	Siirt	228	Kutahya	349	Kars	259	Erzurum	406	Nigde	449
	Nigde	242	Tokat	174	Kastamonu	234	Kars	224	Elazig	330	Tokat	256	Van	402	Kirklareli	447
	Yozgat	231	Maras	169	Nigde	225	Ordu	221	Isparta	325	Elazig	250	Tokat	394	Sivas	446
	Bingol	227	Nigde	166	Canakkale	223	Sivas	218	Sivas	310	Sivas	226	Sivas	373	Canakkale	445
4 th G	Mus	83	Cankiri	51	Hakkari	70	Cankiri	64	Cankiri	108	Cankiri	80	Bitlis	119	Hakkari	120
roup	Sinop	81	Sinop	44	Bitlis	69	Gumushane	58	Mus	96	Bingol	79	Bingol	112	Sinop	108
	Bilecik	34	Bilecik	34	Sinop	99	Sinop	56	Gumushane	90	Mus	77	Cankiri	103	Mus	105
	Hakkari	34	Hakkari	31	Bilecik	57	Mus	52	Sinop	65	Sinop	61	Sinop	97	Cankiri	92
	Tunceli	24	Tunceli	25	Tunceli	23	Tunceli	18	Tunceli	42	Tunceli	36	Tunceli	62	Tunceli	70

Source: TSTATS

¹³¹ We define the groups such that, we divide 67 provinces into 4 groups. There are seventeen provinces in each group. We take the first five of the provinces in each group except of the lowest group. In order to show the big gap among the provinces we take the lowest provinces of the lowest group.

Table 2.6.4. Closed Enterprises

	1975-197	61	1980-19	84	1985-1989		1990-1994	1995-1999		2000-200	4	2004-20	60	2010-20	13
	Istanbul	2122	Istanbul	1955	Istanbul 2328	8 Ist	tanbul 2160	Istanbul 25	86]	stanbul	4615	Istanbul	10442	Istanbul	15171
15	Izmir	463	Izmir	446	Izmir 968	8 A1	nkara 1057	Ankara 12	693	Ankara	1517	Ankara	3363	Ankara	3940
st Grou	Ankara	400	Ankara	422	Bursa 656	6 K(onya 575	Antalya 60	82	Antalya	1224	Izmir	1683	Antalya	3221
р	Konya	297	Konya	349	Ankara 636	2 Br	JITSA 522	Izmir 60	27 1	zmir	844	Eskisehir	1469	Izmir	1948
	Bursa	266	Bursa	321	Konya 606	5 Iz	mir 499	Konya 6	10	Konya	699	Diyarbakir	1288	Adana	1153
	Denizli	106	Canakkale	116	Denizli 235	5 Bc	olu 182	Zonguldak 1'	2 LL	Samsun	240	Gaziantep	439	Manisa	472
2r	Canakkale	103	Hatay	116	Maras 228	Si.	vas 180	Bolu 1	72	Aydin	239	Kayseri	388	Samsun	467
nd Grou	Antalya	102	Denizli	113	Mersin 215	5 Af	fyon 179	Diyarbakir 10	88	Zonguldak	221	Denizli	367	Kayseri	461
ıp	Trabzon	95	Sakarya	107	Kutahya 210	<u>N</u>	ugla 173	Eskisehir 10	89	Fekirdag	217	Kars	361	Denizli	460
	Bolu	94	Kutahya	104	Giresun 198	8 Te	skirdag 164	Maras 10	67	Maras	212	Erzurum	334	Gaziantep	445
	Burdur	65	Elazig	62	Tekirdag 133	3 K(ocaeli 111	Sanliurfa 1	14	Sanliurfa	115	Corum	211	Y ozgat	241
3r	Isparta	65	Mardin	62	Mugla 130	lsl 0	parta 109	Kars 1	13	Γ rabzon	110	Sakarya	204	Edirne	240
d Grou	Sivas	63	Kocaeli	78	Afyon 127	7 Tr	abzon 104	Trabzon 10	90	Kutahya	109	Siirt	191	Mus	234
ıp	Elazig	59	Amasya	75	Diyarbakir 122	5 EI	azig 94	Elazig 10	03	Drdu	108	Van	190	Nigde	232
	Nigde	59	Isparta	71	Corum 120) Ed	lime 93	Malatya 10	00	Nigde	106	Afyon	183	Malatya	228
	Bingol	5	Bilecik	10	Bilecik 12	AG	diyaman 20	Adiyaman 2	55	Sinop	43	Mus	70	Hakkari	63
4t	Adiyaman	4	Mus	8	Adiyaman 11	Σ	us 19	Bilecik 2	42	Gumushane	39	Bitlis	65	Mardin	57
h Grou	Bilecik	4	Usak	S	Hakkari 9	Bi	tlis 16	Sinop 1	8	Bitlis	35	Hakkari	63	Gumushane	54
р	Hakkari	б	Hakkari	б	Bingol 4	Bi	lecik 11	Mus 1	5	Adiyaman	34	Bingol	60	Cankiri	40
	Usak	1	Tunceli	7	Tunceli 3	JL	inceli 5	Tunceli	ь Г	Funceli	12	Gumushane	59	Tunceli	16

Source: TSTATS

0-2013	14315733	5223073	4081495	2741690	2664607	1295756	1239293	1172687	1153912	1101681	701814	629160	609700	597415	1 594328	ne 210293	202912	182898	166892	
201	Istanbul	Ankara	Izmir	Bursa	Adana	Siirt	Balikesir	Van	Maras	Aydin	Afyon	Sivas	Tokat	Kars	Adiyamar	Gumushaı	Sinop	Cankiri	Artvin	
2009	1296164 6	4769692	3744884	2467763	2448670	1168134	1121463	1020128	1015832	984383	707822	645967	638522	607159	587884	201760	200502	184887	169332	
2004-	Istanbul	Ankara	Izmir	Adana	Bursa	Kayseri	Balikesir	Zonguldak	Maras	Van	Nigde	Sivas	Tokat	Kars	Adiyaman	Sinop	Bilecik	Cankiri	Artvin	
-2004	1123797 4	4492974	3476148	2363878	2351480	1090334	1088337	1022481	1002964	949675	716721	711392	653535	636048	628407	239406	217813	197026	185122	
2000	Istanbul	Ankara	Izmir	Konya	Adana	Kayseri	Balikesir	Zonguldak	Maras	Aydin	Mardin	Eskisehir	Tekirdag	Kutahya	Yozgat	Hakkari	Sinop	Bilecik	Artvin	
6661	9205872	4149765	3168037	2295115	1968539	1025348	1006558	969554	921351	912975	669573	660887	651788	633238	600904	362819	360790	350519	322776	
1995-	stanbul	Ankara	zmir	ćonya	Bursa	ćayseri	Siirt	Maras	[rabzon	Aydin	Mugla	Mardin	Yozgat	ćutahya	Corum	Amasya	lize	3olu	Kirklareli	
994	7851099]	3747091	2829989	2061346]	1917821	981968	966874	914838	894810	866039	607304	599904	594727	593797	593313	251520	208653]	185299	179286	
1990-1	stanbul	Ankara	zmir	Konya	Adana	Zonguldak	Kayseri	Maras	Siirt	Erzurum	Corum	Yozgat	Kars	Kutahya	Mugla	Bingol	Artvin	Hakkari	Bilecik	
989	642946] 7	327844	246860 J	180952	176155	8776022	8614641	8529851	819812	790356]	583303	558841	5572381	5176141	516898]	2380021	220936	1785791	166756]	
1985-1	stanbul	Ankara	zmir	Adana	Konya	Sanliurfa	Maras	Brzurum	Kocaeli	Drdu	Van	Yozgat	Kutahya	3olu	Mugla	Gumushane	Artvin	Jakkari	3ilecik	
-1984	5182328]	3035344	2113189]	1644903	1581822]	805683	779008 1	758970]	753105]	733664 0	531397	520780	515607]	500074]	488910]	233840	227933 ,	166336]	155547]	
1980-	Istanbul	Ankara	Izmir	Konya	Adana	Antalya	Maras	Sivas	Trabzon	Ordu	Nigde	Yozgat	Kutahya	Van	Giresun	Bingol	Artvin	Hakkari	Tunceli	
1979	4239509	2693051	1795085	1478332	1338582	717439	704534	702000	701097	683988	501996	482701	481089	470185	445923	227741	217963	161944	141072	
1975-	Istanbul	Ankara	Izmir	Konya	Adana	Kayseri	Kars	Diyarbakir	Antalya	Ordu	Yozgat	Nigde	Kutahya	Giresun	Bolu	Burdur	Bingol	Tunceli	Bilecik	
		1:	st Grou	ıp			2r	nd Grou	up			31	rd Grou	ıp			41	th Grou	ıp	

Source: TSTATS and Authors' Calculations based on TSTATS

1980-1984 Jul 174928	4 74928	22	1985- Istanbul	1989 13892466	1990-1 İstanbul	994 24337753	1995-19 Istanbul	999 5572155	2000-20 İstanbul	004 2087134	2005- Istanbul	2009 3244022	2010-2 Istanbul	013 4503827
ik 899929 Mugla 5833	99929 Mugla 5833	Mugla 5833	5833	228	Ankara	2210488	Bursa	4760490	Kocaeli	556279	Bursa	996309	Adana	3737689
	10/00 Antaiya 100/01 30952 Ankara 1333	Antarya 1557 Ankara 1333	1333	1/0	Antalya Bursa	1447331	ızmır Tekirdag	2421234	bursa Izmir	529625	Kocaell Antalya	597125	kocaen Izmir	2120666
1 270918 Bursa 13055	70918 Bursa 13055	Bursa 13055	13055	89	Tekirdag	1388012	Ankara	2381864	Ankara	512305	Ankara	582630	Ankara	1508477
1ya 58583 Malatya 17325	58583 Malatya 17325	Malatya 17325	17325	6	Hatay	329627	Konya	443845	Mersin	143024	Konya	181671	Kayseri	489193
kkale 52453 Kirklareli 16692	52453 Kirklareli 16692	Kirklareli 16692	16692	1	Mersin	268237	Sakarya	436890	Kayseri	138801	Mersin	167739	Canakkale	451621
sa 51969 Bolu 155591	51969 Bolu 155591	Bolu 155591	155591		Adiyaman	264480	Bilecik	385577	Zonguldak	128773	Sinop	162124	Malatya	419322
tya 50076 Denizli 146386	50076 Denizli 146386	Denizli 146386	146386		Cankiri	262564	Zonguldak	296325	Eskisehir	111881	Kayseri	134457	Sakarya	408129
n 45834 Kayseri 143015	15834 Kayseri 143015	Kayseri 143015	143015		Sakarya	219117	Malatya	293537	Denizli	111640	Aydin	125385	Balikesir	404120
g 23952 Samsun 53217	23952 Samsun 53217	Samsun 53217	53217		Canakkale	98708	Samsun	94745	Adiyaman	35914	Ordu	62604	Cankiri	258311
s 22581 Isparta 51778	22581 Isparta 51778	Isparta 51778	51778		Sivas	98404	Mardin	91314	Corum	34376	Tokat	61258	Bilecik	251690
19199 Sakarya 50059	19199 Sakarya 50059	Sakarya 50059	50059		Isparta	98014	Corum	86043	Usak	32768	Kutahya	61237	Trabzon	236259
m 16623 Nevsehir 47903	16623 Nevsehir 47903	Nevsehir 47903	47903		Tokat	95965	Afyon	85445	Isparta	30276	Usak	60495	Diyarbakir	218997
e 15992 Siirt 43807	15992 Siirt 43807	Siirt 43807	43807		Sanliurfa	88657	Adiyaman	82091	Sivas	25868	Erzincan	57908	Bolu	192998
2285 Mus 4187	2285 Mus 4187	Mus 4187	4187		snM	8139	Bingol	14522	Hakkari	2354	Burdur	11923	Yozgat	47016
2195 Artvin 3861	2195 Artvin 3861	Artvin 3861	3861		Giresun	5888	Bitlis	6918	Kirsehir	1451	Bingol	10562	Agri	33742
ushane 1918 Kirsehir 3234	1918 Kirsehir 3234	Kirsehir 3234	3234		Rize	4804	Mus	5496	Bitlis	1104	Cankiri	5654	Sinop	29953
ol 912 Hakkari 2175	912 Hakkari 2175	Hakkari 2175	2175		Hakkari	2783	Hakkari	2893	Bingol	167	Bitlis	5589	Hakkari	23741
ari 311 Tunceli 1040	311 Tunceli 1040	Tunceli 1040	1040		Tunceli	1007	Tunceli	1932	Tunceli	295	Agri	3448	Tunceli	13271

Table 2.6.6. Investment Incentives (\$1000)

Source: TOBB

Table 2.6.7	. Public	Expenditure	(\$1000)
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)13	1738451	1442769	396794	395822	394349	168066	161960	161945	159948	156579	127288	126571	123282	105255	102737	36051	34460	29630	28880	24825
2010-20	stanbul	Ankara	Diyarbakir	Mardin	Izmir	Samsun	Adiyaman	Adana	Γ rabzon	Eskisehir	Manisa	Agri	Canakkale	Afyon	Aydin	Bolu	Usak	Funceli	Nevsehir	Bilecik
600	2110265	783086	390033	347971	319206	147831	128444	127496	124150	122883	70480	69847	67529	64942	63834	18202	15414	14942	14435	13743
2005-2	stanbul	Ankara	Konya	zmir	Artvin	Eskisehir	Diyarbakir	Brzurum	Γrabzon	Sivas	Corum	Γekirdag	Jenizli	Kastamonu	Rize	Usak	Cankiri	Γunceli	3ilecik	Nevsehir
004	672642	480267	272577	249758	191318	83782	69364 I	68959 I	55406	53004	32095	31280	30804	30586	26120 I	7256 1	7129	5465	4977 I	4478
2000-2	Istanbul	Ankara	Izmir	Maras	Bursa	Gaziantep	Balikesir	Erzurum	Denizli	Zonguldak	Bingol	Mus	Hatay	Kutahya	Van	Usak	Yozgat	Kirklareli	Burdur	Nevsehir
666	673699	652673	390341	240174	118734	54955	53012	48823	42846	42193	26821	23994	22478	22117	21686	12368	11539	10637	10216	9920
1995-1	lstanbul	Ankara	Izmir	Bursa	Antalya	Konya	lsparta	Samsun	Balikesir	Maras	Trabzon	Mus	Tekirdag	Manisa	Artvin	Bilecik	Kirklareli	Gumushane	Rize	Sinop
1994	673515	539903	332028	164214	119060	42479	39785	36004	35882	33310	19854	19634	19444	18213	17854	5052	4962	4723	4482	3705
1990-	lstanbul	Ankara	Izmir	Sanliurfa	Mugla	Samsun	Malatya	Gaziantep	Hatay	Erzincan	Yozgat	Denizli	Bolu	Edirne	Kirsehir	Giresun	Artvin	Cankiri	Bilecik	Usak
989	400619	301108	200759	125665	117756	41910	39968	34947	34385	32070	20435	18184	17500	16785	16104	6747	6277	5556	5102	4381
1985-1	Istanbul	Ankara	Sanliurfa	Izmir	Mugla	Kocaeli	Mersin	Antalya	Balikesir	Hatay	Elazig	Kastamonu	Trabzon	Tokat	Yozgat	Bitlis	Giresun	Sinop	Bilecik	Usak
984	426927	308116	217220	189243	180459	49951	49482	48273	41971	39449	17193	16483	16277	16205	16153	4741	4559	4525	4011	1966
1980-1	Mugla	Ankara	Izmir	Maras	Istanbul	Kocaeli	Mersin	Sanliurfa	Siirt	Balikesir	Mardin	Kirsehir	Trabzon	Agri	Van	Gumushane	Tunceli	Sinop	Bilecik	Usak
979	332304	270650	264870	244010	136536	72396	72267	60698	54962	50615	24671	24106	23274	22422	20430	7418	7080	7030	6003	3885
1975-1	Ankara	Istanbul	Izmir	Maras	Sivas	Antalya	Mugla	Balikesir	Afyon	Eskisehir	Bolu	Siirt	Aydin	Canakkale	Denizli	Hakkari	Nevsehir	Gumushane	Tunceli	Usak
		15	st Grou	р			2 ^r	^d Grou	р			3ª	rd Grou	р			4	th Grou	р	

Source: Ministry of Development, Kutbay, C. (1982)

Table 2.6.8. GDP (\$1000)

2010-2013	stanbul 244271769	Ankara 77876761	Izmir 49938331	Bursa 31768672	Kocaeli 27425955	Tekirdag 11252372		Mugla 9540894	Mugla 9540894 Denizli 9232684	Mugla 9540894 Denizli 9232684 Eskisehir 9025827	Mugla 9540894 Denizli 9232684 Eskisehir 9025827 Diyarbakir 8070448	Mugla 9540894 Denizli 9232684 Eskischir 9025827 Diyarbakir 8070448 Afyon 5147071	Mugla 9540894 Denizli 9232684 Eskisehir 9025827 Diyarbakir 8070448 Afyon 5147071 Sivas 4850442	Mugla 9540894 Denizli 9232684 Eskisehir 9025827 Diyarbakir 8070448 Afyon 5147071 Sivas 4850442 Ordu 4246978	Mugla 9540894 Denizli 9540894 Denizli 9232684 Eskisehir 9025827 Diyarbakir 8070448 Afyon 5147071 Sivas 4850442 Ordu 4246978 Blazig 3950747	Mugla 9540894 Denizli 9532684 Sskischir 9025827 Siyarbakir 9025827 Diyarbakir 8070448 Afyon 5147071 Sivas 4850442 Ordu 4246978 Blazig 3950747 Corum 3820070	Mugla 9540894 Denizli 9532684 Sskischir 9232684 Sskischir 9025827 Jiyarbakir 8070448 Afyon 5147071 Sivas 4850442 Drdu 4246978 Blazig 3950747 Elazig 3950747 Mus 2033484	Mugla 9540894 Denizli 9532684 Benizli 9232684 Skisehir 9025827 Jiyarbakir 8070448 Afyon 5147071 Sivas 4850442 Drdu 4246978 Sivas 3950747 Elazig 3950747 Mus 2033484 Bitlis 1526975	Mugla 9540894 Denizli 9232684 Eskisehir 9025827 Sivas 8070448 Afyon 5147071 Sivas 4850442 Sivas 4850442 Sivas 4850442 Sivas 3950747 Blazig 3950747 Bitlis 1526975 Bingol 1293602	Mugla 9540894 Denizli 9232684 Eskisehir 9025827 Sivasbakir 8070448 Afyon 5147071 Sivas 4850442 Sivas 4850442 Sivas 4850442 Sivas 4850442 Bitus 3950747 Blazig 3950747 Bitlis 1526975 Bingol 1293602 Hakkari 1251742
.2009	190672881 I:	64462704	39902854 L	19734814 E	14649126 K	9209946 T		8275968 N	8275968 N 7420499 I	8275968 N 7420499 E 7068261 E	8275968 M 7420499 E 7068261 F 5968450 I	8275968 M 7420499 E 7068261 E 5968450 E 3025962 <i>i</i>	8275968 M 7420499 E 7068261 E 5968450 E 3025962 A 33590945 S	8275968 M 7420499 E 7068261 E 5968450 E 3025962 A 33290945 S 5096998 C	8275968 M 7420499 E 7068261 E 5968450 E 3025962 A 33590945 S 5096998 C 5096998 C	8275968 M 7420499 E 7068261 E 5968450 E 3025962 A 3025962 S 5096998 C 3377357 E 3025962 C	8275968 M 7420499 E 7068261 E 5968450 E 3025962 A 33259045 S 5096998 C 5096998 C 3377357 E 3325962 C 1408668 N	8275968 M 7420499 D 7068261 E 5968450 E 3025962 A 3025962 A 33570945 S 5096998 C 5096998 C 33577357 E 3025962 C 3025962 C 1408668 N	8275968 M 7420499 D 7068261 E 5968450 E 3025962 A 3025962 S 3577357 E 3025968 C 33577357 E 3025962 C 3025962 C 1408668 N 11079043 E 1079043 E	8275968 M 7420499 D 7068261 E 5968450 E 3025962 A 3025962 S 3577357 E 3025968 C 33577357 E 3025962 C 1408668 M 11079043 E 967121 E 908543 F
2005-	Istanbul	Ankara	Izmir	Kocaeli	Adana	Kayseri	E	I ekirdag	l ekırdag Mugla	l ekırdag Mugla Eskisehir	l ekırdağ Mugla Eskisehir Diyarbakir	l ekırdağ Mugla Eskisehir Diyarbakir Edime	l ektraag Mugla Eskisehir Diyarbakir Edirne Ordu	l ekırdağ Mugla Eskisehir Diyatbakir Edime Ordu Sanliurfa	l ekırdağ Mugla Eskisehir Diyarbakir Edime Ordu Ordu Sanliurfa	l ekırdağ Mugla Eskisehir Diyarbakir Edime Ordu Ordu Sanliurfa Sivas	l ekırdağ Mugla Eskisehir Diyarbakir Edime Ordu Ordu Sanliurfa Sivas Sivas Sivas Agri	l ekırdağ Mugla Eskisehir Diyarbakir Ordu Ordu Sanliurfa Sivas Sivas Sivas Bidis	l ekırdağ Mugla Eskisehir Diyarbakir Edime Ordu Sanliurfa Sivas Sivas Sivas Birlis Bitlis	l ektraag Mugla Eskisehir Diyarbakir Edime Ordu Ordu Sanliurfa Sivas Sivas Sivas Bitlis Bitlis Bingol
9-2004	53724155	21374620	17132840	10491407	8685504	3234809	3215678	-	3103113	3103113 2794630	3103113 2794630 2708640	3103113 2794630 2708640 1885279	3103113 2794630 2708640 1885279 1853868	3103113 2794630 2708640 1885279 1853868 1754124	3103113 2794630 2708640 1885279 1853868 1754124 1754009	3103113 2794630 2708640 1885279 1853868 1754124 1754124 1754009 1754009	3103113 2794630 2708640 1885279 1853868 1754124 1754124 1754009 1754009 1754009 1754009 1754009	3103113 2794630 2708640 1885279 1853868 1754124 1754124 1754009 1754009 1754009 1754009 1754009 17690117 494070 494070	3103113 2794630 2708640 1885279 1853868 1754124 1754124 1754009 1690117 494070 494070 314390 314390	3103113 2794630 2708640 1885279 1853868 1754124 1754124 1754009 1754009 1754009 1754009 1754009 1754025 314390 314390 263161
2000	Istanbul	Ankara	Izmir	Kocaeli	Bursa	Mugla	Denizli		Kayseri	Kayseri Diyarbakir	Kayseri Diyarbakir Sakarya	Kayseri Diyarbakir Sakarya Siirt	Kayseri Diyatbakir Sakarya Siirt Corum	Kayseri Diyarbakir Sakarya Siirt Corum Elazig	Kayseri Diyarbakir Sakarya Siirt Corum Elazig Edirne	Kayseri Diyarbakir Sakarya Siirt Corum Elazig Edirne Kirklareli	Kayseri Diyarbakir Sakarya Siirt Corum Elazig Edirne Edirne Mus	Kayseri Diyarbakir Sakarya Siirt Corum Corum Elazig Edirne Edirne Mus Mus	Kayseri Diyarbakir Sakarya Siirt Corum Corum Elazig Edirne Edirne Mus Mus Bitlis Bitlis	Kayseri Diyarbakir Sakarya Siirt Corum Corum Elazig Edime Edime Mus Mus Bitlis Bitlis Tunceli
-1999	31619723	11839036	10245297	6576013	5346016	1789760	1737906		1720686	1720686 1709850	1720686 1709850 1623939	1720686 1709850 1623939 1048399	1720686 1709850 1623939 1048399 1033700	1720686 1709850 1623939 1048399 1033700 980636	1720686 1709850 1623939 1048399 1033700 980636 950299	1720686 1709850 1623939 1048399 1048399 1033700 980636 950299 948962	1720686 1709850 1623939 1048399 1033700 980636 980636 950299 948962 248340	1720686 1709850 1623939 1048399 1033700 980636 980636 950299 948962 248340 248340 242698	1720686 1709850 1623939 1048399 1048399 980636 980636 950299 948962 248340 248340 248363 192109	1720686 1709850 1623939 1048399 1048399 980636 980636 950299 948962 248340 248340 248340 192109 192109
1995	Istanbul	Ankara	Izmir	Kocaeli	Bursa	Denizli	Diyarbakir	_	Eskisehir	Eskisehir Kayseri	Eskisehir Kayseri Sakarya	Eskisehir Kayseri Sakarya Kirklareli	Eskisehir Kayseri Sakarya Kirklareli Edime	Eskisehir Kayseri Sakarya Kirklareli Edirne Siirt	Eskisehir Kayseri Sakarya Kirklareli Edime Siirt Sivas	Eskisehir Kayseri Sakarya Kirklareli Edime Siirt Siirt Ordu	Eskisehir Kayseri Sakarya Kirklareli Edime Siirt Siirt Sivas Ordu Bitlis	Eskisehir Kayseri Sakarya Kirklareli Edime Siirt Sivas Sivas Ordu Mus	Eskisehir Kayseri Sakarya Kirklareli Edirne Siirt Sivas Sivas Ordu Mus Mus	Eskisehir Kayseri Sakarya Kirklareli Edirne Siirt Sivas Sivas Ordu Mus Mus Hakkari
0-1994	25875979	11047258	9219723	5752169	5123437	1612481	1522760		1494005	1494005 1478152	1494005 1478152 1391304	1494005 1478152 1391304 897037	1494005 1478152 1391304 897037 889234	1494005 1478152 1391304 897037 889234 887426	1494005 1478152 1391304 897037 889234 887426 861811	1494005 1478152 1391304 897037 889234 887426 861811 861811 839066	1494005 1478152 1391304 897037 889234 887426 861811 861811 861811 215622 215622	1494005 1478152 1391304 897037 889234 887426 861811 861811 839066 215522 215528	1494005 1478152 1391304 897037 889234 887426 861811 861811 839066 215522 215528 215558 163094	1494005 1478152 1391304 897037 889234 887426 861811 861811 839066 215522 215528 215558 163094 163094 136287
199(' Istanbul	Ankara	Izmir	Kocaeli	Bursa	Mugla	Eskisehir		Kayseri	Kayseri Denizli	Kayseri Denizli Tekirdag	Kayseri Denizli Tekirdag Elazig	Kayseri Denizli Tekirdag Elazig Edime	Kayseri Denizli Tekirdag Elazig Edime Sivas	Kayseri Denizli Tekirdag Elazig Edime Sivas Nigde	Kayseri Denizli Tekirdag Elazig Edime Sivas Nigde Erzurum	Kayseri Denizli Tekirdag Elazig Edime Sivas Nigde Erzurum Agri	Kayseri Denizli Tekirdag Elazig Sivas Sivas Nigde Erzurum Agri Mus	Kayseri Denizli Tekirdag Elazig Sivas Sivas Nigde Erzurum Agri Mus Bingol	Kayseri Denizli Tekirdag Elazig Edime Sivas Sivas Nigde Erzurum Agri Mus Bingol Hakkari
-1989	14834767	5426530	5357871	3145731	2632621	898040	886553		820748	820748 805607	820748 805607 752345	820748 805607 752345 465444	820748 805607 752345 465444 461870	820748 805607 752345 465444 461870 461870 452315	820748 805607 752345 465444 461870 452315 452315 446781	820748 805607 752345 465444 461870 452315 452315 446781 431987	820748 805607 752345 465444 461870 452315 446781 446781 431987 109682	820748 805607 752345 465444 461870 452315 452315 446781 446781 431987 109682 105606	820748 805607 752345 465444 461870 452315 452315 446781 446781 431987 109682 105606 105606 74886	820748 805607 752345 465444 461870 452315 446781 446781 446781 109682 109682 105606 74886 65385
1985	Istanbul	Ankara	Izmir	Kocaeli	Bursa	Denizli	Eskisehir		Kayseri	Kayseri Diyarbakir	Kayseri Diyarbakir Kutahya	Kayseri Diyarbakir Kutahya Sanliurfa	Kayseri Diyarbakir Kutahya Sanliurfa Afyon	Kayseri Diyarbakir Kutahya Sanliurfa Afyon Sivas	Kayseri Diyarbakir Kutahya Sanliurfa Afyon Sivas Erzurum	Kayseri Diyarbakir Kutahya Sanliurfa Afyon Sivas Sivas Brzurum Nigde	Kayseri Diyarbakir Kutahya Sanliurfa Afyon Sivas Sivas Erzurum Nigde Mus	Kayseri Diyarbakir Kutahya Sanliurfà Afyon Sivas Sivas Erzurum Nigde Mus Bitlis	Kayseri Diyarbakir Kutahya Sanliurfâ Afyon Sivas Sivas Erzurum Mus Bitlis Bitlis	Kayseri Diyarbakir Kutahya Sanliurfâ Afyon Sivas Sivas Erzurum Mus Bitlis Bitlis Tunceli
-1984	9633439	3632273	3173094	2014499	1459831	565873	558728		556433	556433 479208	556433 479208 477530	556433 479208 477530 333375	556433 479208 477530 333375 333375 332974	556433 479208 477530 333375 332974 332974 327107	556433 479208 477530 333375 332974 327107 323742	556433 479208 477530 333375 332974 323742 323742 323742 312293	556433 479208 477530 333375 333375 332974 327107 323742 323742 323742 323742 102833	556433 479208 477530 333375 333375 332974 327107 327107 323742 323742 312293 102833 102833	556433 479208 477530 333375 333375 332974 327107 323742 323742 323742 323742 323742 323742 73893 102833 102833 66917	556433 479208 477530 333375 333375 333375 333375 3333742 327107 323742 327107 323742 323742 323742 323742 323742 323742 323742 323742 323742 54145
1980.	Istanbul	Izmir	Ankara	Kocaeli	Mersin	Kayseri	Kutahya		Gaziantep	Gaziantep Sakarya	Gaziantep Sakarya Tekirdag	Gaziantep Sakarya Tekirdag Ordu	Gaziantep Sakarya Tekirdag Ordu Sivas	Gaziantep Sakarya Tekirdag Ordu Sivas Corum	Gaziantep Sakarya Tekirdag Ordu Sivas Sivas Nigde	Gaziantep Sakarya Tekirdag Ordu Sivas Sivas Nigde Nigde Sanliurfa	Gaziantep Sakarya Tekirdag Ordu Sivas Sivas Corum Nigde Sanliurfa Mus	Gaziantep Sakarya Tekirdag Ordu Ordu Sivas Corum Nigde Sanliurfà Mus Bitlis	Gaziantep Sakarya Tekirdag Ordu Ordu Sivas Sivas Corum Nigde Sanliurfa Mus Bitlis Bingol	Gaziantep Sakarya Tekirdag Ordu Ordu Sivas Sivas Corum Nigde Sanliurfa Mus Bitlis Bitlis Tunceli
-1979	9658377	3386398	2983622	1586295	1462687	652816	581150		521523	521523 513655	521523 513655 498763	521523 513655 498763 390467	521523 513655 498763 390467 387446	521523 513655 498763 390467 387446 3877697	521523 513655 498763 390467 387446 377697 376564	521523 513655 498763 390467 387446 377697 376564 376564 366689	521523 513655 498763 390467 387446 377697 376564 376564 3765689 138860	521523 513655 313655 498763 390467 387446 377697 376564 376689 138860 138860 111776	521523 513655 513655 498763 390467 387446 377697 376564 376564 376564 138860 138860 111776 89388	521523 513655 313655 498763 390467 387446 377697 376564 376564 138860 138860 111776 89388 89388 82439
1975-	Istanbul	Ankara	Izmir	Adana	Kocaeli	Hatay	Denizli	_	Sakarya	Sakarya Trabzon	Sakarya Trabzon Kutahya	Sakarya Trabzon Kutahya Tokat	Sakarya Trabzon Kutahya Tokat Malatya	Sakarya Trabzon Kutahya Tokat Malatya Elazig	Sakarya Trabzon Kutahya Tokat Malatya Elazig Kars	Sakarya Trabzon Kutahya Tokat Malatya Elazig Kars Nigde	Sakarya Trabzon Kutahya Tokat Malatya Elazig Kars Nigde Gumushane	Sakarya Trabzon Kutahya Tokat Malatya Elazig Kars Nigde Gumushane Bitlis	Sakarya Trabzon Kutahya Tokat Malatya Elazig Kars Kars Nigde Gumushane Bitlis Bingol	Sakarya Trabzon Kutahya Tokat Malatya Elazig Kars Kars Nigde Gumushane Bitlis Bingol Tunceli
		15	st Grou	р				2	2 nd Grou	2nd Group	2 nd Group	2 nd Group	2 nd Group 3	2 nd Group 3 rd Grou	2 nd Group 3 rd Group	2 nd Group 3 rd Group	2 nd Group 3 rd Group	2 nd Group 3 rd Group 4 ^t	2 nd Group 3 rd Group 4 th Group	2 nd Group 3 rd Group 4 th Group

Source: Authors' calculations based on TSTATS, Ozotun (1980, 1986)

Table 2.6.9. Loans (\$1000)

	1975-19′	79	1980-	1984	1985-	1989	1990-	1994	1995-	1999	2000-	2004	2005-2	600	2010	-2013
	Istanbul 1	1725399	Istanbul	1722130	Istanbul	2910179	Istanbul	5956656	Istanbul	10900437	Istanbul	15488960	Istanbul	60447344	Istanbul	112273335
1	Ankara	818001	Ankara	752356	Ankara	1281528	Izmir	2063887	Ankara	3095186	Ankara	4440261	Ankara	19962026	Ankara	39305343
st Grou	Izmir	645759	Izmir	726074	Izmir	1203114	Ankara	2034728	Izmir	2838784	Izmir	3567892	Izmir	15078390	Izmir	28065344
р	Bursa	248146	Bursa	256251	Bursa	391895	Bursa	743426	Bursa	1091040	Bursa	1530985	Antalya	6990140	Antalya	15555731
	Adana	239884	Konya	241088	Adana	379770	Adana	671261	Adana	957886	Antalya	1312602	Bursa	6772589	Bursa	13849963
	Mersin	125669	Mugla	132774	Trabzon	189886	Hatay	275919	Samsun	426725	Denizli	493009	Zongul.	2247455	Denizli	4659476
2ª	Kayseri	122066	Hatay	125508	Hatay	187674	Kayseri	274877	Hatay	390560	Samsun	474712	Denizli	2132610	Hatay	4315489
^{1d} Grou	Mugla	110574	Kayseri	121732	Kayseri	178524	Antep	252240	Kayseri	377053	Kayseri	461839	Hatay	2034064	Zongul.	4226370
р	Sakarya	107189	Sivas	108029	Tekirdag	153629	Trabzon	249457	Trabzon	362659	Tekirdag	422987	Tekirdag	2014767	Tekirdag	4087567
	Sivas	106806	Tekirdag	105302	Sivas	153360	Eskisehir	240541	Tekirdag	347540	Trabzon	421562	Trabzon	1825161	Trabzon	3816555
	Yozgat	86127	Yozgat	81873	Edirne	114791	Kastam.	152901	Ordu	214258	Erzurum	221724	Corum	1003480	Edirne	2232196
31	Kutahya	84462	Edirne	77883	Giresun	114607	Yozgat	151932	Maras	211458	Kutahya	220360	Isparta	961828	Erzurum	2055706
rd Grou	Edirne	84171	Kars	76903	Tokat	113815	Kirklareli	148240	Corum	210437	Maras	220166	Kirklareli	953076	Kutahya	2020462
p	Diyarbakir	79499	Rize	74787	Kars	106538	Tokat	146368	Kirklareli	209645	Urfa	216341	Erzurum	943251	Malatya	1904985
	Tokat	78449	Tokat	74721	Kirklareli	104701	Giresun	143784	Kastam.	187434	Corum	216242	Sanliurfa	904200	Nigde	1902121
	Kirsehir	39641	Agri	32415	Agri	48685	Agri	63192	Amasya	124029	Bitlis	08669	Bitlis	262383	Bitlis	714157
41	Tunceli	34391	Tunceli	30478	Tunceli	42305	Tunceli	55574	Mardin	122329	Tunceli	60796	Tunceli	218811	Mus	462409
^h Grou	Bingol	27386	Mus	21751	Mus	33749	Mus	43638	Artvin	118667	Bingol	55759	Hakkari	215668	Tunceli	459569
0	Mus	25317	Bingol	20757	Bingol	32416	Bingol	43459	Erzincan	112239	Mus	53763	Bingol	206035	Bingol	418987
	Hakkari	18690	Hakkari	14114	Hakkari	20723	Hakkari	27119	Bilecik	112238	Hakkari	43582	Mus	203025	Hakkari	413159

Source: BAT, Author's calculations

Table 2.6.10. Deposit (\$1000)

	1975-1979	1980-	-1984	1985-1	1989	51-0661	94	1995-1	666	2000-	2004	2005-2	2009	2010	-2013
Istanbul	2651415) Istanbul	2535460	Istanbul	4727101	Istanbul	8388647	Istanbul	19281365	Istanbul	33095990	Istanbul	77022134	Istanbul	116711692
Ankara	1120183	3 Izmir	606666	Izmir	1879763	Ankara	3056839	Ankara	5751132	Ankara	10540729	Ankara	27792062	Ankara	42467765
Izmir	930653	Ankara	976035	Ankara	1838279	Izmir	2949402	Izmir	5319394	Izmir	8364667	Izmir	20581413	Izmir	30069182
Bursa	339543	Bursa	336845	Bursa	611871	Bursa	1105000	Bursa	2046125	Bursa	3557725	Antalya	9140287	Antalya	16316801
Adana	1 336476	Adana	304959	Adana	601527	Adana	969970	Adana	1736268	Adana	2980827	Bursa	9070419	Bursa	14707234
Kocae	eli 169734	Mugla	169225	Trabzon	301825	Hatay	427658	Samsun	824906	Antep	1272522	Samsun	3315894	Samsun	5174954
Kayse	eri 147293	Hatay	165311	Hatay	289819	Kayseri	408564	Hatay	749626	Samsun	1265636	Denizli	3205404	Zongul.	4798781
Sakaı	ya 143813	Kayseri	158327	Kayseri	278415	Trabzon	398273	Kayseri	742920	Kayseri	1201280	Hatay	2933622	Hatay	4659397
Mugl	a 143618	Tekirdag	141675	Sivas	241801	Gaziantep	359340	Trabzon	742581	Trabzon	1185519	Trabzon	2914254	Trabzon	4306322
Tekiı	dag 140556	Sakarya	141579	Sakarya	237981	Tekirdag	356285	Tekirdag	683606	Tekirdag	1039943	Tekirdag	2716741	Tekirdag	4297383
Yozg	çat 103586	Kutahya	98448	Isparta	180823	Diyarbakir	237987	Maras	424935	Kutahya	666769	Corum	1639027	Erzurum	2517993
Kuta	hya 102331	Isparta	98297	Edirne	179692	Kirklareli	236802	Edime	424395	Kirklareli.	666069	Tokat	1621309	Edime	2413326
Toka	t 98844	Tokat	97922	Tokat	171051	Yozgat	235937	Corum	419127	Giresun	662019	Kars	1593598	Kutahya	2309092
Ispar	ta 97142	Kirklareli	96153	Kirklareli	164136	Tokat	234336	Kastamonu	401531	Nigde	653570	Giresun	1584105	Isparta	2199201
Kirkl	areli 96408	Kars	93859	Kars	157417	Giresun	230158	Kirklareli	398601	Isparta	634687	Isparta	1581627	Nigde	2193712
Adiy	aman 44832	Agri	39422	Agri	68192	Agri	94028	Agri	158613	Bitlis	246065	Bitlis	537319	Bitlis	867446
Tunc	eli 34499	Tunceli	32919	Tunceli	60400	Tunceli	82921	Tunceli	145801	Tunceli	227047	Tunceli	490071	Tunceli	610698
Bing	ol 29639	Mus	27557	Mus	49005	Mus	67414	Mus	120971	Bingol	192069	Bingol	428904	Mus	580472
Mus	27970	Bingol	26061	Bingol	46436	Bingol	64772	Bingol	112086	Mus	184934	Hakkari	409633	Bingol	543223
Hakka	ari 18495	Hakkari	17275	Hakkari	31533	Hakkari	41660	Hakkari	75110	Hakkari	139963	Mus	399148	Hakkari	525718

Source: BAT

2.6.3. Maps

2.6.3.1. GDP (Billion \$)



2.6.3.2. GDP Per capita(Thousand \$)



Figure 2.7.3.2.1. GDPPC 1975-79, mean-0.9k

Figure 2.7.3.2.2. GDPPC 1980-84, mean-0.77k



Figure 2.7.3.2.3.GDPPC 1985-89, mean-1.04k

Figure 2.7.3.2.4. GDPPC 1990-94, mean-1.74k



Figure 2.7.3.2.5. GDPPC 1995-99, mean-1.87k

Figure 2.7.3.2.6. GDPPC 2000-04, mean-0.31k





Figure 2.7.3.2.8. GDPPC 2010-13, mean-9.88k

2.6.3.3. Deposits (Million \$)



0.4 1 3 5 10 35 80 120 0.5 1

Figure 2.7.3.3.7. Deposits 2005-09, mean-4016m

Figure 2.7.3.3.8. Deposits 2000-04, mean-6117m

2.6.3.4. Loans (Million \$)



Figure 2.7.3.4.1. Loans 1975-79, mean-137.9m



Figure 2.7.3.4.3. Loans 1985-89, mean-209.6m



Figure 2.7.3.4.5. Loans 1995-99, mean-519.1m



Figure 2.7.3.4.7. Loans 2005-99, mean-2856m



Figure 2.7.3.4.2. Loans 1980-84, mean-135.1m



Figure 2.7.3.4.4. Loans 1990-94, mean-340.1m



Figure 2.7.3.4.6. Loans 2000-04, mean-667.2m



Figure 2.7.3.4.8. Loans 2010-13, mean-5641m

2.6.3.5. Number of Branches



Figure 2.7.3.5.1. NOB 1975-79, mean-77



Figure 2.7.3.5.3. NOB 1985-89, mean-96



Figure 2.7.3.5.2. NOB 1980-84, mean-92



Figure 2.7.3.5.4. NOB 1990-94, mean-94



Figure 2.7.3.5.5. NOB 1995-99, mean-102

Figure 2.7.3.5.6. NOB 2000-04, mean-96



Figure 2.7.3.5.7. NOB 2005-09, mean-113

Figure 2.7.3.5.8. NOB 2010-13, mean-149

2.6.3.6. Rural Population (Thousand)



Figure 2.7.3.6.1. PRUR 1975-79, mean-360.1k

Figure 2.7.3.6.2. PRUR 1980-84, mean-366.8k



Figure 2.7.3.6.3. PRUR 1985-89, mean-346.8k

Figure 2.7.3.6.4. PRUR 1990-94, mean-344.9k



Figure 2.7.3.6.5. PRUR 1995-99, mean-343.66k

0.25

0.5

0.75

0.05

0.1

Figure 2.7.3.6.6. PRUR 2000-04, mean-342.57k



Figure 2.7.3.6.7. PRUR 2005-09, mean-296.8k

Figure 2.7.3.6.8. PRUR 2010-13, mean-257.5k

2.6.3.7. Urban Population (Thousand)



Figure 2.7.3.7.1. PUR 1975-79, mean-268.35k

Figure 2.7.3.7.2. PUR 1980-84, mean-336.32k



Figure 2.7.3.7.3. PUR 1985-8, mean-434.4k









Figure 2.7.3.7.5. PUR 1995-99, mean-599.13k



0.5

1

10

4

Figure 2.7.3.7.6. PUR 2000-04, mean-681.29k

0.25

0.1



Figure 2.7.3.7.8. PUR 2010-13, mean-902.8k

2.6.3.8. Public Expenditure (Million \$)



Figure 2.7.3.8.1. PEXP 1975-79, mean- 51.1m

Figure 2.7.3.8.2. PEXP 1980-84, mean-44.9m



Figure 2.7.3.8.3. PEXP 1985-89, mean-42.15m

Figure 2.7.3.8.4. PEXP 1990-94, mean-51.1m

20

10



Figure 2.7.3.8.5. PEXP 1995-99, mean-60.5m

40

80

200

450 675







Figure 2.7.3.8.7. PEXP 2005-09, mean-138.66m

Figure 2.7.3.8.8. PEXP 2010-13, mean-178m

2.6.3.9. Investment Incentive (Billion\$)



Figure 2.7.3.9.1. INVINC 1980-84 mean-92.54m

Figure 2.7.3.9.2. INVINC 1985-89 mean-460.69m



Figure 2.7.3.9.3. INVINC 1990-94 mean-669.5m



0.1



Figure 2.7.3.9.5. INVINC 2000-04 mean-135.2m



Figure 2.7.3.9.7. INVINC 2010-13 mean-508.3m



0.5

1

3

6

Figure 2.7.3.9.6. INVINC 2005-09 mean-194.4m





Figure 2.7.3.10.1. Literacy 1975-79, mean-492.1k

Figure 2.7.3.10.2. Literacy 1980-84, mean-650.3k



Figure 2.7.3.10.3. Literacy 1985-89, mean-529.5k

Figure 2.7.3.10.4. Literacy 1990-94, mean-623.9k



Figure 2.7.3.10.5. Literacy 1995-99, mean-708.8k

Figure 2.7.3.10.6. Literacy 2000-04, mean-790.3k



Figure 2.7.3.10.7. Literacy 2005-09, mean-822.3k

Figure 2.7.3.10.8. Literacy 2010-13, mean-857.75k

Chapter 3

A Theoretical Approach to the Effect of Banks on Regional

Growth

3.1. Introduction

Financial institutions make use of productive resources to promote capital formation, via the provision of a wide range of financial services, in order to provide for the different requirements of lenders and borrowers. Therefore, the financial system plays a significant role in organising and intermediating savings, and guarantees to divide these resources among the real sector efficiently, which in turn makes a significant contribution to economic growth (Levine, 1997). Extensive literature on economic development has attributed a key role in a country's financial system, going back to Schumpeter (1911), who emphasises the positive role of financial development on economic growth.

Recent contributions promote the growth-endorsing role of financial growth, as financial intermediaries lessen the impact of market imperfections (for example, asymmetric information). Researchers place emphasis, both theoretically and empirically, on the importance of financial development to long-term growth. Nevertheless, economists have not fully understood the mechanisms through which financial development affects economic development.

The growth rate of economies that have competitive intermediaries is greater than economies lacking such institutions (Bencivenga and Smith, 1993, to Bose and Cothren, 1997). Therefore, emerging countries, which aim to converge with developed ones, need to concentrate on their financial systems, specifically, on the banking systems. The banks' role in the financial system is always crucial, not only for emerging economies but also advanced ones, as the banking system influences income and wealth distribution, and plays a vital role in sustaining growth.

It is important for individuals and agents to accumulate capital in liquid form for future liquidity needs. Banks are proven to shift savings towards capital, hence promoting growth and reducing unnecessary capital liquidation. Although banks have been noted to influence the rate of economic growth, little progress has been made to develop general equilibrium models. Policy makers could design better policies, in order to adjust to local conditions and decrease the imbalances between regions within a country, through a comprehensive examination of the relationship between finance and economic development.

This chapter suggests a variant of the endogenous growth model with financial intermediaries by bringing a new definition of banking activities, and proposes a more flexible

approach by introducing unit banks and branch banks into the model.¹³² The model contributes to the understanding of regional development in the presence of financial intermediation. According to some studies, branch banking offers benefits owing to the stability of the banking system implied by portfolio diversification across regions and provision of services to rural areas, as a result of branch specialisation. That is to say, branch banking increases the provision of financial services to the rural areas. White (1998) argues that branch banks can reallocate capital from urban to rural areas at low costs, while unit banks must raise all their capital and only issue loans locally.

However, in several instances, branch banking fails to influence and facilitate economic growth due to the following reasons:

• The management of the branch bank focuses attention on maximising the profit of the whole institution, and hence finances the most profit-generating projects, with minimum risk, and neglects other projects.

• Branch managers do not have decision making powers and rely on the decisions made by the top management; this can cause a decrease in the net profit of the branch.

• In branch banking, deposits are collected via branches from rural areas around the country. These resources are shifted to investments in highly urbanised cities. Hence, this causes a flow of capital from less developed to highly developed regions, which, in turn, prevents some regions from catching up with the country's overall growth rate and decelerates development in those areas.¹³³

Bearing these issues in mind, the aim of this aspect of the study is to model how the differential growth between regions varies when such a banking system fails to achieve a balanced distribution of wealth. The study's model is based on the Endogenous Growth Model with financial intermediaries, with the introduction of a rejection variable, representing the branch banking decision making mechanism. Models for hierarchical and decentralised forms of banks are examined in order to investigate the effects of banks on regional economic development.

¹³² It should be noted that endogenous growth is independent from a specific spatial scale. Endogenous growth is economic progress based on the creation, increase and usage of resources at every spatial level: local, regional, national and multinational groups.

¹³³ The following terminology is used interchangeably to describe the economic characteristics of a region: *highly urbanized* and *rich* for developed regions; and *rural* and *poor* for underdeveloped regions.

The structure of the chapter is as follows. Section 2 gives a brief background of banks as depository institutions and discusses the roles of these institutions, nature of the information, and allocation of the decision-making mechanism. In Section 3, the theory of financial intermediation and economic development are investigated, while Section 4 outlines relevant literature on the finance-growth nexus. Section 5 presents the study's theoretical model, in which the conventional endogenous growth model has been modified to include the new assumption of banking structure. In the final section, the research conclusions are provided.

3.2. Role of Depository Institutions

In a financial system, banks, thrift institutions, and credit unions are known as "depository institutions". Banks are the major, or sometimes only, way of financing SMEs in emerging economies, hence the significance of banks is greater than all other depository institutions. In this section, the role of banks in an economy, nature of information in the financial market, allocation of the decision-making mechanism, and organisational structure of banks are discussed.

The primary role of depository institutions, particularly banks, can be understood by considering the financial flows in an economy. The borrowed funds are immediately returned to the spending stream by governments, businesses, and households by the intermediation of depository institutions. The role of banks can, therefore, be stated as: to fill the diverse needs of both borrowers and lenders in the economy. Freixas and Rochet (2008) define several categories of banking activities, such as liquidity and payment services, providing risk management, monitoring and information processing.

One of the main roles of banks is to provide liquidity and payment services. To achieve this, they engage in two distinct types of activities, collecting deposits and lending. Deposit-taking includes issuing claims that are riskless and demandable, while lending involves acquiring costly information about opaque borrowers and extending credit based on this information. Hence banks function by reducing the cost of transaction and information gathering for deposit takers and lenders during the liquidity providing process (Kashyap et. al., 2002).

Banks do not only provide liquidity but also play a crucial role in transforming assets. Households prefer financial claims that are issued by the banks rather than claims issued directly by corporations. Banks purchase the financial claims issued by corporations, called primary assets, and finance these purchases by selling financial claims to investors as asset transformers.

Banks become confident enough to guarantee the provision of liquidity services to borrowers and lenders when they themselves invest in risky assets because they diversify their portfolio risks. A bank is able to offer highly liquid demand deposits as liabilities and, at the same time, invest in risky loans as assets. Risk diversification allows a bank to make more accurate predictions for its expected return on its asset portfolio (Allen and Gale, 2000; Saunders and Cornett, 2014)

Banks collect funds from a large number of small savers and invest in the direct or primary financial claims issued by firms. This agglomeration of funds resolves a number of problems. For instance, a bank has an incentive to collect information and monitor the actions of firms. In other words, small savers appoint banks as delegated monitors to act on their behalf. Thus the average cost of collecting information is reduced.

Banks also invest in the technologies that allow them to screen loan applicants and to monitor their projects, which, in turn, helps to solve the problems resulting from asymmetric information. According to Mayer (1988), this monitoring activity implies that firms and banks develop long-term relationships, therefore mitigating the effects of moral hazard. However, although banks are monitoring and collecting information about firms they are not always evaluating that information efficiently. In the following chapter, the nature of information in the financial markets is explained.

3.3. Organizational Structure of Banks

The banking industry has both centralized and decentralized organizational structures, which have recorded different benefits for economies. In this study, a model is constructed in which the equilibrium behaviour of banks affects the allocation of resources in a way that leads to growth for real rates, and creates differences among economies. This means economies with competitive banks will record higher growth rates than those without. The reasoning applied in this study is based on the basic organizational structures of the banks.

Although banking systems differ substantially from one country to another, they can be classified under two categories: branch banks and unit banks. In this section, the main features of both types of system are examined. Notwithstanding that their main functions are the same, such as accepting deposits and making loans, there are a number of significant differences between the two types.

Branch banking involves banking activities at a location distant from the bank's head office. Numerous banks employ branching to spread their services to various regions in a country. Historically, branch banks were located in large buildings shared with other businesses. Today, branches can be located in a number of different places that are independent of other businesses. The reforms in finance all around the world have significantly affected branch banking, through decreasing the necessity to maintain wide branch networks to service customers. Smaller branches are less expensive to manage and often easier for customers to access, while providing all the services of a large bank.

There are some characteristics which make branch banking more advantageous for some economies than unit banking. For instance, the cost of supervision is low in branch banking, while it is higher in unit banking. In branch banking, the division of labour is possible and this may result in specialisation. Nevertheless, specialisation may not be feasible due to a lack of trained staff and an inadequate knowledge base. Additionally, competition is high with branches, which can lead to better services. There is less competition within banks in the unit banking system (Hempel et.al., 1986).

In branch banking, bank resources, funds, and profits are shared with the branches, while in unit banking these are used for bank development. In conjunction with this difference, proper distribution of capital and power exists in branch banking, yet is not found in unit banking. In branch banking, deposits and assets are diversified; therefore, the risk is spread over various areas. In contrast, in unit banking, risk is not spread because the assets and deposits are not diversified.

The rate of interest is uniform in the branching system and specified by the head office. However, it is not uniform among all banks in the unitary system because each bank has its own policies and rates. In branch banking, loans and advances can be influenced by the sole authority of the bank but, in unit banking, they are based on merit, irrespective of status. Moreover, financial resources are mostly kept in one branch in branch banking, while financial resources are kept in each branch in unit banking more evenly.

Unit banking has an advantage over branch banking as the latter has less operational freedom. Moreover, in branch banks, there are delays in decision making due to their dependence on head office, whereas time is saved in unit banking, since the decision-making mechanism resides within the same unit. Large branch banks cannot screen individual borrowers on the basis of soft information that requires frequent face-to-face meetings and tracking of the financial activities of borrowers. By contrast, unit banks specialize in providing relationship-based lending facilities to borrowers that require close monitoring.

Branch banks can cause interregional imbalances related to the underutilisation of funds because funds can be transferred from one branch to another. Unit banks are not a reason for the imbalance in the time of wellbeing because funds are allocated within the branch. However, in times of crisis, if a unit bank has to close down, this can also lead to imbalances, since there is no branch support. Branch banking may experience external financial constraints due to the hierarchical structure, which involves capital market intervention among other incentives that govern how funds are allocated internally. This is unlike the situation in unit banking, which is solely controlled and managed by the branch manager. The aim of the model employed in this study is to show that, in the case of soft information, the decentralised banks (unit banks) function better than the hierarchical type (branch banks).

3.4. Nature of Information in the Economy: Soft Information

As one of the main roles of banks is collecting and processing information, this has been a research focus, with theorists paying great attention. In particular, soft information is considered a crucial input for lending decisions to small businesses. Soft information is defined in the literature as information that is *private* and *unverifiable* to the third party (Aghion and Tirole, 1997; Dessein, 2002; Stein, 2002). This kind of information is not announced to the public and can be obtained only by direct contact with the primary information source; for instance, an owner of a borrowing firm while lending the target SME. Entrepreneurs' enthusiasm, future purposes of financing, capacity, reputation and influence in a sector in a region are examples of soft information. On the other hand, real-time accounting information, personal assets and debt, family members, or career history are examples of hard information, which is verifiable by a third party through objective and quantifiable information or legal documents.

Credible hard information is easier for a bank to collect when a firm applies for new loan which has never been transacted. However, gathering soft information in a verifiable manner requires considerable effort for firms and banks may not be able to transmit in a short time. Soft information tends to be exclusively held by a bank that has a long-term lending relationship with an SME, and this gives the bank a quasi-rent arising from the advantage of holding information over rival financial institutions. (Relationship banking: Greenbaum et al., 1989; Sharpe, 1990; Rajan, 1992; Dell'Ariccia et al., 1999; von Thadden, 2004).

A decentralized bank is better able to collect soft information if a relationship lender requires being a first lender to a firm and could be more pro-active in lending to new firms (Petersen and Rajan, 1995). Therefore, allocation of the decision authority may have an effect on real economic activities via the influence of credit availability for new firms. In a financing situation, if the branch has the authority to make the final decision, it is easier for the bank to share all relevant information and reflect it in the decision. On the other hand, if the authority is centralized at the credit division in the head office, the relevant information has to be arranged in a document to be passed to the head office. In this case, soft information cannot be transmitted confidentially and is ignored in the process of decision making by the head office. Under these circumstances, soft information has no importance, thus branch staff are discouraged from gathering this type of information. Larger banks cannot easily screen individual borrowers on the basis of soft information that requires frequent face-to-face meetings and tracking of the financial activities of the borrowers. Hence in both decentralized and hierarchical conditions, the allocation of decision making authority influences the usage of soft information in lending decisions and incentives if this kind of information is collected.

The informational asymmetry between SMEs and financial institutions is much more serious than between publicly traded companies and their financiers because of more ambiguous performance and deficient disclosure of private SMEs. For instance, financial statements of small businesses tend to be less accurate because of the lack of accounting expertise. Even though an SME could bypass such a problem, a financial statement cannot supply reliable information about the future repayment capacity due to the uncertainty of its performance.
3.5. Theory of Financial Intermediation and Growth: Literature Review

The theory of financial intermediaries and economic development goes a long way back to Schumpeter (1911), who emphasizes the importance of banking intermediation in promoting growth by the adoption of new technologies provided by entrepreneurs. He states that banks are the key agents, as they facilitate access to financial resources and efficiently allocate these resources to the most promising uses. An alternative view comes from Robinson (1952), who argues that the financial system responds to an increase in the demand for financial services, which follows and increases due to the economic activity.

According to Gurley and Shaw (1958), the financial sector is able to overcome indivisibilities via mobilizing savings. These savings are then allocated to productive sectors to finance investment projects, which leads to an increase in capital accumulation and higher growth of output. Another description of the functions of financial systems is suggested by Levine (1997) and includes: allocating resources, mobilizing savings, reducing risks, facilitating transactions and exercising corporate control. Of these functions, the allocation of resources is most important for the current study.

McKinnon (1973) and Shaw (1973) argue that the role of the financial system is not properly analysed in previous studies. In his model, Mc Kinnon (1973) stresses the importance of accumulating sufficient savings as bank deposits in materializing investment and hence economic growth. Shaw(1973), on the other hand, focuses on debt intermediation. He shows the role of banking intermediation in promoting investment and growth, as it links the borrower and lender.

Banks are the major, and sometimes only, source of funding for farming, small business, and residential real estate in emerging economies (Saunders and Cornett; 2014). If a financial system is functioning well, this leads to more efficient allocation of resources. Tobin and Brainard (1963) indicate that financial intermediaries help entrepreneurs to improve their businesses by enabling them to borrow at lower rates and with easier terms due to financial institutions' ability to evaluate investment projects. Financial intermediaries, particularly banks, evaluate different investment opportunities by assessing the associated risks, so that funds are transmitted to the most profitable and promising projects. Therefore, the quality of investments is improved, which, in turn, has an expansionary effect on the economy.

Banks allow investors to diversify their portfolios and hedge against risks. Financial intermediaries can effectively provide liquidity by properly matching the different maturity periods of loans through the advantage of having a large number of borrowers and lenders (Diamond and Dybvig, 1983). Intermediation of the financial sector importantly improves the liquidity risks faced by individuals, and hence enables investment activities. Finally, unnecessary liquidations can be prevented. Endogenous financial development and growth models show correspondent interactions between these two variables. In other words, on the one hand, a higher level of economic growth spurs more demand for financial services, leading to increased competition and efficiency in the financial intermediaries. On the other hand, the supply of timely and valuable information by financial intermediaries to investors allows investment projects to be funded more efficiently, and this stimulates capital accumulation and economic growth (Bencivenga and Smith, 1991).

Nevertheless, the negative influence of banks can also come into question. Morck and Nakamura (1999) and Morck et al. (2000) point out that bankers' surveillance on corporate governance aims to ensure corporate borrowers do not default on their debts. This raises doubts regarding the reliability of bankers, as they may encourage risk-averse behaviour in investment undertakings and promote excessive investment in tangible assets. This can restrain firms' opportunities to expand and exert a negative influence on growth. Therefore, the banking sector can have a negative impact on economic growth.

In the 1980s, with the evolution of the literature on growth, more complex models emerged that incorporate financial institutions into endogenous growth models (see, for example, Pagano, 1993; Greenwood and Smith, 1997). The main difference between those models and the Mc Kinnon-Shaw (1973) model is that endogenous growth models explicitly employ techniques as externalities to model financial intermediation, unlike the McKinnon-Shaw model, which takes it for granted. These models follow the finance-led hypothesis, which has policy implications towards deregulating the financial system. The McKinnon-Shaw model stresses the importance of financial liberalisation in increasing the level of savings and investment, whereas the endogenous growth model focuses on the role of financial intermediation in improving efficiency; in other words, the former model emphasizes quantity and the latter stresses quality. Another difference between the two models is that the McKinnon-Shaw model proposes a finance-led system; on the other hand, the endogenous growth literature also considers the reverse. Greenwood and Jovanovic (1990) use a theoretical model that examines the link between growth and income distribution, plus the relationship between financial structure and economic development. The main reason for a positive effect of financial structure on economic growth is the more effective attempted investment and more efficient allocation of capital, since agents can have better clues about the nature of potential shocks that may impact on specific projects.

Bencivenga and Smith (1991) develop an endogenous model with multiple assets. According to their model, the equilibrium behaviour of banks affects resource allocations in ways that have implications for real rates of growth. It also provides a partial characterization of when economies with competitive banks grow faster than economies that do not have such intermediaries. Consequently, the researchers find that when conditions are provided under which the introduction of intermediaries shifts the composition of savings towards capital, intermediation is growth promoting. They define the activities of banks as: accepting deposits and lending, holding liquid reserves against predictable withdrawal demand, issuing liabilities that are more liquid than their primary assets, and eliminating the need for self-financing of investment. Bencivenga and Smith's (1991) main assumptions can be summarised as follows. They assume the state of development of financial markets is typically viewed as exogenously determined by legislation. In underdeveloped economies, banks essentially constitute the whole of organized financial markets. There can be long delays between investment expenditures and receipts of profits from the capital. Because of long delays, too much selffinancing of investment in the absence of banks can cause problems. Moreover, the most important role of banks in promoting growth is viewed as providing liquidity, hence improving the composition of savings. The last assumption is that economies with developed financial systems grow faster than otherwise similar economies lacking those systems. They show that the growth rate would be higher by introducing an intermediary to the endogenous growth models in two sections; while one is a model of intermediation and growth, the other is an intermediation and growth model with variable savings. The first model assumes that there is no scope for the savings rate to vary in order to emphasize it is not necessary for intermediation to change total savings out of income so as to stimulate growth. In the second model, they take saving as non-trivial. In each case, the effect of banks is positive for the rate of growth within the model.¹³⁴

¹³⁴ The model employed in this study was based on Bencivenga and Smith's (1991) paper; further detail is provided in the Methodology chapter.

Pagano (1993) employs an AK model, in a fundamental endogenous growth model, to show that the steady state growth rate positively depends on the percentage of savings diverted to investment. This indicates that one of the ways financial growth can affect real growth is by transforming savings to investment.

Berthelemy and Varoudakis (1996) set up a model with banks acting as Cournot oligopolists to show that the steady state growth rate depends positively on the number of banks or the level of competitiveness of the financial sector. They find, differing from others, that education is a prerequisite for growth, and when the educational system is not successful, financial deficiency is a complication.

Bose and Cotren (1997) construct a neoclassical growth model to investigate risky investment projects. They simultaneously determine the equilibrium loan contract, growth path of the economy, and steady state capital stock. They illustrate that, as capital accumulates, credit rationing can fall, as a rising number of lenders choose to obtain costly information to separate borrowers according to type. Their study finds there is a higher capital accumulation path and higher steady-state capital stock after the transition from credit rationing to screening. They also consider the effects of a fall in the cost of information on the capital accumulation path of the economy and steady-state capital stock. They demonstrate the cost of collecting information must fall below a certain threshold before the economy transits from credit rationing to screening.

Cecchetti and Kharroubi (2012) investigate how financial development affects aggregate productivity growth. They first show that the level of financial deepening is positive only up to a point before it becomes a burden on growth. Secondly, they show the faster financial intermediaries grow, the slower the economy as a whole grows. These two findings are based on a sample of developed and emerging economies. The researchers propose a different point of view regarding the understanding of financial growth and economic development, suggesting that the financial sector competes for resources with the rest of the economy not only in terms of physical capital but also highly skilled workers. They examine the effect of the size of the financial system on productivity growth using panel regression with a sample of 50 developed and emerging economies over the period 1980-2009. They use GDP and private credit as output measures and the financial sector's share in total employment as an input measure in order to assess financial sector size. Taking into account the level of financial development, this study finds that, when private credit grows to a level where it exceeds GDP, then it becomes a drag on productivity growth. Cecchetti and

Kharroubi's (2012) research is restricted to advanced countries and is limited only to input and output productivity in terms of GDP, private credit, and financial sector share.

3.5.1. Effect of Bank's Structure and Nature of Information on Economic Growth

The relationship between regional growth and banking organization structure is vital and is given wide coverage in this paper. In this section, some of the pioneer theoretical papers in the area are outlined.

A major pillar of discussion on banking regulation in the theoretical literature is the argument that branch banking creates more stability in the banking system by capacitating banks to widen and diversify their depositor base (Samolyk, 1992).

Jayaratne and Strahan (1997) focus on the effects of restrictions on the efficiency of the banking system. They find that bank efficiency is greatly enhanced when restrictions on branching are lifted. Their analysis suggests that much of the efficiency improvement brought about by branching is attributable to a selection process, whereby better functioning banks expand at the expense of poorer performers.

Maksimovic and Philips (2002) develop a profit-maximizing neoclassical model of optimal firm size and growth across different industries based on variations in industry fundamentals and firm efficiency. In their model, a conglomerate discount is consistent with profit maximization and their model also predicts how conglomerate firms will allocate resources across divisions over the business cycle and how their responses to industry shocks will differ from those of single-segment firms by using plant level data. Their results demonstrate that growth and investment of conglomerate and single-segment firms are linked to fundamental industry factors and individual segment level productivity. Moreover, most of the conglomerates exhibit growth across industry segments, which is consistent with optimal behaviour.

In his paper, Stein (2002) investigates how well different organizational structures perform in terms of generating information about investment projects and allocating capital to them. He develops two views which are applicable to the banking industry. The first is a decentralized approach, which is most likely to be attractive when information about the projects is soft and cannot be transmitted. The second approach relates to hierarchical firms, which perform better when information is hard and passed along inside firms. The investigation finds that, when information is soft, decentralization has more advantages than disadvantages. However, hierarchical organizations do better when the information is hard,

in that line managers advocate their branches; if they can produce verifiable positive information and pass it to their superiors, they can raise their capital budgets. These theories have recently been applied to banks.

Branch banking is one of the important issues concerning banking regulation in the theoretical literature, since it leads to more stable banking systems by allowing banks to vary their assets and extend their depositor base (Hubbart, 1994). Carlson and Mitchener (2002) focus on an alternative way in which branch banking impacts financial stability, in terms of increased competition. They find that states which adopted branching laws experienced fewer failures in the 1920s and early years of the Great Depression.

Hart and Moore (2005) consider an economy that has to decide how assets should be used. Each agent has ideas but these ideas conflict. They assume that decision making authority is determined by hierarchy, whereby each asset has a command chain and the authority belongs to the most senior person. They analyse the optimal hierarchical structure, given that some agents coordinate while others specialize. They demonstrate the reason why coordinators should be senior to specialists and the reason why pyramidal hierarchies may be optimal. They also clarify the optimal level of decentralization inside a firm and related to firm boundaries.

Berger et al. (2005) suggest that small banks are in fact better at gathering and acting on soft information than large banks. In particular, large banks are less willing to lend to informationally difficult credits; for instance, firms with no financial records. Moreover, they report that large banks lend at a greater distance and in a more impersonal way than small banks.

Strahan (2008) shows the effects of deregulation of restrictions on bank entry and expansion on the real economy. According to his study, after state-level deregulation of restrictions on branching, state economic growth accelerates. In particular, this better growth performance is pronounced in the entrepreneurial sector. Moreover, macroeconomic stability improves with interstate deregulation that allows that banking system to integrate across states. Strahan (2008) argues that the deregulation reduces the sensitivity of state economies to shocks affecting their own banks' capital.

Empirical studies testing the relationship between finance and development basically employ two techniques; namely: cross-country analysis and time series analysis. Crosscountry analysis does not represent the time series properties of the data. Time series methods are essentially Granger Causality, cointegration, unit root, and panel data analysis.

One of the earliest time series studies of Jung (1986) provides a wide range of analyses for 56 countries. He employs the Granger Causality test to find the direction of causality. Two basic financial development indicators are used to test the relationship between finance and growth in his study, namely, currency ratio and monetization variable. This provides a general idea about the size of the banking system but not about the efficiency of financial intermediation, which is one of the shortcomings of this study.

At the beginning of the 1990s, the literature develops towards cross-country analysis. King and Levine (1993b) present one of the comprehensive pioneering studies in the literature, constructing four financial development indicators and applying cross-country analysis. Although the study made a significant contribution to the literature, it has been criticized for several reasons. For instance, it does not reflect the time-series properties of the data, it does not provide mutual causality investigation, and it has an endogeneity problem, which results in biased and inconsistent estimators. De Gregorio and Guidotti (1995) provide another cross-country analysis, following the previous work of King and Levine (1993b).

In the middle of the 1990s, other case studies appear to reveal the time series properties of the finance-growth relationship. Demetriades and Hussein (1996) apply Vector Error Correction Model (VECM) causality analysis for 16 countries. They use the size and efficiency of the banking sector as variables and report mixed results. As a complementary study to that of Demetriades and Hussein (1996), Arestis and Demetriades (1997) employ VECM causality for 4 countries. However, in this study, they take stock market variables into account, as these had not been included in previous empirical studies as a financial indicator.

Levine (1997) employs cross-country analysis with GMM estimator. The novel feature of this study is that, to eliminate the endogeneity problem, it takes into account the exogenous part of the financial system, such as legal and regulatory determinants. He finds that in a better legal and regulatory environment finance performs better. Even though the study seems to alleviate the endogeneity problem, it still has shortcomings, as it represents cross-country analysis.

Rouasseu and Watchel (1998) investigate the finance-growth relationship for 5 countries by utilising Vector Autoregression (VAR) and VECM methods. To represent

financial development, they use the assets of commercial banks, the combined assets of commercial banks and saving institutions, and pension funds.

Levine (1998) investigates the relationship between banking and economic development in the long term by using a sample of 44 advanced and less developed countries during the period 1975–1993. Conventional GMM analysis is employed to justify the simultaneity bias. The degree and the efficiency of the legal system in driving regulations and contracts are examined as instruments. His evidence is consistent with the hypothesis that there is a strong positive relationship between exogenous elements of banking development and real growth, capital accumulation, and productivity growth.

Luintel and Khan (1999) test finance-growth relations for 10 countries by applying VAR and VECM methods. The novel feature of the study is that they apply multivariate analysis rather than conventional bivariate methodologies. However, even multivariate time series methodology is inadequate in providing satisfactory estimators, as it omits variable problems due to strict data constraints. In their study, Luintel and Khan (1999) utilise the ratio of total deposit liabilities of deposit banks to GDP as the financial development indicator.

Beck et al. (2000) make a study of the finance-growth relationship for 134 countries. To represent financial development, they use credit to the private sector, which is a more accurate indicator of how efficiently the banking system works. They use panel estimation and IV cross-section estimation methods.

Another important study Levine et al (2000) examine the finance-growth link by constructing three financial indicators, which are corrected version of the Levine and King (1993) parameters as they more accurately deflate the variables to eliminate mismatching. They apply dynamic panel GMM and cross country IV methods for 74 countries. Dynamic GMM panel analysis of finance –growth link is both contributions of these two studies as it is superior to both time series and cross-section analysis.

Al-Yousif (2002) makes a comparison of time series and panel data methods to test finance-growth relations for 30 developing countries. He uses the currency ratio and M2 as the financial development indicators, which is one of limitation of the study as these variables do not reflect the efficiency of the financial system. Likewise, Christopolous and Tsionas (2004) conduct another study which compares the results of panel and time series methods for 10 developing countries. They take the ratio of bank deposit liabilities to nominal GDP as the financial development indicator which reflects the size of banking intermediation. Another important study by Calderon and Liu (2003) applies a new method: the Geweke linear independence and feedback decomposition test. Like many other studies, they use M2 and credit to the private sector as their main indicators. They use pooled data from 104 countries.

Beck and Levine (2004) contribute to the literature by considering whether financial structure influences new establishment creation, industry expansion, or capital allocation. To represent financial development, they use regulatory restrictions, which are equal to the principal component of private credit and value traded, and log of the sum of private credit and market capitalization ratio. By so doing, they consider both the stock market and banking sector. They employ TSLS panel cross-country data for 42 countries and 36 industries, and OLS cross-country data for 39 countries.

Although the use of dynamic panel analysis is an attempt to incorporate the time dimension, it may still be subject to the econometric problems. This type of regression analysis is also subject to omitted variable problems or heterogeneity bias when the unobserved country-specific effects are included in the error term, and this leads to biased and inconsistent estimates (Pesaran and Smith, 1995). Moreover, Wachtel (2001) argues that holding country-specific effects constant in panel regressions would generate a spurious aggregate relationship as the reported relationship between financial development and economic growth is due to between-country differences rather than within country differences over time. Hence, it appears it is difficult to draw any reliable policy inferences from these broad comparative analyses (Demetriades and Andrianova, 2004).

Recent studies show that lending conditions depend on the characteristic of the organizational structure of the banks included. By documenting the changes in the distance between small firms and their lenders, Petersen and Rajan (2002) demonstrate that improvement in lender productivity explains their finding that distant firms do not have to have the highest quality credits, indicating they do not have greater access to credit anymore. Moreover, their evidence shows that there is a substantial development of the financial sector, even in small business lending areas. In their paper, they argue, firstly, that the distance between small firms and their lenders increased steadily in the United States over the period 1973 to 1993. Secondly, Petersen and Rajan (2002) claim borrowers who start a relationship with lenders communicate less in person while growing physically more distant from lenders. They test whether the distance firms are from their lender is a good credit quality predictor and whether distance has become a less efficient predictor of credit quality over time. Their

evidence is consistent with both predictions. They use panel data containing the financial information of small firms and documentation of firms' relationships with financial institutions in the US. They find that firms that are not informationally transparent have closer lenders. Moreover, bank transactions are more likely to be conducted in person than transactions with other lenders. Thus, banks are closer and their loans are more relationship based than those of other lenders.

The number of banks or branches is related to the structure of the banking industry. Theoretically, it still remains controversial whether a competitive banking industry is more conducive to growth than a highly concentrated one. Barro and Sala-i Martin (1992) show how bank market structure influences real sector growth.

The studies using data from US states find support for the hypothesis that real income per capita across states converged by employing cross section analysis related income growth to initial income and the sectoral composition of income in each state. Secondly, branching spurs growth by improving the quality of bank lending (Jayaratne and Strahan, 1996). Thirdly, financial development promotes growth partially by decreasing the costs of external finance to firms (Rajan and Zingales, 1998). Finally, the higher the bank concentration, the lower the effect on growth, due to reduced credit availability, yet there is a beneficial effect from improving the quality of lending relationships (Cetorelli and Gambera, 2001; Cetorelli and Strahan, 2006).

Aghion and Tirole (1997) study a two-person hierarchy, in which one is a boss and the other is a subordinate. They find that, although each person can have an idea, the boss's idea is implemented if s/he has one, while the subordinate's idea is only implemented if s/he has one but the boss does not. The researchers find that the amount of communication within an organization relies on the authority allocation, suggesting that the information produced at a bank branch depends on the extent to which authority has been delegated to the branch.

Strahan and Weston (1998) investigate the link between bank lending to small businesses, banking company size and complexity, and bank consolidation. They consider two potential impacts on small business lending associated with changes in the size distribution of the banking industry. On one hand, organizational diseconomies may raise the costs of small business lending as the size and complexity of the banking company increases. On the other hand, size-related diversification may enhance lending to small businesses. They find that small business loans per dollar of asset increases, then falls, with the size of a banking company, while the level of small business lending increases monotonically with size. Their second finding is that consolidation among small banking companies serves to increase bank lending to small businesses, while other types of mergers or acquisitions have less effect.

With opening up of markets and allowing the banking system to integrate across the economy, deregulation has made local economies less sensitive to the fortunes of their local banks. Sapienza (2002) examines how individual borrowers and banks' credit policies are affected by banking consolidation. In order to examine this, he uses the information on individual loan contracts between banks and companies, and differentiates various types of bank mergers. He uses quarterly data that includes the long contract terms of a large number of Italian banks for the period between January 1989 and December 1995. The study finds that if in-market mergers involve the acquisition of banks with small market shares, then these mergers benefit borrowers. If merger occurs between banks previously operating in the same area, the interest rates charged to customers of the consolidated bank decline considerably. If the banks are in different provinces, the decreases in interest rates are not significant. Sapienza (2002) also finds that borrowers are affected by consolidation differently due to the number of their banking relationships. The more banking relationships they have, the less borrowers will suffer from a rise in market power, since consolidation does not remarkably alter a bank's relative market power over small borrowers. Last finding is that small borrowers of target banks are less likely to borrow money from the merged bank in the future. Overall, this evidence supports the view that small and large banks have different organizational structures and loan strategies.

Internal capital markets might be beneficial in decreasing information asymmetries among managers and investors. To investigate this, Campello (2002) examines internal capital markets in financial mergers through comparing the responses of independent banks and small subsidiary banks to monetary policies. One of his main findings is that, as the central bank tightens the money supply, funding of new loans by members of multibank holding companies becomes less dependent on cash flow compared to the funding of new loans by independent banks. However, the study only focuses on the differences between bank responses instead of the levels of response.

According to Allen and Gale (2004), competition policy in the banking sector is complicated by the necessity of maintaining financial stability. They indicate that greater competition may be desirable for efficiency but undesirable for financial stability. There is a complex relation between competition and stability; sometimes competition increases stability and concentration may be socially preferable to perfect competition, while perfect stability may not be beneficial socially.

Liberti (2005) investigates how information transmits in the organization not only across layers but also horizontally. He shows that loan applications that need to pass more organizational layers for confirmation are based more on hard information. However, this requirement for hard information is mitigated when direct contact between the bottom and top organizational layers is possible. Besides, loans accepted directly by the branch and branches with a leaner horizontal organization, can make more use of soft information.

Degryse and Ongena (2007) investigate how bank organization forms banking competition, both theoretically and empirically. In their model, they show how a lending bank's geographical reach and loan pricing strategy is determined by the organizational structure and its rivals' organizational choices. They look test their model for Belgium by employing 15000 bank loans granted to small firms, including all loan portfolios of large banks, and information about the organizational structure of all rival banks located in the neighbourhood of the borrower. Their findings indicate that the organizational structure of both the rivals and the lending bank is important for loan pricing and branch reach. Also, they show that the structure and technology of rival banks in the vicinity affect local banking competition.

Banking consolidation has increased since the 1950s through a growing number of intermediaries. Alessandrini et al. (2009) indicate that the consolidation process creates larger and more complex banks; hence this could facilitate decentralization versus hierarchy, increasing the physical distance between borrower and lender, and decreasing relationship banking. However, in the studies related to M&A, there is no consensus on the impact of consolidation on credit supply. In general, empirical research shows M&As involving small banks improves small business lending; however, when large banks are involved, there is an opposite effect. Additionally, the effect of mergers can also vary in different geographical areas.

Mocetti et.al. (2010) find that banks equipped with more Information and Communication Technology (ICT) delegate higher decision-making power to their local branch managers in respect of small business lending activity. They also report that the effect on decentralization is strengthened for banks with a more orientation towards small business lending and those that simultaneously hold higher ICT capital endowments and adopt credit scoring. Thus innovation offsets the cost of transferring the information from branches to head office, and improves the central manager's decision making ability. Chu (2010) examines the finance and growth nexus by combining branch banking with a two-period overlapping generation growth model, related to Diamond's (1965) and Salop's (1979) models. He argues that expanding the branches of a bank decreases the transaction costs of financial intermediation and spurs lenders to save more, therefore creating higher per capita output. He examines the case of banking in Canada for the time interval 1889-1926, employing VAR and VECM. The analysis shows that there is a long-term relationship between savings, real GNP and the number of branches. Chu (2010) criticizes the relevant literature to date, particularly from the aspect of the indicators of financial growth. Hence he studies the number of financial intermediaries in the economy, specifically the banks. He claims that branch banking is crucial in Canada, a geographically large country, since the changing pattern of regional differentials in economic opportunities determines to a large extent when and where and for how long migrants moved. Consequently, his findings indicate a positive relationship between financial development and economic growth, and show that a higher level of financial development is represented by a large number of bank branches in the economy.

Another study on the effect of organizational structure of banks on the decisionmaking process of lenders was conducted by Micucci and Rossi (2010). These researchers link the decisions to restructure the debts of financially distressed borrowers to a series of variables that determine organizational factors within lenders. They examine the restructuring decisions which the banks operating in the local credit market could have taken with regard to firms in financial distress. They find that the heterogeneity of banks explains the decision to restructure credit to those small and medium-sized enterprises that are in distress. Moreover, the possibility of restructuring is higher when a bank depends on more relationship-based lending than transactional-based lending, and where there is a decentralized structure with more power allocated to local managers. The probability of restructuring rises in the case of the adoption of credit scoring if banks have more decentralized structures. Micucci and Rossi (2010) employed a probit model for their study, using loan-level data, and selecting firms that faced financial distress at least once between 2002 and 2004. Balance sheet data were combined with information of banking relations. Their sample only included banks from which the financially distressed firms had borrowed and may lead to bias in the results.

In the 1990s, the Italian banking system was impacted by two main factors, namely: liberalization and technological innovation, arising from ICT. Since rapid developments in ICT have significantly affected banking output, knowledge of transformations in lending activities need to be updated. As a result, Albareto et al. (2011) emphasize the importance of bank organization and strategic interaction among managers responsible for various functions. Their survey shows credit scoring has spread among Italian financial intermediaries, with the sharp acceleration of recent years conceivably linked to induction of the new Capital Adequacy Accords (Basel II). Accordingly, in their research, Beretta and Prete (2012) aim to verify potential changes in decisions related to decentralization or centralization after banking acquisitions. They use a data set for banking, with a sample of 300 banks, drawn from a survey conducted in 2006 by the Bank of Italy, to focus on internal loan approval mechanisms regarding SME financing. Then they investigate whether Italian bank acquisitions impact on power delegation across hierarchical levels and in relation to employee turnover. They find that acquisitions affect the amount of loans the branch manager of the target bank can independently grant to SMEs. Moreover, acquisitions influence the powers delegated not only to the loan officer but also to the chief executive officer (CEO) for loan consent.

The effect of the banking structure and fiscal policies on economic growth is another topic studied by the existing literature. Abrams et al. (1999) investigate these relationships by employing data from 48 contiguous states for the period 1950-1980 to test the effect of restrictions on branch banking, restrictions on multibank holding companies, the depth of financial assets in a state, the financial intermediary mix, the size of state government, and methods of financing state government on per capita income growth rate. They do not find support for the hypothesis that branch banking restrictions influence growth. Nonetheless, according to their findings, financial depth and the mix of financial intermediaries are strongly correlated with economic growth. Moreover, different types of financial institutions have different distributional effects. Some types of financial intermediaries can obtain better information and conduct better risk management than others. For instance, in the US, commercial banks and thrift institutions control well over half of the total assets of all financial intermediaries (Abrams et al., 1999).

Seltzer (2001) examines the consequences of branch banking in Australia in the late 19th and early 20th century. He shows that there is a little evidence to indicate that branching increases the stability of Australian banking. He argues that branch banks can reallocate capital from urban to rural areas at low costs, while unit banks typically need to enhance all their capital and issue all of their loans locally. He states that branch banking allows banks to regionally diversify their assets and that regional diversification reduces the variability of an asset portfolio by securing it against local shocks or general shocks with asymmetric impacts

across regions or sectors. This leads to an increase in the stability of the banking system. In the branch banking system, reallocating capital among branches in different regions can more efficiently match borrowers and savers than is feasible in unit banking, since, in the unitary system, banks are dependent on their localized consumer bases.

Jaffee and Lenovian (2001) conduct cross-sectional regression analysis with the determinants of the structure of the banking system, measuring bank assets, branches and employees for 26 developed OECD countries. They apply the estimated regression to 23 transition economies, to obtain benchmarks for the efficient structure of their banking systems. They compared the actual and benchmark measures of banking structure in order to evaluate the state of banking system development, including the computation of a measure of convergence. Their findings are objective and replicable multidimensional measures of development for transition economies.

Entry barriers, such as branch banking restrictions in the U.S., are instigated by special interest groups, with local banks playing a central part in protection. In particular, it is considered that the unitary system advocates branching prohibitions since they need protection from competition from branch banks that are large and have multi offices. Moreover, some classes of borrowers also support branch banking restrictions with different rates among states and over time. Clarke (2004) investigates the effect of bank deregulation on economic growth by using state-level U.S. data for the time period between 1965 and 1994. Specifically, she tests whether interstate branch and bank deregulation, measured by the activities of banks and bank holding companies, accelerate growth in real per capita income via the impact on the size of banking markets. The evidence is consistent with the hypothesis that such deregulation enhances economic growth in the short term.

Calomiris and Ramirez (2004) examine bank entry restrictions from a political point of view, showing that entry barriers influence the terms on which borrowers can have access to credit, and might be beneficial for some borrowers. They develop two complementary models that show how barriers to branching create strategic advantages for borrowers who hold their wealth in the form of immovable factors of production for unit or branch banking. In their models, these advantages are likely to present only when borrowers' net worth levels are adequately high. On the one hand, the first model emphasizes the benefits for borrowers from the loan pricing strategy that unit banking produces; on the other hand, the second model focuses on the way that unit banking limits changes in the flow of credit in response to shocks to borrower wealth between regions. The empirical evidence also supports the researchers' theory. Their results indicate that the loan customers predicted in their model should benefit the most from the strategic advantages of unitary banking. On the contrary, borrowers that their model predicts would not benefit as much from preferred branch banking. The results suggest that bank customers may favour unit banking laws out of informed self-interest.

A large number of researchers have emphasized that small banks are more advantageous in small business lending. Benvenuti et al. (2010) show that, irrespective of size, organizational characteristics affect bank loan portfolio choices. Employing a data set based on a recent survey of Italian banks, and controlling for bank size, they find that branch loan officers play a key role in explaining bank specialization in small business lending. Specifically, banks which delegate more decision making to their branch loan officers are more willing to lend to small firms than other banks. They estimate the loan officers' authority by controlling for: officer turnover, maximum amount of money officers are allowed to lend autonomously, their role in loan approval and in setting loan interest rates, type of information used for screening and monitoring borrowers, and the structure of their compensation schemes.

The empirical studies which employ micro data sets consistently find that small banks are more likely to maintain strong communication with borrowers, since more soft information is presumably needed for lending decisions. SMEs tend to communicate smaller banks, and that larger firms tend to contact larger banks with greater lending capacity (Berger et al., 2005; Uchida et al., 2008). Employing data from the 1987 National Survey of Small Business Finances (NSSBF), Cole et al. (2004) find that information in financial statements does not have a significant effect on the contracted loan rate in the small business lending of small banks.

Some research views bank mergers as discontinuous and perhaps exogenous changes to the structure of decision making. Most of these studies find evidence that is consistent with the theoretical prediction that bank mergers reduce small business lending, and make banks less dependent on soft information through making them more hierarchical. These results indicate that decentralized banks are more willing to collect and use soft information, and this finding implicitly assumes that larger banks are more hierarchical. Alternatively, a large bank may decentralize itself by delegating the decision authority to branch offices.

Liberti and Mian (2009) categorize information into objective information, which is documented in each loan screening sheet and based on financial statements, and subjective information, based on a loan officer's subjective evaluation; such as, considering an entrepreneur's business discipline. The researchers find that subjective information has significant explanatory power concerning loan applications that are screened and approved by loan officers at branch level. However, objective information is more significant if the lending decisions are made by head office managers, superior to branch officers. If it is assumed that subjective information carries the same weight as soft information, this finding is consistent with the assumption that soft information is harder to transmit, even within organizations.

3.5.2. Regional Development and Financial Intermediaries

It is worthwhile to study the effect of banks on local economic development within a single country, in particular for countries that are suffering from regional disparities while their overall growth rate is increasing. The necessity for financial intermediation in regional growth has been acknowledged and new regional growth models with monetary indicators have emerged. The role that money plays in the growth process for developing countries, as well as regions of countries, is open to question (Dreese, 1974).

First attempts to combine monetary models with growth models at a regional level started in the 1970s. One of the earliest studies by Beare (1976) shows that monetary conditions may play an important role in a regional business cycle, and relates the national money stock to regional activities. Empirical results for Canadian provinces show that money is an important explanatory variable. However, the use of reduced form models (such as Beare's, 1976) is criticized by Mathur and Stein (1980). Their study indicates the limitations of following such models, as they may cause bias problems. Testing using the data from American States, they showed a high degree of instability in the models.

Roberts and Fishkind (1979) also demonstrate the importance of money in the regional context. They show that explicit specification of a region's financial sector contributes to improved forecasting performance for a state econometric model.

The model developed by Samolyk (1989) indicates that regional heterogeneity in financial conditions is an important mechanism for the generation of region-specific fluctuations. The study considers the short-term situations of bank capital immobility, when banks provide real services by transferring the flow of funds into investments. According to the researcher's model, bank investment in risky projects relies on the quantity of bank capital and the return on risk-free and risky projects. Moreover, she demonstrates that the distribution of bank capital across banks is important. The aggregate output decreases when capital is distributed from a state of equally capitalized banks to one where some banks are overcapitalized while others are undercapitalized.

Kozlowski (1991) finds that integrating a national monetary indicator into the regional models with leading indicators is conceptually sound, as well as empirically promising. He compares the performances of four leading indicator models for Detroit, South Carolina, Toledo, and Wisconsin, with and without a national money supply. He shows that the deflated value of M2 appears to be a strong candidate for inclusion in regional models.

It is difficult to measure regional financial flows and discover the role that financial markets and institutions play in regional economic growth. This is partly because of the paucity of data on money capital flows on a regional basis, but mainly because money capital markets are assumed to be perfect in most regional models, and, therefore, not a significant obstacle to growth. In addition, controversially, the structure of financial institutions is ignored or given little consideration. This is unfortunate, since much public policy, such as: liberalising branching laws, is based on the assumption that banks exert a significant influence in the regional growth process.

Many researchers argue that banks represent the most important financial institution in the early stages of financial growth and economic development. Banks can easily gather information, match borrowers and lenders, thereby transforming risks and promoting maturity. In recent years, studies have confirmed that a precondition of sustained economic growth is a well-functioning banking system. Furthermore, there has been considerable global consolidation in banking in recent times. Therefore, changes in the market structure of banking can seriously influence a wide range of nonbanking industries insofar as banks are the most important sources of capital.

Some studies regarding bank structure and local economic growth involve the adverse effects of failures of local banks in relation to economic activity in rural areas. The residents of rural areas in states with restricted branching tend to rely on small, local banks for financial services. Gilbert and Kochin (1989) claim that there is evidence that failures of local banks tend to have adverse effects on economic activity in rural communities.

Some studies support the view that growth promotes the effects of branch banking (for example, Calomiris, 1993), while others suggest that unit banks may be desirable from the aspect of regional economic development in a financially integrated economy because they can prevent the flow of capital from underdeveloped regions to rich ones (Alessandrini et al., 2009). Samolyk (1992) examines the link between banking performance and economic growth at the state level. Her model suggests that problems in the local banking sector may restrain economic activity in financially distressed regions, while no such relationship is

evident in financially sound regions. Employing state-level data, she tests the empirical relevance of regional credit view for the period between 1983 and 1990.

Jayaratne and Strahan (1996) examine the direct impacts of bank consolidation on local economic growth. They find that income growth rate at the state level is likely to increase when branching restrictions are relaxed. They argue that liberalizing branching regulations activates state economic growth through giving freedom to the banking sector to direct credit to borrowers who can use the funds the most productively. However, their findings do not have clear implications for the impacts of branching restrictions on rural economic growth, as their study only estimates the determinants of economic growth at the state level. The researchers also suggest that branching might prompt economic growth in rural areas. Moreover, their study indicates that the positive impact of relaxing branching restrictions on state economic growth does not entirely rely on the amount of lending, but instead upon the efficiency of banks in allocating credit to borrowers.

According to some research, there is evidence to support the assumption that large banks have adverse effects on small businesses. Bank credit is more essential for small businesses than for larger businesses (Berger and Udell, 1998). Surveys point out that most small firms benefit from services provided by banks with offices located in their own communities (Elliehausen and Wolken, 1990; Cole and Wolken, 1995; Cole et al., 1996). While the results of these surveys do not eliminate the possibility that small firms could access financial services from other firms located in more distant places, the results are consistent with the view that small firms tend to rely on local banks.

Small businesses in rural areas which are dependent on local banks for financing tend to have fewer advantages than small firms in urban areas. This is because rural areas are likely to have relatively few banks. Large banks lending to small businesses is another issue studied by many researchers. However, these studies do not provide a clear conclusion about the impacts of banking sector consolidation on small businesses' access to credit. Berger, et al. (1998) define "huge" banks as those with total assets of more than \$10 billion. Their findings indicate that while acquisition of relatively small banks by huge banks decreases lending to small businesses, the impacts tend to be balanced by increases in lending by other banks with offices in the market where the merging banks also had their offices. Thus, banks not included in the consolidations have a tendency to enhance their lending to small businesses, offsetting the negative effects of the consolidations on small business financing.

One of the country-specific studies for Italy is presented in Guiso et al.'s (2000b) paper, which examines the effect of variations in local financial development within an

integrated financial market. For their analysis, they construct a new indicator of financial growth through estimating regional influence on the probability that, ceteris paribus, a household is separated from the credit market. With the help of this indicator, they find that financial development increases the probability an individual starting his/her own business, favours entry, increases competition, and promotes the growth of firms. Their results suggest that local financial growth is an important determinant of the economic success of an area where there are no frictions to capital movements.

Jeong et al. (2006) focus on "credit view" theory at the state level, suggesting that the health of the state-level banking sector has an effect on state-level real economic performance. In particular, they extend the conventional analysis of the credit view theory, applying related state-level economic variables, in order to consider whether the health of a state's banking system affects capital investment loans and, in turn, whether the growth of these loans affects the performance of the state's economy. To investigate these effects, they develop a two-equation state-level model, by applying advanced dynamic pooled estimators to their panel of state data for the period between 1984 and 1993. Their results indicate dynamic relationships among state-level bank health, investment-oriented bank loans, and economic performance, thereby supporting the existence of a state-level credit channel impact.

Another country based study by Crouzille et al. (2012) examines the relationship between banking and regional economic development in the Philippines. They focus on the effect of rural banks on economic activity by employing cointegration panel data analysis for the 16 Philippine regions from 1993 to 2005. Using indicators developed in the regional banking sector, they find no definite evidence that banking leads to economic development. However, they find the presence of rural banks has a consistently positive impact on regional economic development for the intermediate and less developed regions.

Different from studies that employ quantitative data, some recent research has investigated the quality of the banking system and its effects on regional growth. For instance, Hasan et al. (2009) analyse the effect of financial development on output growth in European economic agglomeration regions. They suggest a relative measure of the quality of financial institutions instead of the usual quantity proxy of financial development. They employ profit efficiency, derived from stochastic frontier analysis, in order to measure the quality of financial development. They demonstrate that more efficient banks stimulate regional growth.

Guevara and Maudos (2009) examine Spanish regions and their results suggest that firms in industries with a greater dependence on external finance grow faster in more developed financial regions. Moreover, their findings indicate that bank monopoly power has an inverted-U effect on economic growth, suggesting that market power has its highest influence at intermediate values. This influence is heterogeneous among firms due to the financial dependence of the industry to which they belong. Their result is consistent the view that bank competition can have a negative effect on the availability of finance for more informationally opaque firms.

Hakenes et al. (2009) discuss the effect of small regional banks on differently developed local economies and examine whether regional banks are efficient in preventing capital flow from poor to rich regions. They first show that a more efficient regional banking system in terms of both quality and quantity can stimulate local economic development. Moreover, in underdeveloped regions, the effect of an expansion in the loan volume of local banks is higher, and the effect of local bank efficiency improvement is larger. They also test the model predictions based on a data set of 457 local savings banks in Germany, with corresponding regional statistics, for a time interval between 1995 and 2004. The results show that efficient savings banks can stimulate regional development and that the impact is stronger in poorer regions.

Deloof and Rocca (2012) investigate the relationship between regional financial development and trade credit in an integrated financial market. Their results indicate that trade credit complements formal finance at the local level. Specifically, provincial banking development in Italy increases the provision of trade credit at the local level. SMEs in provinces with industrial districts employ more trade credit. The research finds that lower levels of provincial banking development were related to a strong decrease in trade credit at the start of the global financial crisis.

3.5.3. Summary and Conclusion

Literature on the theory of financial intermediaries and economic development goes back to Schumpeter (1911), who emphasizes the importance of banking intermediation in promoting growth. His views are supported by subsequent researchers, who also show that promoting the role of financial institutions in economic activity through mobilising savings reducing risks, facilitating transactions and exercising corporate control results in capital accumulation and higher growth of output (Robinson, 1952; Gurley and Shaw (1958); Levine (1997) Among these functions, allocating resources is more important for this current research. The allocation of resources strongly depends on the way the allocation of decision authority influences in determining the usage of soft information in lending decisions and incentives, if branches collect such information. A decentralized bank is more able to collect soft information and could be more pro-active in lending to new firms (Petersen and Rajan, 1995; Aghion and Tirole, 1997; Stein 2002). These studies demonstrate that decentralization, whereby decision authority is given to the position that has direct access to information, improves willingness to gather soft information. It can be argued that branch banks can cause interregional imbalances regarding underutilisation of funds. For instance, they might transfer funds from one branch to another. Unit banks, on the other hand, are not a cause of the imbalance because funds are allocated within the branch, hence within the region.

The endogenous financial development and growth models show correspondent interactions between these two variables. A higher level of economic growth spurs more demand for financial services, leading to increased competition and efficiency in the financial intermediaries. On the other hand, the supply of timely and valuable information by financial intermediaries to investors allows investment projects to be funded more efficiently, and this stimulates capital accumulation and economic growth (Bencivenga and Smith, 1991; Pagano, 1993; Greenwood and Smith, 1997; Greenwood and Jovanovic, 1990).

It has been claimed that branch banking leads to more stable banking systems by allowing banks to vary their assets and extend their depositor base (Hubbart, 1994; Seltzer, 2001; Carlson and Mitchener, 2002). On the other hand, there are suggestions that the branch banks and unit banks do not function in the same way in different situations. For example, Stein (2002) investigates how well different organizational structures perform in terms of generating information about investment projects and allocating capital to these projects. In line with Stein's (2002) theoretical model, empirical studies which employ micro data sets show that small banks are more likely to maintain strong communication with borrowers, as more soft information is needed presumably in a lending decision, SMEs tend to communicate smaller banks, and that larger firms are more tend to contact larger banks with a greater lending capacity (Berger et al., 2005; Uchida et al., 2008; and Benvenuti et al., 2010).

The role that money plays in the growth process for developing countries, as well as in regions of countries, is controversial (Dreese, 1974). The necessity of financial intermediation in regional growth has been realised. Empirical studies adopt models that are used in cross-country analysis, employing micro-level data. They demonstrate the importance of money in the regional context (Roberts and Fishkind, 1979; Kozlowski, 1991; Guiso et al., 2000b). Some studies regarding bank structure and local economic growth focus on the adverse effects of failures of local banks in relation to economic activity in rural areas. The residents of rural areas in states with restricted branching tend to rely on the small, local banks for financial services (Gilbert and Kochin, 1989; Calomiris, 1993). On the other hand, some research suggests unit banks may be desirable from the aspect of regional economic development in a financially integrated economy because they can prevent the flow of capital from underdeveloped to rich regions (Elliehausen and Wolken, 1990; Cole and Wolken, 1995; Cole et al., 1996; Berger and Udell, 1998; Alessandrini et al., 2009).

In contrast to the existing literature, the aim of this study is to investigate the effect of financial intermediaries on regional growth, taking into account the financial structure and nature of information. In the case of soft information, the analysis shows that the decentralised type of bank (unit banks) function better than the hierarchical type (branch banks). As a result, unit banks may be more beneficial for underdeveloped regions.

3.6. Model of Endogenous Growth with Branch Banking System

3.6.1. Introduction to Model

In accordance with discussion in the previous chapters, a model is now developed to assess the role of banks in regional growth in the case of soft information, as well as considering the hierarchical and decentralised structures of the banks. The return on capital is investigated and compared for both types of banking organization; namely, branch banking for hierarchical and unit banking for decentralised organization. Most importantly, the study revises one of the main assumptions of the classical endogenous growth models, which is "the financial system is defined by the legislation and all banks are identical in an economy" (Bencivenga and Smith, 1991). In place of this assumption, it is argued that banks are not identical, but differ in terms of organizational structure. For this reason, the current investigation adopts Bencivenga and Smith's (1991) growth model of financial intermediaries with new assumptions that are based on the different expected outputs in hierarchical and decentralised cases (Stein, 2002).

3.6.2. Definitions

Before constructing the model, the parameters and parties in the model are described in this section.

3.6.2.1. Definitions for unit banking

The model employed in the study assumes that there is a country with two regions. There are also two separate banks, such that in each region there is one branch that is independent from the branch in the other region. M_i is the manager of Bank I (B_i) in the first region and M_j is the manager of Bank J (B_j) in the second region. The model assumes decisions about funding investment projects are made independently.

Since M_i and M_j are the only decision makers involved in the process of financing a project, they depend on the information obtained about investors. They consider the profitability of the bank in the target region, so the deposit collected from the region is reinvested within the region.

3.6.2.2. Definitions for branch banking

In this country there is only one large bank, Bank Z, which has two branches, each with its own branch manager: BM_{zi} in Branch i (B_{zi}) and BM_{zi} in Branch j (B_{zj}). However,

different from the decentralised system, there is a head manager of Bank Z (HM_z) in the head office, located in the most developed province of the country. Branch managers depend on the head manager in the decision making process of financing a project.

Consider Bank Z in the branch banking system; BM_{zi} decides to finance a project by taking into consideration maximizing B_{zi} 's profit, with the help of soft information. The organisational structure of the bank requires that, in order to provide a loan to an investment, BM_{zi} has to send the investment project to the bank headquarters. The final decision maker is HM_z , who labels regions, and hence the branches, as "bad" or "good", according to his research. He declines to finance the projects in the branch labelled bad, since he places most importance on the total profit of the bank rather than the profit of branches separately. If he thinks that the return on the project is not as profitable as other projects, then he will not approve a loan. Therefore, deposits in B_{zi} will not be distributed to investments within the region. This leads to a resource flow from the target region to other regions, which are usually more developed. Branch managers cannot make decisions in givin loan, which might cause a decrease in the branch's net profits.

In the first place, the analysis in this study shows the return on capital in the case of decentralization. In the model, an economy with a decentralised banking system is one where the banks are identical. On the other hand, another model is established in the current study which incorporates the hierarchical case for the target region, introducing the new banking definition, and treating the hierarchical banks as different from conventional growth models with financial intermediaries.

3.6.3. The Environment and Labour Market

General Assumptions

- Banks are the only financial intermediaries in the economy.
- Banks accept deposits and allocate credits, and hold liquid reserves against predictable withdrawals.
- All savings are deposited.
- In the model, soft information in regions labelled bad is considered. The reasoning behind this is: in a rural area, the nature of the information about the entrepreneurs is mostly soft. This assumption follows Stein's (2002) suggestions. He shows that, in spite of a hierarchy's potential for beneficial cross-division reallocations based on soft information, it is possible for decentralization to be the preferred organizational form.

Given that, it is able to raise four units of external finance, capital allocation in a hierarchy works as follows. When the head manager's research is unsuccessful, the best he can do is to just give each division manager two units of funding and this corresponds with the decentralised outcome. When the head manager's research is successful, he may choose to deviate from equal funding and give one division more than the other. This will only happen if one branch is identified as a star, and the other is not. In such a "lone-star" scenario, the head manager has three options: still give each division two units, give the star division three units and the other division one unit, or give the star division all four units. Stein (2002) shows in his model that, when the firm is organized as a hierarchy, only the head manager does research, and branch managers are totally discouraged. Conversely, under decentralization, the branch managers are highly motivated and become perfectly informed. Given that the two division managers taken together are able to gather more accurate information than the CEO, this latter effect is more than enough to outweigh any improved crossdivision allocation that can be obtained in a hierarchy. As a result, Stein (2002) shows that decentralization is the better mode of organization. Another example showing a similar result is from Berger et al. (2005), who show that large banks are less prone to finance small firms. Additionally, Benvenuti et al. (2010) find that interaction over time between the branch and manager and the borrower is shaped by the type of organization the bank has adopted. The mode of communication between hierarchical levels can significantly affect the decisions of branch managers, which, in turn, can be reflected in the allocation of credit to projects in regions.

- Banks contribute capital accumulation by investing in illiquid assets and reducing the investment in liquid assets. Therefore, an economy with banks will grow faster than one without banks. However, in the hierarchical banking system, a proportion of investors are now rejected, hence the composition of the liquid and illiquid assets differs in the branches. The branches defined as bad branches by HMZ now have less illiquid investment. And the fraction of the entrepreneurs in the model is now less than it is in the decentralised banking system. Hence, the region labelled bad cannot reach the desired growth.
- Banks are not identical in terms of their organisational forms. Branch banks are big commercial banks that have small branches in the regions of a country as well as a head office located in a financial centre. They collect deposits through the branches and can shift funds from one branch to another. Unit banks are local banks, which are

independent of each other and from a head office. They collect deposits and allocate resources within the region.

In the model used in this study, assumptions regarding the environment and labour market are in line with Bencivenga and Smith's (1991) traditional endogenous model for the decentralised banking system and three other possible situations of branch banking, such as: the head manager is uninformed, both branches are identified as good/ bad at the same time¹³⁵.

The environment and the labour market are described as follows. Consider that the economy is composed of three-period-lived overlapping generations. Time is discrete, t= 1, 2,... There is an old agent at t=0, endowed with initial per firm capital stock of k_0 .

There are two goods in the economy, consisting of a single consumption and a single capital good. The consumption good is produced from labour and capital, and all capital belongs to old agents, also called entrepreneurs.

 k_t : capital of an individual entrepreneur at time t

 \bar{k}_t : average capital stock per entrepreneur at t employs L_t units of labour, which produces the consumption good according to the production function:

$$\bar{k}_t^\delta k_t^\theta L_t^{1-\theta} \tag{3.1}$$

where $\theta \in (0, 1)$, and $\delta = 1 - \theta$, which represents the external effect in production. Assume for simplicity all capital depreciates after one period.

The only young agent is endowed with labour in that each young agent is endowed with a unit of labour when young, which is supplied inelastically. The utility function of all young agents is as follows:

 c_i : age i consumption and utility function of all young agents is

$$u(c_1, c_2, c_3; \emptyset) = -\frac{(c_2 + \emptyset c_3)^{-\gamma}}{\gamma}$$
(3.2)

 $\gamma > -1$, and \emptyset is an individual-specific random variable realized at the beginning of age 2. Probability distribution of \emptyset is

Young agents do not value age-one consumption, so all young period income is saved. Therefore, financial structure cannot trivially affect decisions of agents about how much of

¹³⁵ Stein (2002, p. 1902) suggest the same assumption under soft information.

their income to save (Bencivenga and Smith, 1991). Finally, the formulation of preferences in (3.2) and (3.3) implies a "desire for liquidity" on the part of savers. (Diamond and Dybvig, 1983)

There are two assets in this economy. First, "liquid investment" is where one unit of the consumption good invested at t returns n > 0 units of consumption at either t+1 or t+2. Hence, the return on liquid investment does not rely on the date of liquidation. Second, there is "illiquid" capital investment, in which one unit of the consumption good invested at t returns R units of the capital good at t+2. If investment in the capital good is liquidated after one period (that is, at t+1) its "scrap value" is x units of the consumption good; $0 \le x < n$.

3.6.4. Labour Markets

Given an inherited capital stock of k_t , an entrepreneur can choose a quantity of labour (L_t) to maximize profit, as follows;

 L_t =argmax { $\overline{k_t}^{\delta}$, $k_t^{\theta} L_t^{1-\theta}$ - $w_t L_t$ }, where w_t is the real wage rate. Then labour demand, as a function of $\overline{k_t}^{\delta}$, k_t and w_t, is given by:

$$L_t = k_t [(1-\theta) \,\overline{k_t}^{\delta} / w_t]^{1/\theta}$$
(3.4)

Labour market clearing

Labour market clearing¹³⁶ requires that *labour demand is equal to labour supply*. Not all old agents are entrepreneurs; only fractions of (π) of all agents have a realized value of 1 for the random variable Ø and hire of labour L_t. Then, labour market clearing requires L_t=1/ π for all t. Therefore, averaging the equation (3.4) over firms and equating the results to 1/ π gives the real wage at t as:

$$w_t = \bar{k}_t (1 - \theta) \pi^\theta \tag{3.5}$$

Consequently, it is possible to derive the perceived return on capital for entrepreneurs by substituting equation (3.5) into (3.4), and using the fact that per firm profits at t are:

$$\theta \bar{k}_{t}^{\delta} k_{t}^{\theta} L_{t}^{1-\theta}$$

$$\theta \bar{k}_{t}^{\delta} k_{t}^{\theta} L_{t}^{1-\theta} = \theta \bar{k}_{t}^{\delta} k_{t} \left[(1-\theta) \bar{k}_{t}^{\delta} / w_{t} \right]^{((1-\theta)/\theta)} = \theta \pi^{\theta-1} k_{t}$$

$$\equiv \theta \psi k_{t}$$

$$(3.6)$$

¹³⁶ Derivations of equations (3.4) and (3.5) provided in Appendix 3.8.1, 3.8.2, and 3.8.3.

Hence each entrepreneur retains the return to capital, $\theta\psi k_t$, where $\psi=\pi^{ heta-1}$.

3.6.5. Model with financial intermediaries

Financial intermediaries are now introduced into model. Banks accept deposits from young savers and invest these funds in both *liquid assets* and *illiquid capital investment*. Bencivenga and Smith (1991) assume each depositor gets the same return on investment, depending on liquidation date. This assumption is true in first part of our model, which examines the decentralised case. However in the second part of the model, which focuses on the hierarchical case, the banking system is not perfectly competitive, so the return on investment also differs.

In order to show the efficiency level of the hierarchical case in regional growth relative to the decentralised case, two models are compared. The first shows the decentralized case.

3.6.5.1. Decentralized case

Managers of banks conduct research in order to differentiate good and bad investments, and fund investments according to their decisions. Providers of finance are young savers. Banks are cooperative entities, formed by young agents (Bencivenga and Smith, 1991). In equilibrium, all young agents deposit their entire labour income in banks.

Each manager allocates funds to a combination of liquid and illiquid assets. Liquid asset investment is a form of bank reserve. Each bank places $z_t^u \in [0, 1]^{137}$ units in liquid investment, $q_t^u \in [0, 1]$ units in illiquid investment for each unit deposited at time t.

$$z_t^u + q_t^u = 1 \tag{3.8}$$

Depositors who withdraw from banks after one period of making a deposit get r_{1t} units of the consumption good for each unit deposited. However, agents who withdraw after two periods receive r_{2t} units of the capital good, and \tilde{r}_{2t} units of the consumption good per unit deposited. α_{1t} is the fraction of the bank's liquid assets liquidated after one period, and α_{2t} the fraction of illiquid assets liquidated after one period.

Therefore, the related resource constraints for unit banking for each bank are:

$$(1 - \pi)r_{1t} = \alpha_{1t}z_t^u n + \alpha_{2t}q_t^u x$$
(3.9)

$$\pi r_{2t} = (1 - \alpha_{2t}) R q_t^u \tag{3.10}$$

¹³⁷ Superscript "u" denotes unit banking

$$\pi \tilde{r}_{2t} = (1 - \alpha_{1t}) z_t^u n \tag{3.11}$$

where $(1 - \pi)$ represents the fraction of agents who withdraw one period after making a deposit.

Expecting the result that in equilibrium all savings are intermediated, the expected utility is evaluated as follow: at time t, young agents deposit their income w_t . At t+1, a fraction $(1 - \pi)$ of these agents experience $\emptyset = 0$, and withdraw their deposits. The consumption of these agents is then r_{1t} per unit deposited.

The fraction of π agents with $\emptyset = 0$ do not withdraw until t+2. This is equilibrium behaviour and demonstrated below. They receive r_{2t} units of the capital good each per unit deposited, along with \tilde{r}_{2t} units of the consumption good. Taking \bar{k}_{t+2} as given, each agent who withdraws at t+2 becomes an entrepreneur, and earns the return on capital $\theta \psi k_{t+2}$. Besides, these agents receive $r_{2t}w_t$ units of the consumption good.

The expected utility of a depositor, at time t, is thereby represented as;

$$\left[-\left(\frac{1-\pi}{\gamma}\right)(r_{1t}w_t)^{-\gamma} - \left(\frac{\pi}{\gamma}\right)\left[\theta\psi(r_{2t}w_t) + \tilde{r}_{2t}w_t\right]^{-\gamma}\right]$$
(3.12)

where $k_{t+2} = r_{2t}w_t$.

Banks choose q_t^u , z_t^u , α_{1t} , α_{2t} , r_{1t} , r_{2t} , and , \tilde{r}_{2t} to maximize (3.12), subject to (3.8)-(3.11). Each bank views itself as being unable to influence the "average per entrepreneur capital stock."

Proposition 1:

Suppose that $\theta \psi R > n$. Then $\alpha_{1t} = 1$ and $\alpha_{2t} = 0$.

"Premature" liquidation of capital can always be improved upon by increasing reserve holdings, while reserves held for two periods can always be profitably converted into capital. It is henceforth assumed, then, that $\theta \psi R > n$, implying that $\tilde{r}_{2t} = 0$. Proposition 1, to a large extent, simplifies the problem of the bank. Setting $\alpha_{1t}=1$ and $\alpha_{2t}=0$ in (3.9)-(3.11), and substituting the resulting equations along with (3.8) into (3.12), we obtain the problem¹³⁸ below for the financial intermediary at t:

$$max_{0 \le q_t^u \le 1} - \left(\frac{1-\pi}{\gamma}\right) \left[\frac{(1-q_t^u)nw_t}{1-\pi}\right]^{-\gamma} - \left(\frac{\pi}{\gamma}\right) \left[\theta\psi(Rq_t^u w_t/\pi)\right]^{-\gamma}$$
(3.13)

The solution for (3.13) sets:

¹³⁸ For derivations see Appendix 3.7.4.

$$q_t^u = \rho/1 + \rho \tag{3.14}$$

where

$$\rho = \left(\frac{\pi}{1-\pi}\right)^{1/(1+\gamma)} \left[\frac{\pi n}{(1-\pi)\theta\psi R}\right]^{\gamma/(1+\gamma)}$$
(3.15)

It remains to be verified that agents with $\phi = 1$ prefer to withdraw from the bank after two periods rather than one, and that all savings are intermediated.

To obtain the first result, it is observed that equilibrium consumption for agents who withdraw at t+2 is:

$$\theta\psi(r_{2t}w_t) = \theta\psi Rq_t^u w_t/\pi.$$

Agents who withdraw at t+1 have time t+1 consumption equal to $r_{1t}w_t = (1 - q_t)nw_t/(1 - \pi)$. Then agents with $\phi = 1$ will withdraw at time t+2 if

$$\left(\frac{\theta\psi R}{\pi}\right)\left(\frac{\rho}{1+\rho}\right) \ge \left(\frac{n}{1-\pi}\right)\left(\frac{1}{1+\rho}\right) \tag{3.16}$$

Substituting equation (3.15) into (3.16) and rearranging terms yields the equivalent expression $\theta \psi R \ge n$, which has been assumed to hold. Then only agents with $\phi=0$ withdraw after one period. That all savings are intermediated is immediate, since intermediaries choose returns to maximize the expected utility of young savers.

Equilibrium

$$\bar{k}_{t+2} = r_{2t} w_t = R q_t^u w_t / \pi = k_{t+2}$$
(3.17)

Then (3.5) and (3.17) imply that

$$\bar{k}_{t+2}/\bar{k}_t = R(1-\theta)\pi^{\theta-1}q_t^u = R(1-\theta)\psi\rho/1 + \rho = \mu$$
(3.18)

As per firm output at time t, denoted y_t , equals $\bar{k}_t^{\delta} k_t^{\theta} \psi = \psi \bar{k}_t$ in equilibrium, and since the number of firms is constant over time, (3.18) also gives the equilibrium rate of output growth.

In particular:

$$\bar{k}_{t} = \begin{cases} \mu^{t/2}k_{0}; & t \text{ is even} \\ \mu^{(t-1)/2}k_{1}; & t \text{ is odd} \end{cases}$$
(3.19)

The time t+2 capital stock depends on the time t wage rate because capital formation takes two periods.

Generally, the growth rate μ can be less or greater than one. Thence negative or positive real growth rate can be expected. In equilibrium, the growth rate will increase as the share of labour in output $(1 - \theta)$ increases, with ρ remaining fixed. As long as capital becomes easier

to produce, or as ρ increases, a larger part of savings is invested in the accumulation of productive capital.

3.6.5.2. Branch Banking

For analysis of the branch banking system, there is only one bank in the economy with two branches. Manager1 is the manager of branch i and manager 2 is the manager of branch j. They are dependent on the head manager while making decisions.¹³⁹

In contrast to the decentralised banking system, besides branch managers, there is a head office manager in authority, who decides how much capital to allocate among banks. The head manager is willing to allocate most capital to the so called good branches, according to the soft information available.

It is assumed that the two branches collect deposits and allocate capital to liquid and illiquid assets. Since the HM_z labels a branch as a good branch (B_{zi}) (bearing in mind that in branch banks all funds are collected in a pool and allocated from one centre), he decides to reject some projects from the bad branch. The allocation of some funds to a good branch means that the composition of illiquid investment is different than in the unit banking case. Here, the acceptance rate for investors is denoted by $(1 - \epsilon)$. Hence the proportion of investors, future entrepreneurs, is now:

$$\pi^b = \pi(1 - \epsilon), \qquad 0 < \epsilon < 1 \tag{3.20}$$

 π^{b} is the percentage of entrepreneurs in the branch banking case. Upper case b (B) denotes the bad branch. The region is also termed bad in order to differentiate it from the good one.

Labour Market

The labour demand per entrepreneur is the same as the previous model: $L_t = k_t [(1 - \theta) \bar{k_t}^{\delta} / w_t]^{1/\theta}$. In branch banking, for the bad region, the fraction of entrepreneurs is now decreased to $\pi(1 - \epsilon)$, so new market clearing requires the labour supply to be:

$$L_t^b = 1/\pi (1-\epsilon) \tag{3.21}$$

Equation (3.21) can be rewritten by

$$L_t^b = L_t \, 1/(1-\epsilon) \tag{3.22}$$

¹³⁹ Stein (2002) uses the term "CEO" of the firm in his paper; here "head manager" is substituted.

where L_t is the labour demand in the unit banking case, and L_t^b is labour demand in the branch banking case. From the new labour supply equation, it can now be observed that the supply of labour per entrepreneur is more than it is in the unit banking case. The real wage in the bad region at t is set as: $k_t[(1 - \theta) \bar{k_t}^{\delta}/w_t]^{1/\theta} = L_t 1/(1 - \epsilon)$. If the equation is averaged, the following estimate is obtained:

$$w_t^b = \bar{k}_t \pi^\theta (1 - \epsilon)^\theta (1 - \theta) \tag{3.23}$$

where w_t^b is the real wage in the bad region. The new function can be rewritten in terms of unit banking real wage as:

$$w_t^b = w_t (1 - \epsilon)^\theta \tag{3.24}$$

From equation (3.24), it can be seen that the wage rate in the branch banking case is lower than in unit banking. Finally, by replacing labour in per firm profits, the new perceived return on capital¹⁴⁰ per entrepreneur is:

$$R^{b} = \theta k_t \pi^{\theta+1} (1-\epsilon)^{\theta-1}$$
(3.25)

It is important to remember that in unit banking each entrepreneur retains $R = \theta \psi k_t$ where $\psi = \pi^{\theta - 1}$.

By putting R in R^b , the following is obtained:

$$R^b = R(1-\epsilon)^{\theta-1} \tag{3.26}$$

Again it can be seen that the new return is less compared to the unit banking case. Before showing the expected utility of a representative depositor in a bad branch, the new resource constraints are defined as follows:

$$(1 - \pi(1 - \epsilon))r_{1t} = \alpha_{1t}z_t^b n + \alpha_{2t}q_t^b x$$
(3.27)

$$\pi (1 - \epsilon) r_{2t} = (1 - \alpha_{2t}) R^b q_t^b$$
(3.28)

$$\pi(1-\epsilon)\tilde{r}_{2t} = (1-\alpha_{1t})z_t^b n \tag{3.29}$$

With the new resource constraints, the expected utility of depositors in branch banking can be now written as:

$$EU^{b} = \left[-\left(\frac{1-\pi(1-\epsilon)}{\gamma}\right) \left(r_{1t}w_{t}^{b}\right)^{-\gamma} - \left(\frac{\pi(1-\epsilon)}{\gamma}\right) \left[\theta\psi(1-\epsilon)^{\theta-1}\left(r_{2t}w_{t}^{b}\right) + \tilde{r}_{2t}w_{t}^{b}\right]^{-\gamma} \right]$$
(3.30)

¹⁴⁰ Proof is provided in Appendix 3.8.7.

Setting $\alpha_{1t}=1$ and $\alpha_{2t}=0$ in equations of resource constraints, banks choose $q_t^b, z_t^b, \alpha_{1t}, \alpha_{2t}, r_{1t}, r_{2t}$, and \tilde{r}_{2t} to maximize¹⁴¹ EU^b .

$$\max_{0 \le q_t^b \le 1} - \left(\frac{1 - \pi(1 - \epsilon)}{\gamma}\right) \left[\frac{nw_t^b(1 - q_t^b)}{1 - \pi(1 - \epsilon)}\right]^{-\gamma} - \left(\frac{\pi(1 - \epsilon)}{\gamma}\right) \left[\theta\psi(1 - \epsilon)^{\theta - 1}w_t^b\frac{R}{\pi(1 - \epsilon)}q_t^b\right]^{-\gamma} \frac{q_t^b}{1 - q_t^b} = \left(\frac{n}{\theta\psi R}\right)^{\gamma/\gamma + 1} (1 - \epsilon)^{(2\gamma - \gamma\theta + 1)/(\gamma + 1)}\frac{\pi}{1 - \pi(1 - \epsilon)}$$
(3.31)

From equation (3.31) $q_t^u = \rho/1 + \rho$, $\rho = \frac{q_t^u}{1-q_t^u}$ can be obtained, and, rearranging the equation above, q_t^b can be written in terms of q_t^u , as follows:

$$\frac{q_t^b}{1-q_t^b} = \frac{\rho(1-\pi)}{\pi} \frac{\pi}{1-\pi(1-\epsilon)} (1-\epsilon)^{(2\gamma-\gamma\theta+1)/(\gamma+1)} \text{ then } \rho \text{ is replaced by } \frac{q_t^u}{1-q_t^u}$$
$$\frac{q_t^b}{1-q_t^b} = \frac{1-\pi}{1-\pi(1-\epsilon)} (1-\epsilon)^{(2\gamma-\gamma\theta+1)/(\gamma+1)} \frac{q_t^u}{1-q_t^u} \tag{3.32}$$

Proposition 2:

Equation (3.32) shows that as ϵ approaches 0, q_t^b approaches q_t^u , and as ϵ approaches 1, q_t^b becomes 0.¹⁴²

Growth in Equilibrium

It is necessary to recall the estimation $\bar{k}_{t+2} = r_{2t}w_t$ and $\bar{k}_{t+2}^b = r_{2t}w_t^b$ for the bad branch. Replacing $\bar{k}_{t+2}^b = \frac{Rw_t^b}{(1-\epsilon)\pi}q_t^b = \frac{R(1-\epsilon)^{\theta}q_t^b}{(1-\epsilon)\pi}$ with q_t^u equation can be rewritten as follows: $\frac{Rw_t}{\pi}(1-\epsilon)^{\theta-1}q_t^b = \frac{\bar{k}_{t+2}}{q_t^u}q_t^b(1-\epsilon)^{\theta-1} = \bar{k}_{t+2}^b$ (3.33) $u^b = \frac{\bar{k}_{t+2}^b}{(1-\epsilon)^{\theta-1}}q_t^b$

$$\mu^b = \frac{\kappa_{t+2}}{\bar{k}_t} \tag{3.34}$$

where μ^{b} is the growth rate of the region in which the branch labelled bad is located.

$$\mu^{b} = \mu \frac{q_{t}^{b}}{q_{t}} (1 - \epsilon)^{\theta - 1}$$
(3.35)

From equation 3.32, q_t^b is obtained as follows:

¹⁴¹ Derivations are provided in Appendix 3.8.5.

¹⁴² The only condition for this proposition to hold is $\frac{\partial q_t^b}{\partial \epsilon} < 0$. To achieve this, the sign of the power $(1 - \epsilon)$ should be known. The proof is derived in Appendix 3.8.8.

$$= \rho \left(\frac{1-\pi}{1-\pi(1-\epsilon)} \right) (1-\epsilon)^{\frac{2\gamma-\gamma\theta+1}{\gamma+1}} / \rho \left(\frac{1-\pi}{1-\pi(1-\epsilon)} \right) (1-\epsilon)^{\frac{2\gamma-\gamma\theta+1}{\gamma+1}} +$$
(3.36)

By rewriting equation (3.36) in terms of q_t^u , two illiquid fractions for decentralised and hierarchical cases for a region can be compared:

$$q_t^b = \frac{q_t^u(\rho+1)A(1-\epsilon)^B}{\rho A(1-\epsilon)^B + 1} q_t^u$$
(3.37)

where $A = \frac{1-\pi}{1-\pi(1-\epsilon)}$ and $B = \frac{2\gamma-\gamma\theta+1}{\gamma+1}$.

 q_t^b

It can simply be written as: $q_t^b = \sigma q_t^u$, where $\sigma = \frac{q_t^u(\rho+1)A(1-\epsilon)^B}{\rho A(1-\epsilon)^B+1}$

It is now known that $0 < \sigma < 1$, since $\sigma = \frac{q_t^b}{q_t^u}$ because q_t^b is less than q_t^u .

$$u^{b} = \mu \sigma (1 - \epsilon)^{\theta - 1} \tag{3.38}$$

It can easily be seen that the new growth rate is lower than in the unit banking case. The equilibrium rate of growth is then set as:

$$\bar{k}_{t}^{b} \begin{cases} \mu^{t/2} (\sigma(1-\epsilon)^{\theta-1})^{t/2} k_{0}; & t \text{ is even} \\ \mu^{(t-1)/2} (\sigma(1-\epsilon)^{\theta-1})^{(t-1)/2} k_{1}; & t \text{ is odd} \end{cases}$$
(3.39)

Equation (3.39) can be rewritten as follows in order to see the time effect more clearly:

$$\frac{\bar{k}_t^b}{\bar{k}_t} \begin{cases} \left(\sigma(1-\epsilon)^{\theta-1}\right)^{t/2} \\ \left(\sigma(1-\epsilon)^{\theta-1}\right)^{(t-1)/2} \end{cases}$$
(3.40)

As can be seen from the equation above, as t goes to infinity, capital accumulation and thus growth approaches to zero¹⁴³.

$$\lim_{t \to \infty} \left(\sigma (1 - \epsilon)^{\theta - 1} \right)^{t/2} = 0 \tag{3.41}$$

It is clearly seen from equation (3.38) that $k_{(t+2)}>k_{(t+2)}$, which means growth of a region is greater when it has decentralised banking system than when there is hierarchical banking system and the branch is defined as bad by Head Manager depending on soft information he valuates.

¹⁴³ Proof of $\lim_{t\to\infty} (\sigma(1-\epsilon)^{\theta-1})^{t/2} = 0$ is given in Appendix 3.7.9.

In equilibrium, as ϵ increases, the difference between the bad and good branches located in a region increases. These results are consistent with Stein's (2002) findings, indicating that return on capital is lower in hierarchical cases than decentralised. The analysis shows that branch banks might not be desirable for regional growth¹⁴⁴.

It can be concluded that, in branch banking, deposits are collected via branches from rural areas around the country. However, these resources are shifted to investments in highly urbanized cities. Hence this causes a capital flow from less developed regions to highly developed ones, which, in turn, increases the gap between rural and developed regions.

¹⁴⁴ Stein's (2002) derivations are shown in Appendix 3.7.6.
3.7. Conclusion

The existing literature, both theoretical and empirical, argues that hierarchical firms function better when information is hard, while decentralized firms perform better when information is soft. If this is applied to the banking sector, it is safe to assume that branch banks do not perform well when information is soft. Considering a country's economy as a whole, branch banks stimulate financial and economic development. However, if the regional effects of banking are taken into account, it cannot be claimed for all regions that branch banks are growth promoting. In rural regions of a country, SME lending becomes more important, as existing literature shows. In these regions, banks need more soft information which cannot be easily collected by large branch banks in the process of lending. Even if branches in the target region collect soft information, this information is not always considered by the head office. As a result, this can discourage the staff in those branches from gathering soft information, consequently causing a decrease in the profit of the target branch. Furthermore, capital flow from one region to another might be observed, which ends up with the poor region remaining underdeveloped and regional disparities deepening further.

In this research, the return on capital in the presence of soft information for both types of the banking system, branch banks, and unit banks, is investigated, by applying Stein's (2002) hierarchical case approach to Bencivenga's (1991) model endogenous growth with financial intermediaries. To do so, the assumption that financial intermediaries in an economy are identical is relaxed. It is also assumed that there might be information asymmetry, whereby, in rural areas, the nature of information about investors is more likely to be soft.

The present study combines the assumptions behind Bencivenga and Smith's (1991) endogenous growth model with financial intermediaries and Stein's (2002) model of capital allocation for decentralised and hierarchical firms in the case of soft information. The centralised decision-making mechanism leads the head office to reject projects backed by soft information. By introducing a rejection variable, it can be shown that the gap between the capital accumulations of regions with hard information (usually in highly developed regions) and soft information (usually in poor regions) becomes infinite. The return on capital in the branch banking system is less than the unit banking system. Hence, the study shows that unit banks function better in rural areas.

Since there are fewer or no regional disparities in developed countries, branch banking might be advantageous. Such countries, however, have significant regional imbalances in

terms of growth. Therefore, branch banking might widen these disparities by causing capital to flow from poor regions to rich ones. For this reason, establishing unit banks or giving more authorisation to branch managers might support regions which are below the national growth level. Moreover, unit banks are more welcomed by local people in poor regions because they would be saving more. They would know that the deposits collected will turn into investments in the same region, which favours capital accumulation and development. Other financial institutions might be encouraged to enter the financial sector.

3.8. Appendix

3.8.1. Derivations of Maximization of Labour Demand

The labour demand is maximised by taking the first differentiation and setting the result equal to zero.

 $(1-\theta)\bar{k_t}^{\delta}k_t^{\theta}L_t^{-\theta} - w_t = 0 \qquad \Rightarrow \qquad w_t = (1-\theta)\bar{k_t}^{\delta}k_t^{\theta}L_t^{-\theta}$ Then we find:

 $L_t^{-\theta} = \frac{w_t}{(1-\theta)\overline{k_t}^{\delta}k_t^{\theta}}$ by taking the power of $-1/\theta$ on both sides of the equation to derive:

$$L_t = k_t [(1 - \theta) \,\overline{k_t}^{\delta} / w_t]^{1/\theta} \tag{i}$$

3.8.2. Labour market clearing proof

In labour market clearing equilibrium, it is known that:

$Labour_{Demand} = Labour_{Supply}$

Labour demanded by entrepreneurs is derived in the previous section. Here labour demand is averaged and equated with its labour supply. Since only a π fraction of the old agents are capital owners, taking into account that labour is supplied inelastically, labour supply is $\frac{1}{\pi}$.

$$\bar{k}_t [(1-\theta) \bar{k}_t^{\delta} / w_t]^{1/\theta} = \frac{1}{\pi} \qquad \Rightarrow \qquad \frac{\pi \bar{k}_t (1-\theta)^{1/\theta} \bar{k}_t^{\delta/\theta}}{w_t^{1/\theta}}$$

Remember $\delta = 1 - \theta$

 $w_t^{1/\theta} = \pi \bar{k}_t^{1-\theta/\theta} (1-\theta)^{1/\theta}$ Therefore: $w_t = \bar{k}_t (1-\theta) \pi^{\theta}$

3.8.3. Proof of per entrepreneur return to capital

By adopting the Cobb-Douglass production function, we know that per firm profit is $\theta \bar{k}_t^{\delta} k_t^{\theta} L_t^{1-\theta}$

Substituting equation 4 into 3, and replacing δ with $(1 - \theta)$ we obtain the following equation:

$$\theta \bar{k}_t^{1-\theta} k_t^{\theta} \left\{ \bar{k}_t \left[(1-\theta) \bar{k}_t^{1-\theta} / w_t \right]^{1/\theta} \right\}^{1-\theta} \equiv \theta \bar{k}_t^{1-\theta} k_t^{\theta} \bar{k}_t^{1-\theta} \left[\frac{(1-\theta) \bar{k}_t^{1-\theta}}{\pi^{\theta} \bar{k}_t (1-\theta)} \right]^{(1-\theta)/\theta}$$

By simplifying the equation above we obtain:

$$\theta k_t^{\theta} \pi^{\theta - 1} \tag{11}$$

(ii)

3.8.4. Problem of Bank

$$max_{0 \le q_t^u \le 1} - \left(\frac{1-\pi}{\gamma}\right) \left[\frac{(1-q_t^u)nw_t}{1-\pi}\right]^{-\gamma} - \left(\frac{\pi}{\gamma}\right) \left[\theta\psi(Rq_t^u w_t/\pi)\right]^{-\gamma}$$
(iv)

$$I^{st} Step: -(1-\pi)nw_t \left[\frac{(1-q_t^u)nw_t}{1-\pi}\right]^{-\gamma-1} + \theta \psi Rw_t [\theta \psi (Rq_t^u w_t/\pi)]^{-\gamma-1} = 0$$

2nd Step:
$$\left[\frac{(1-q_t^u)n/(1-\pi))}{\theta\psi R q_t^u/\pi}\right]^{\gamma+1} = \frac{n}{\theta\psi R} \equiv \left[\frac{n}{\theta\psi R}\right]^{\gamma+1} \left[\frac{(1-q_t^u)}{q_t^u}\right]^{\gamma+1}$$
$$= \frac{n}{\theta\psi R} \left(\frac{1-\pi}{\pi}\right)^{-\gamma-1}$$

3rd Step:
$$\frac{q_t^u}{(1-q_t^u)} = \left(\frac{n}{\theta\psi R}\right)^{\gamma/1+\gamma} \left(\frac{\pi}{1-\pi}\right) \equiv q_t^u = \frac{\rho}{1+\rho}; \ z_t^u = \frac{1}{1+\rho}$$

where $\rho = \left(\frac{n}{\theta \psi R}\right)^{\gamma/1+\gamma} \left(\frac{\pi}{1-\pi}\right)$

3.8.5. Maximization of EU for Hierarchical Case

$$\begin{split} \max_{0 \le q_t^b \le 1} - \left(\frac{1 - \pi(1 - \epsilon)}{\gamma}\right) \left[\frac{nw_t^b(1 - q_t^b)}{1 - \pi(1 - \epsilon)}\right]^{-\gamma} \\ - \left(\frac{\pi(1 - \epsilon)}{\gamma}\right) \left[\theta\psi(1 - \epsilon)^{\theta - 1}w_t \frac{R}{\pi(1 - \epsilon)}q_t^b\right]^{-\gamma} \\ \equiv \left(-\gamma\right) \left(-\frac{1 - \pi(1 - \epsilon)}{\gamma}\right) \left(-\frac{nw_t^b}{1 - \pi(1 - \epsilon)}\right) \left[\frac{nw_t^b(1 - q_t^b)}{1 - \pi(1 - \epsilon)}\right]^{-\gamma - 1} \\ - \left(-\gamma\right) \left(\frac{\pi(1 - \epsilon)}{\gamma}\right) \left(\frac{\theta\psi(1 - \epsilon)^{\theta - 1}Rq_t^b}{\pi(1 - \epsilon)}\right) \left[\theta\psi(1 - \epsilon)^{\theta - 1}w_t \frac{R}{\pi(1 - \epsilon)}q_t^b\right]^{-\gamma - 1} = 0 \\ \left[\frac{n}{\theta\psi R(1 - \epsilon)^{\theta - 2}}\right]^{\gamma/\gamma + 1} \left[\frac{\pi}{1 - \pi(1 - \epsilon)}\right] = \frac{q_t^b}{1 + q_t^b} \end{split}$$
(v)

3.8.6. Assumptions and findings in Stein's (2002) study

According to Stein (2002), the return on capital of decentralised firms is greater than the return of hierarchical firms in the case of soft information; $\Delta_4^{hs} < \Delta_2^d$. Assumptions in his study are as follows: There are two divisions in states, and each division has two projects that need to be funded. Zero, one or two units of capital can be allocated to each project. The probability of being a good or bad project is 0.5. Outcomes are independent across all projects both within and across divisions. Net outputs within projects are given below:

Good State

Net output of g(1) > 0 if a project gets one unit of capital

Net output of g(2) > 0 if it gets two units.

Bad State

The net output of b(1) with one unit of capital and b(2) with two units.

Assume that

g(2) < 2g(1), which means there is decreasing returns in the good state.

g(2) > g(1) + b(1)

Normalization: b(1) = 0

-1<b(2)<0,

b(2) + g(2) < 0.

In other words, the net return for investing two units in a bad project is so negative that it offsets the gains from investing two units in a good project. This assumption ensures that there will be credit constraints in equilibrium, since an uninformed provider of external finance will never want to give each division four units of capital to work with. In addition, financing frictions are necessary in this model if one is to pose questions of internal capital allocation; without such frictions, all projects would get fully funded in all states of the world.

Each branch has their own manager, able to obtain signals about projects that they oversee by virtue of research effort. The effort of manager i is e_i , with probability $p(e)_i$ of observing signals on both of his projects. The function p() is increasing, concave, and takes values on the interval [0, 1].

The division managers have reservation utilities of zero, so that there is never any issue of satisfying their participation constraints. Each agent prefers more capital to less, but, conditional on being granted a certain budget, tries to allocate it efficiently. That is to say, the agents in the model are empire builders, but, while maintaining the size of their empires, they prefer them to be profitable.

In the following subsections, we aim to establish the results that first when information is soft, decentralization may for some parameter values be the more efficient mode of organization.

Decentralized case

A branch manager allocates two units of capital based on his knowledge, thus expected net output is (g(2)+g(1))/2. (Note that b(1)=0)

 R_{it} = Branch manager is informed = (g(2)+g(1))/2

 R_{ut} = Branch manager is uninformed= g(1)

$$\Delta_2^d = (g(2) - g(1))/2 \tag{vi}$$

Hierarchical case

 Δ_4^{hs} represents the gains in expected utility that an individual division manager obtains when, in a hierarchy with soft information and four units of capital, his own research efforts succeed. Then the following equation can be derived:

$$\Delta_4^{hs} = (1 - q)(g(2) - g(l))/2 + 3q(g(2) - g(l))/8$$

= (1 - q) $\Delta_2^d + 3q \Delta_2^d/4$ (vii)

Level of research effort, e_4^{hs} satisfies

$$p'(e_4^{hs}) = \gamma / \Delta_4^{hs}$$
(viii)

Since $\Delta_4^{hs} < \Delta_2^d$, the anticipated net output in a hierarchy with soft information and four units of capital is given by;

$$Y^{hs}(4) = (1 - q)\{p(e_4^{hs})(g(2) + g(l)) + (1 - p(e_4^{hs}))(2g(1))\} + q\{p(e_4^{hs})(6g(2) + g(1))/4 + (1 - p(e_4^{hs}))(3g(2) + 4g(1))/4\}$$
 (ix)

 $R_{b^{i}h^{i}t}$ = Branch manager and head office both informed = (6g(2) + g(1))/4 $R_{b^{i}h^{u}t}$ = Branch manager informed and head office uninformed =(g(2) + g(l)/2) $R_{b^{u}h^{i}t}$ = Branch manager uninformed and head office informed =(3g(2) + 4g(1))/4 $R_{b^{u}h^{u}t}$ = Branch manager and head office both uninformed = g(1)

$$\Delta_4^{hs} = \frac{(1-q)\left(g(2) - g(l)\right)}{2} + \frac{3q\left(g(2) - g(l)\right)}{8} \tag{x}$$

$$(1-q) \Delta_2^d + \frac{3q\Delta_2^d}{4} = (1-q/4)\Delta_4^d$$
 (xi)

Hence if equations (ii) and (v) are compared, it can be seen that:

$$\Delta_4^{hs} < \Delta_2^d \tag{xii}$$

Therefore, equation (i) indicates that when the nature of the information is soft, return on capital is greater in the decentralised case than in the hierarchical case. **3.8.7.** Return on Capital per Entrepreneur

$$\theta \bar{k}_t^{\delta} k_t^{\theta} \left\{ k_t \left[\frac{(1-\theta)\bar{k}_t^{\delta}}{\bar{k}_t \pi^{\theta}(1-\epsilon)^{\theta}(1-\theta)} \right]^{1/\theta} \right\}^{1-\theta} \equiv \theta \bar{k}_t^{\delta} k_t^{\theta} k_t^{1-\theta} \bar{k}_t^{\theta-1} \pi^{\theta-1} (1-\epsilon)^{\theta-1}$$
$$\equiv \theta k_t^{1-\theta+\theta+1-\theta+\theta-1} \pi^{\theta-1} (1-\epsilon)^{\theta-1}$$

By simplifying, we obtain $\theta k_t \pi^{\theta+1} (1-\epsilon)^{\theta-1}$

3.8.8. Sign of
$$\frac{2\gamma - \gamma \theta + 1}{\gamma + 1}$$
: the power of $(1 - \epsilon)$

In order to have positive power, there should be the following condition:

$$\frac{2\gamma - \gamma\theta + 1}{\gamma + 1} \equiv 1 + \gamma \frac{1 - \theta}{\gamma + 1}$$

Then

$$\gamma \frac{1-\theta}{\gamma+1} > -1 = \frac{1}{-\gamma} > \frac{1-\theta}{\gamma+1} \qquad \Rightarrow \qquad \theta - 2 > \frac{1}{\gamma}$$

We put a new condition on γ , knowing that $\gamma > -1$. $\gamma > \frac{1}{\theta - 2}$ is set to have the power value greater than 0. Then, the first order condition is taken to see the reverse relationship. It is known that:

$$\begin{split} q_t^b &= \frac{\rho\left(\frac{1-\pi}{1-\pi(1-\epsilon)}\right)(1-\epsilon)^{\frac{2\gamma-\gamma\theta+1}{\gamma+1}}}{\rho\left(\frac{1-\pi}{1-\pi(1-\epsilon)}\right)(1-\epsilon)^{\frac{2\gamma-\gamma\theta+1}{\gamma+1}}+1} \\ \frac{\partial q_t^b}{\partial \epsilon} &= \frac{-\rho.AB(1-\epsilon)^{B-1}[\rho.A(1-\epsilon)^B+1] + \rho.AB(1-\epsilon)^{B-1}[\rho.A(1-\epsilon)^B]}{[\rho.A(1-\epsilon)^B+1]^2} \\ &\equiv \frac{-\rho.AB(1-\epsilon)^{B-1}}{[\rho.A(1-\epsilon)^B+1]^2} \end{split}$$

It can be seen that the denominator is positive and nominator is negative; hence the equation is negative which shows the inverse relation between q_t^b and ϵ .

Where
$$A = \frac{1-\pi}{1-\pi(1-\epsilon)}$$
 and $B = \frac{2\gamma-\gamma\theta+1}{\gamma+1}$

Therefore, according to the theorem of intermediary values, $q_t^b(1) < q_t^b(\epsilon) < q_t^b(0)$, where $q_t^b(1) = 0$ and $q_t^b(0) = q_t^u$, $(\epsilon \in [0,1])$.

3.8.9. Proof of
$$\lim_{t \to \infty} (\sigma(1-\epsilon)^{\theta-1})^{t/2} = 0$$
$$\lim_{t \to \infty} (\sigma(1-\epsilon)^{\theta-1})^{t/2} = 0$$
$$\lim_{t \to \infty} exp \left[ln (\sigma(1-\epsilon)^{\theta-1})^{t/2} \right] = 0$$
(xiii)

In order to take the first order condition, the L' Hospital rule is applied:

$$\lim_{t \to \infty} \exp\left[\frac{t}{2} \ln(\sigma(1-\epsilon)^{\theta-1})^{t/2}\right]'$$
(xiv)

$$\lim_{t \to \infty} \frac{\ln \sigma (1-\epsilon)^{\theta-1}}{2} exp\left[\frac{t}{2}\ln(1-\epsilon)^{\theta-1}\right]$$
(xv)

$$\frac{t}{2}(ln\sigma + (\theta - 1)ln(1 - \epsilon))$$
(xvi)

 $ln(1-\epsilon)$ is less than 0, $(\theta - 1)$ is less than 0, and $ln\sigma$ is also less than 0. Therefore, as t approaches infinity, the equation approaches 0.

Chapter 4

Regional Economic Development, Financial Structure and Bank's Business Model

4.1. Introduction

A better provision of financial intermediaries should enable more efficient allocation of resources and reduce information asymmetries between lenders and borrowers. Financial intermediaries, hence, facilitate the accumulation of capital (Pagano, 1993; Greenwood and Smith, 1997). Many studies empirically investigate the roles of financial intermediaries in economic growth at the cross-country level, industry level, and firm level by examining the volume of financial funds intermediated relative to economic output (King and Levine, 1993a; Beck et al., 2000). Cross-country studies are criticised because the samples cover very different economies, which causes heterogeneity problems (Hasan et al., 2009). These heterogeneities emerge from differences in banking sector development, regulatory frameworks, and access to financial services and institutions. A solution offered by Higgins et al. (2006) is to concentrate on regions to observe the variations within the countries.

A number of recent studies report the importance of local variations in the financial services and the link between financial market structure and local economic growth. Lucchetti et al. (2001) prove that regional growth of provinces in Italy positively depends on banking efficiency. Also for Italy, Guiso et al. (2004) show that easier access to credit is conducive to higher regional growth rates and the establishment of a larger number of new firms. On the contrary, Clarke (2004) highlights the fact that the Interstate Branching Act (13 September 1994) led to an expansion of credit provision, which is correlated with state growth, employing state-level data from the USA.

One of the main assumptions in the literature is that capital is perfectly mobile among regions and therefore plays a passive role in regional economic growth. Yet, a large number of studies (Roberts and Fishkind, 1979; Moore and Hill, 1982; Dow, 1987; Hutchinson and Mckillop, 1990; Amos and Wingender, 1993; Greenwald et al., 1993; Harrigan and Mcgregor, 1997) show that financial activities have a spatial dimension and capital is not perfectly mobile. These studies mainly argue that the presence of informational imperfections creates conditions under which regional interest rates may differ from national rates. In many countries, for example: the USA, Germany, Italy, France, and Spain, large banks are formed through consolidations and mergers of smaller banks. Although this trend may improve the operating efficiency of banks by exporting managerial skills, technologies, policies, and procedures, the impact of the changing organisational structure of banks on local development is not clearly understood, theoretically and empirically (Martin and Minns, 1995).

However, it can be argued that banks with hierarchical organisation may hinder the positive impact of financial intermediation on economic growth.¹⁴⁵ For instance, decentralised banks are situated locally, close to investors, while hierarchical banks serve their clients through a network of branch offices or alternative distribution channels and establish local decision-making procedures that guarantee quick but satisfying rather than effective solutions. Moreover, hierarchical banks may have limited information about local investment opportunities. Therefore, these banks may ignore or reject profitable local investment opportunities or use scarce resources in unproductive local investments (Alessandrini and Zazzaro, 1999; Klagge and Martin, 2005). Additionally, local branch managers may decrease the essential monitoring mechanisms on loans that are approved by head offices. (Porteous, 1995; Berger and DeYoung, 2001).

In contrast to many European countries, such as Germany (with a very well structured decentralised banking system), or the USA and Japan (with a large number of comparatively small and locally based banks), Turkey provides a unique setting to analyse the role of hierarchically structured banks in regional growth. There are no regional banks and the decision centres or head offices of all private banks are mostly located in the city of Istanbul, which is accepted as the centre of finance. Banks operate through branches located in different provinces from east to west. It appears, therefore, that the hierarchical institutional structure of the Turkish banking system influences the provision of regional banking services.

The model built in the theoretical paper suggests that the branch banking system may cause economic imbalances among the regions by collecting funds from underdeveloped regions and allocating them to highly developed ones. This study tests the empirical relevance of this finding for the 1975-2013 period, using province-level data from Turkey, and finds evidence of a negative effect of the branch banking system on regional growth. The analysis introduces a new measure of banking intermediation, which shows the transformation of deposits to loans at the provincial, bank, and national levels. More precisely, employing a comprehensive and unique dataset, the research investigates how each bank in each province influences the relationship between financial intermediation and local output. The model is tested by means of GMM regressions, controlling for various province and bank level indicators. The validity of the results is then checked using various robustness tests,j with a number of macroeconomic and regional variables.

¹⁴⁵ Instead of "centralized" we use "hierarchical" to identify the type of banking structure.

This study contributes to the literature by investigating banking intermediation using a newly defined indicator of financial intermediation and examining the triadic level (province-bank-national) effect on regional growth. In particular, this relationship is analysed comprehensively employing unique panel data, including a rich set of banking intermediation and control variables at the provincial level.

The remainder of this chapter is organised as follows. The next section reviews the existing literature on the financial intermediation and regional growth relationship. Section 3 introduces the study's empirical model and describes the regression strategy, data and data sources. The results are discussed in Section 4. Finally, the findings are summarised and conclusions are presented in Section 5.

4.2. Literature Review

Efficient functioning of the financial markets increases the possibility of selecting productive investments through managing the liquidity risk and diversifying the investor portfolios. Furthermore, financial intermediaries influence economic growth via providing funds for innovative investment opportunities and by controlling the risks inherent in the new projects. The existing literature reveals diverse findings regarding the effect of financial intermediation on growth at all levels. In this section, the major studies in this area are summarised.

Generally, profitable projects need long-term commitments of capital. Yet, some capital providers had rather not forgo control of their savings for long periods. According to Levine (1991) and Bencivenga and Smith (1991), financial contracts provided by financial intermediaries reduce the idiosyncratic liquidity shocks of individuals and enable the savings to be invested in illiquid but high-return projects. Because the risk of premature liquidation of high return, long-term investments is decreased, their models indicate that growth in capital accumulation, through successful investments, causes output growth. In addition to dealing with the idiosyncratic liquidity shocks of depositors, financial intermediaries help mitigate the risks associated with investing in a single project.

Guiso et al. (2002) investigate the links between access to credit and local economic growth for Italian provinces for the period 1860-2000. They employ a panel regression method to explain the growth of real GDP per capita in relation to the rejection rate of potential borrowers at the local level. Their major finding is a positive relationship between local financial development and real development. Their results also indicate that local financial development is only relevant for SME, but not for large corporations.

Guiso et al. (2004) and Hao (2006) find that provincial financial development significantly promotes the probability of individuals starting their own businesses, encourages the entry of new firms, increases competition, and promotes regional growth in Italy and China, respectively.

Some of the literature emphasizes the existence of institutional distribution that creates a spatially centralized financial system, under which capital flows are unbalanced among regions, even though financial institutions do not compete on price (Dow, 1987; Hutchinson and Mckillop, 1991; Gentle, 1993; Martin and Minns, 1995; Porteous, 1995, 1999; and Klagge and Martin, 2005).

The mobility of capital can be inhibited by imperfect and asymmetric information, which may cause some varieties in regional growth. As local investors and financial intermediaries have superior knowledge about investment opportunities in their region, they are more willing to invest locally, while outside investors may be trapped with poor investment opportunities if it is costly to search for substitutes. Thus, the return on capital may differ markedly among regions.

Furthermore, various institutional differentials of financial systems, such as branch banking regulations, interest rate differentials among regions, or risk premiums based on future conditions in the region, may restrain the free flow of capital among regions. Greenwald et al.'s (1993) findings support the hypothesis of capital market imperfections in the USA, employing regional data during the period 1972–1982. Another study by Faini et al. (1993) showed how barriers on information affected the existence of local financial intermediation in southern Italy. In particular, they find evidence that firms are more likely to satisfy their financing needs at local banks than banks with headquarters located in other regions.

Samolyk (1994) investigates the relationship between banking conditions and regional economic growth, employing state-level data for the US economy between 1983 and 1990. Her research investigates whether the regional financial sector's health affects investment activity and regional economic growth, by influencing a region's ability to fund local projects, in terms of the credit quality of local banks and non-bank borrowers. Therefore, a measure of local economic performance that is the difference between the state and the national growth rate of personal income is regressed on its lagged values and a set of indicators. These indicators show various aspects of local credit conditions, such as bank returns on assets (ROA) and the share of non-performing loans is utilized. Samolyk (1994) finds that the results from the panel estimation are generally consistent with the credit view hypothesis. She reveals more evidence by splitting the sample, through interactive dummy variables, into low and high lagged income growth groups and testing whether there is another link between credit conditions and output.

Another factor that is proven to influence funding decisions is the proximity of the financial centres to the regions. For instance, Porteous (1995) argues that in spatially centralized financial systems, financial intermediaries may be biased towards firms in close proximity. Therefore, the closer regions are more advantageous than the peripheral regions in terms of availability of capital. These centralized systems may result in imbalanced regional growth, whereas decentralized financial intermediaries may provide financing to SMEs

located in peripheral regions (Klagge and Martin, 2005). In a recent study by Degryse et al. (2015), the supply of credit to SMEs is investigated considering the financial crisis, and by employing geographical data for all bank branches in the UK over the period 2004-2011. They find that, as the functional distance between branches and headquarters increased, credit supply decreased during the financial crisis. A second finding is that banks' local financial conditions did not have an impact on bank credit supply in the period before the crisis, yet this changed during the financial crisis.

Lucchetti et al (2001) suggest a measure of bank microeconomic efficiency as a new proxy for the state of development of the banking system in order to investigate relationships between banks and economic growth. In particular, they proposed a specification of the growth equation, which isolates the role played by the allocative function of banks in the growth process. They calculated an inefficiency index of the Italian regional banking system, taking into consideration all the banks functioning in each region, giving each of them a weight corresponding to their presence in that region. They then employ these inefficiency indices in analysing convergence among regions in Italy.

Boyreau-Debray (2003) investigates growth and financial intermediation at a subnational level within China. He uses evidence of the fragmentation of regional capital markets to justify the existence of local credit channels. Employing a data set of 26 provinces between 1990 and 1999, he defined and introduced indicators of local banking development into the traditional growth regression literature using the GMM-System Estimator. According to his findings, improving state bank performance, and resource allocation generally, would first require reforming the state corporate sector and developing the economy at the regional level. Moreover, the results indicate that a more diversified banking sector performs better in terms of economic growth.

Unlike the previous studies, Usai and Vannini (2005) find that the overall size of the financial sector does not have a strong influence on growth, but some intermediaries are better functioning than others. For instance, cooperative banks and special credit institutions have a positive impact, while a bank of national interest and public law banks have either no effect or a negative effect, depending on the measurement of growth differences. The researchers examine the role that specific categories of banks have played in local economic growth in Italy, employing panel regression analysis with fixed effects. They study the role of specific intermediaries and collect indirect evidence regarding the likely effects of the consolidation process. They employ data for the period 1970 to 1993, which ends up with complete implementation of the banking reforms that introduced statutory de-specialisation and

branching liberalization. Their results support current common concerns regarding a decline in the availability of credit for SMEs. Since the cooperative banks were mostly small banks and special credit institutions were all large conglomerates with standardized credit policies, the consolidation and regulatory reforms in the banking industry took place.

Jeong et al. (2006) focus on the credit view theory at the state level, suggesting that the state-level banking sector's health influences the state-level real economic performance. In particular, they apply relevant state-level variables to consider whether the health of a state's banking system influences capital investment loans, and whether growth of these loans impacts on economic growth at a local level. Employing dynamic pooled estimators to a panel of state data for the period 1984 to 1993, they find that there are dynamic links between state bank health, state investment-oriented bank loans, and state economic performance. Hence, the results support the existence of a state-level credit channel effect.

Some researchers are interested in quality rather than quantity of banking. Hasan et al. (2009), for example, investigate whether regional bank efficiency has a positive effect on regional growth, employing bank-specific data to estimate profit efficiency with stochastic frontier analysis for 3,000 banks active in 160 European regions between 1997 and 2003. They analyse whether banks are able to efficiently convert savings and deposits into loans suited to funding investments, which, in turn, has a positive impact on economic growth. Their results confirm that higher mean profit efficiency stimulates regional economic growth. In contrast to regional bank profit efficiency, the effect of both credit volume, relative to gross domestic product, and the interaction between quality and quantity are not individually statistically different from zero.

Carbo-Valverde et al. (2007) show the positive and significant correlation between bank financial deepening and regional growth by employing dynamic panel data GMM for the 17 administrative regions of Spain over the period 1986 to 2001.

Meslier-Crouzille et al. (2012) examine the relationship between banking and economic development in the Philippine regions, focusing on the role of rural banks using cointegration panel data analysis for the period 1993 to 2005. They are unable to find clear evidence of a positive influence of banking development, measured by traditional indicators built at the regional level, for the whole banking industry. Nevertheless, the results indicate a consistent positive effect of rural banks in the intermediate and less-developed regions, with a stronger effect in the former, suggesting a threshold effect. The estimations verify that the impact of rural banks is differentiated, depending on the stage of regional development. There are also studies, such as the research of Önder and Özyıldırım (2010), which take into consideration the different ownership of banks. Utilizing the Dynamic GMM method, they show that state-owned bank credit contributes significantly to the growth of more developed provinces, but fails to encourage the prosperity of less developed provinces. Credit provided by private banks positively affects the per capita real gross domestic product (GDP) in both developed and less developed provinces. State owned banks did not reduce economic disparity among Turkish provinces.

Turkmen and Yigit (2012) examine the influence of sectoral and geographical diversification on the performance of Turkish banks and show how the diversification affects performance. They employ data for the period between 2007 and 2011 to investigate the link between the credit diversification and performance of 50 Turkish banks. They use ROA (Return on Assets) and ROE (Return on Equity) as measures of performance and the Herfindahl Index is used as a measure of bank diversification. According to their results, the dependent variables ROA and ROE are explained by diversification.

A hierarchical banking organization may have a positive effect on regional growth. According to Berger et al. (2005), the decision-making mechanism is usually based on hard information rather than soft information when providing loans. Hard information is quantitative and easy to transmit within or between the offices of an organisation. Decision makers usually allocate credit using this type of information, resulting in the allocation of credit to high return projects. Therefore, profitable investment opportunities are funded at a national level, whereas this may end up with divergences in regional development (Porteous, 1995; McPherson and Waller, 2000; Klagge and Martin, 2005).

4.2.1. Summary and Conclusion

Financial intermediaries promote economic growth via providing funds to innovative investment opportunities and by controlling the risks. The existing literature reveals diverse findings regarding the effect of financial intermediation on growth at all levels. This thesis aims to extend understanding of the nexus at the regional level. Employing dynamic GMM methods, a number of studies (Guiso et al., 2002; Guiso et al., 2004; Hao, 2006; Carbo-Valverde et al., 2007; Hasan et al., 2009) show the positive relationship between local financial development and real development for both developed and emerging countries. Branch banking, in particular, has been seen as a solution to the problem of restraining the free flow of capital among regions (Greenwald et al., 1993).

On the other hand, the studies which examine the role of diverse banking systems reveal that centralisation might not be desirable for local growth. It is argued that in spatially centralized financial systems, financial intermediaries may be biased towards firms in close proximity. Branch banking systems may result in imbalanced regional growth, whereas decentralized banking systems (unit/regional banks) may provide finance to SMEs located in peripheral regions. In particular, state owned branch banks, which are expected to promote regions lacking financial intermediation, fail to promote rural regions (Porteous, 1995; Mcpherson and Waller, 2000; Boyreau-Debray, 2003; Klagge and Martin, 2005; Usai and Vannini, 2005; Önder and Özyıldırım, 2010). Moreover, the mobility of capital can be inhibited by imperfect and asymmetric information, which may cause imbalances in regional growth. Evidence suggests that firms are more likely to satisfy their financing needs at local banks than banks with headquarters located in other regions (Dow, 1987; Hutchinson and Mckillop, 1991; Gentle, 1993; Faini et al., 1993; Martin and Minns, 1995; Porteous, 1995, 1999; and Klagge and Martin, 2005). Furthermore local rural banks are found to be growth stimulating in emerging countries (Meslier-Crouzille et al., 2012).

The effect of banking structure on regional economic development has to be studied in detail. It is difficult to measure regional financial flows and to discover the role that financial markets and institutions play in regional economic growth. This is partly because of the paucity of data on money capital flows on a regional basis, but mainly because money capital markets are assumed to be perfect in most regional models, and, therefore, do not represent a significant obstacle to growth. The structure of financial institutions is ignored in much of the research, or given little consideration. This is unfortunate since much public policy, such as liberal branching laws, is based on the assumption that banks exert a significant influence in the regional growth process. Additionally, the aforementioned literature assumes perfect mobility of capital, perfect information between lenders and borrowers, and pays little attention to the effect of the structure of the banking system. However, the functioning of the banking system in a region may have a significant effect on regional economic activity. The time series studies give contradictory results. The panel data studies find positive effects of financial and output growth, even after clarifying other determinants of growth alongside for possible biases revealed by simultaneity, omitted variables and unobserved country-specific effect on the relation between finance and growth. All these results indicate that a consensus on the function of financial development in relation to economic growth has not existed to date.

This study proposes that the imbalances between regions may be caused by the structure of banking systems. Therefore, with reference of the previous literature, the current investigation aims to establish whether branch banking has a negative effect on growth in the provinces of Turkey, as an emerging country. Employing a diverse and unique set of data, and using dynamic panel data estimation methods, the study provides a reliable analysis of the relationship between bank structure and economic growth in Turkey.

4.3. Empirical Approach and Data

We investigate the econometric strategies, regression model that we used in our analysis, data descriptions and results in this section. First, the methodology framework for the Dynamic Generalized Method of Moments approach used in the study is introduced. Second, the basic model for the analysis is presented. Then we summarize the data and we present the dependent, explanatory and the control variables at the bank and provincial levels. Finally, the results of the analysis are discussed.

4.3.1. Methodology Framework for Dynamic Panel Data Analysis

Panel data econometrics involves the analysis of a pooling of observations on N crosssectional units (individuals, firms, countries) over T time periods. Panel data comprise information across both space and time. Hence, a panel data analysis may be capable of producing richer conclusions than either a 'pure' cross-sectional or a 'pure' time series analysis. Moreover, the use of panel data allows an increase in the size of the data set. Econometrically, the specification of a panel data set can be presented as follows:

$$y_{it} = \alpha + \beta x_{it} + u_{it} \tag{4.1}$$

For i = 1, ..., N and t = 1, ..., T

In the equation above, y_{it} is the dependent variable, α is the intercept term, x_{it} is a 1 × k vector of observations on the explanatory variable, and β is $k \times 1$ vector of parameters to be estimated for the explanatory variables. $\bar{y} = \sum_{i=1}^{N} \sum_{t=1}^{T} y_{it}/NT$ denotes the sample mean of the dependent variable across all observations, and $\tilde{y} = \sum_{t=1}^{T} y_{it}/T$ denotes the sample mean of entity i across time.

The method used in the analysis is the dynamic panel data and generalised method of moments, which captures autocorrelations by the presence of a first order autoregressive process AR(1). This means that the specification includes a lagged dependent variable among the explanatory variables:

$$y_{it} = \delta y_{it-1} + \beta x_{it} + u_{it} \tag{4.2}$$

For i = 1, ..., N; t = 1, ..., T

Equation (4.1) assumes that u_{it} follows a one-way error component model:

$$u_{it} = \mu_i + v_{it} \tag{4.3}$$

Where $E(\mu_i) = 0$ and $var(\mu_i) = \sigma_{\mu}^2$, $E(v_{it}) = 0$ and $var(v_{it}) = \sigma_v^2$, and $E(\mu_i, v_{it}) = 0$.

The dynamic panel data model is characterised by the first autocorrelation described by the first order autoregressive process and heterogeneity among entities characterised by individual effects, μ_i .

The models described in (4.1) and (4.2) imply that y_{it} is correlated with μ_i , hence the correlation between y_{it-1} and μ_i . Therefore, the lagged dependent variable y_{it-1} is correlated with the error term. This violates one of the assumptions of the OLS, and the OLS estimators are no longer the best linear unbiased estimators.

As mentioned above, estimating dynamic panel data model is inconsistent due to existing correlation between the lagged variables and the disturbance term. A solution suggested by Anderson and Hsiao (1982) consists of eliminating μ_i by differentiating the model, as follows:

$$y_{it} = \delta y_{it-1} + \beta x_{it} + \mu_i + \nu_{it}$$
(4.4)

becomes

$$\Delta y_{it} = \delta \Delta y_{it-1} + \beta \Delta x_{it} + \Delta v_{it} \tag{4.5}$$

where $\Delta y_{it} = y_{it} - y_{it-1}$. Similarly $\Delta y_{it-1} = y_{it-1} - y_{it-2}$ and $\Delta v_{it} = v_{it} - v_{it-1}$. Since y_{it} is a function of v_{it} , y_{it-1} is a function of v_{it-1} . It follows then that Δy_{it-1} is correlated with Δv_{it} . In order to correct this correlation, the method suggests using instrumental variables (IV). The two conditions for the validity of IV are: firstly, they must be correlated with the explanatory variable as mentioned; and, secondly, they must be uncorrelated with the disturbance term.

Anderson and Hsiao (1982) recommend the second lag (y_{it-2}) as an IV, assuming that the v_{it} are not serially correlated. $E(y_{it-2}\Delta v_{it}) = 0$, since y_{it-2} is realised two periods before v_{it} , and there is a zero correlation between v_{it} and its lagged values. The first difference iv method is only efficient if homoscedasticity is verified. In such a case, Anderson and Hsiao (1981) present the most efficient estimation procedure.

Arellano and Bond (1991) suggest a different GMM procedure that is more efficient than Anderson and Hsiao's (1982). Blundell and Bond (1998) suggest a system GMM procedure in order to correct the weak instrument problem encountered in difference GMM. Consider the following dynamic panel data model:

$$y_{it} = \delta y_{it-1} + \beta x_{it} + \mu_i + \nu_{it}$$
(4.6)

The specific effects are eliminated using the first difference of (4.6):

$$y_{it} - y_{it-1} = \delta(y_{it-1} - y_{it-2}) + \beta(x_{it} - x_{it-1}) + (v_{it} - v_{it-1})$$
(4.7)

where $(v_{it} - v_{it-1})$ is a first order moving average process with unit roots.¹⁴⁶ The first period difference for t = 3 is:

$$y_{i3} - y_{i2} = \delta(y_{i2} - y_{i1}) + \beta(x_{i3} - x_{i2}) + (v_{i3} - v_{i2})$$
(4.8)

Here, y_{i1} is a valid instrumental variable because it is highly correlated with $(y_{i2}-y_{i1})$ and independent from $(v_{i3} - v_{i2})$, assuming no serial correlation of the disturbance. Similarly, in time t = 4, y_{i2} , along with y_{i1} , are valid instrumental variables for $(y_{i4}-y_{i2})$. Hence, for time t = T, the set of valid instrumental variables is $(y_{i1}, y_{i2}, ..., y_{iT-2})$.

Unlike Anderson and Hsiao (1981), Arellano and Bond (1991) argue that more instrumental variables can be identified if the orthogonality conditions between lagged values of y_{it} and the error terms v_{it} are utilised. They argue that the IV procedure does not take into account the differenced error term in (4.6). In fact, there is a matrix of instrumental variables $M = [W'_1, ..., W'_N]$, such as for an entity i:

$$M_{i} = \begin{bmatrix} [y_{i1}, x'_{i1}, x'_{i2}] & 0 & \dots & 0 \\ 0 & [y_{i1}, y_{i2}, x'_{i1}, x'_{i2}, x'_{i3}] & \dots & 0 \\ \vdots & \dots & \ddots & \vdots \\ 0 & 0 & \dots & [y_{i1}, \dots, y_{iT-2}, x'_{i1}, \dots, x'_{iT-1}] \end{bmatrix}$$
(4.9)

The idea here is that the set of instrumental variables described above are given by the moment conditions of exogeneity $E(M'_i, \Delta v_i) = 0$.

When implementing the GMM procedures described above, it may be necessary to find the appropriate number of instrumental variables to include in the estimation. Since instruments tend to improve the efficiency of the estimation, it can be argued the more the better. However, increasing the number might cause the loss of degrees of freedom.

In this current study, the main methodology consists of GMM techniques. However, in addition to GMM estimations, to carry out robustness checks, other methods are also employed, including: random effects (RE), fixed effects (FE), autoregressive random effects (ARRE) and autoregressive fixed effects (ARFE).

4.3.2. The Empirical Model

The basic implication of the model presented in Chapter 3 is that unit banks have a comparative advantage in making loans based on soft information, while large banks prefer

¹⁴⁶ Moving average process is one where the current value of the independent variable is a linear combination of white noise process. First order moving average process MA (1) is $y_t = \mu + u_t$. A moving average is always stationary.

giving loans based on hard information. In the study's sample for Turkey, there is no unit banking system, so the investigation focuses on whether large deposit banks function as unit banks via their branches in the provinces, or fail to distribute funds efficiently to the provinces where the deposits are collected. For this purpose, the study seeks to explain the differences in the economic development of provinces in terms of banking intermediation at different levels.

For the empirical analysis, the following dynamic panel model is specified, based on Levine et al. (2000), and the model constructed in the theory paper previously to investigate the effect of financial intermediation on economic growth at the provincial level in Turkey over the period 1975–2013:

$$\Delta \text{GDP}_{j,t} = \alpha_j + \beta_0 \Delta \text{GDP}_{j,t-1} + \beta_1 \text{INTPR}_{j,t} + \beta_2 \text{INTBR}_{i,t} + \beta_3 \text{NATGDPG}_t + \gamma BCV_{i,t-1} + \delta PCV_{j,t-1} + \varepsilon_{j,t}$$
(4.10)

where subscript i represents the bank, j is the province, t is time.

Following the finance-growth literature, the dependent variable is approximated by the growth rate of provincial GDP, Δ GDP_{*j*,*t*}, of province j at time t (King and Levine, 1993 a, b; Carbo-Valverde and Fernandez, 2004). α_j is the intercept term for each province. The lagged dependent variable, Δ GDP_{*j*,*t*-1}, is also included to allow for persistence in the behaviour of the dependent variable.

Various money aggregates, credits to non-financial institutions, and bank assets for the banking sector are commonly used as explanatory variables. In the current model, new indicators are introduced as explanatory variables for different levels, based on the model built in the previous chapter. The first new indicator is INTPR_{*j*,*t*}, the provincial level intermediation rate, which measures the banks' contribution in each province throughout the sample period. The second one is INTBR_{*i*,*t*}, bank level intermediation rate, which measures each bank's intermediation efficiency. The third explanatory variable is NATGDPG_{*t*}, national level GDP growth rate. This indicator shows the effect of overall GDP growth on provincial GDP growth. The intuition underlying these measures is to see the local effect of the ratio of the transformation of deposits into funds. β_1 , β_2 , β_3 are the coefficients of provincial, bank level intermediation and national level GDP growth respectively.

Each intermediation parameter is calculated as follows:

$$INTPR_{j,t} = \frac{(Deposit_{j,t} - Loan_{j,t}) * 100}{PGDP_{j,t}}$$
(4.11)

In the equation above, $Deposit_{j,t}$ is the amount of deposit that banks collect in each province and $Loan_{j,t}$ is the amount of loans that banks allocate in province j at time t. In addition, $PGDP_{j,t}$ is the gross domestic product of each province at time t. Deposits and loans per bank per branch are not released by the Turkish Banking Association. Therefore, the local amount of deposits and loans are calculated on the basis of the number of branches of any bank in each province over the total number of bank branches, based on study of Hakenes et al. (2009). Summing up the amount of deposits and loans for each bank, the total provincial loans and deposits can be calculated as:

$$INTBR_{i,t} = \frac{(Deposit_{i,t} - Loan_{i,t}) * 100}{Total Asset_{i,t}}$$
(4.12)

Here, $Deposit_{i,t}$ is the total amount of deposits that each bank collects from all over the country, and $Loan_{i,t}$ is the amount of loans that each bank distributes all around the country at time t. $Total Asset_{i,t}$ is the amount of total assets of each bank at time t.

$$INTNATR_{t} = \frac{(\sum Deposit_{j,t} - \sum Loan_{j,t}) * 100}{GDP_{t}}$$
(4.13)

In equation (4.13), $\sum Deposit_{j,t}$ is the total amount of deposits collected and $\sum Loan_{j,t}$ is the total amount of loans distributed at the national level, and GDP_t is the national GDP at time t.

The growth rate could be influenced by regional and national conditions, in addition to local financial development. As highlighted in the model, the study controls for the effect of other factors, including bank level, regional level, national level variables, as described below.

In Equation (4.10), $PCV_{j,t}$ stands for the vector of provincial level control variables¹⁴⁷; namely: provincial GDP per capita (GDPPC), prosperity ratio (PROS), government development expenditure ratio in US dollars (GOVEX), investment incentive in US dollars (INV), net tax income (TXR), urbanization rate (URB), socio-economic development index

¹⁴⁷ Calculations are explained in detail in the Table A.1 in Appendix.

(SEDI), number of branches (NOB). δ is the coefficient of provincial control variables. National level dummy variables are also introduced to the model, such as economic and political crises and election times¹⁴⁸. Lastly, $\varepsilon_{j,t}$ indicates the error term in the model. $BCV_{i,t}$ includes the vector of bank level control variables¹⁴⁹. The natural log of total assets of banks is included to measure size (SIZE), capital ratio (CAP), efficiency ratio (EFF), profitability ratio (PRO), liquidity ratio (LIQ), credit quality (credit risk) ratio (CREQ). γ is the coefficient of the bank level control variable.

The equity to asset ratio is an indicator of the capital structure of banks, obtained by dividing shareholder equity by the total assets. The non-performing loans ratio is an approximation for credit risk, estimated by dividing non-performing loans by total loans. The return on equity ratio reflects profitability and is obtained by dividing shareholder equity by total assets. The efficiency structure of banks is captured by the total expenditure to total income ratio. Lastly, the liquidity ratio of banks is calculated by dividing liquid assets by total assets.

In addition, two dummy variables, crisis and election, are introduced to control for macroeconomic factors that may affect provincial growth. There is also a provincial dummy variable: priority provinces for development.

4.3.3. Data

A panel data set is constructed for the analysis in this chapter. The data set is a combination of banking and growth indicators and several control variables for the 67 provinces of Turkey, between the years of 1975 and 2013. Bearing in mind that there have been 81 provinces in Turkey since 2001 (with Yalova town becoming the last province in 2001), the newly established provinces have been clustered back to their original boundaries. The reason for doing this is, first, to deal with the data missing for the new provinces and, second, to control the impact of the boundary changes as the surface area grows or declines due to boundary changes.

All monetary variables are deflated and converted to USD and scaled by dividing by 1,000,000. The investment incentives ratio, government expenditure ratio, net budget income

¹⁴⁸ This will be discussed further in the Results section.

¹⁴⁹ Measurements are given in Appendix in table 4.6.1.

(net tax) ratio are calculated by dividing the values by GDP. The size of provinces is measured by the log of GDP per capita for each province. GDP per capita is scaled by dividing by 100.

The dependent variable in our model is the GDP growth rate per province. Two new variables and a macroeconomics variable (National GDP growth rate) are generated as explanatory variables, based on the model in the third chapter. Balance sheets and income statements of each deposit bank operating or closed in Turkey since 1975 to 2013 are used to calculate these variables. Deposits and loans per bank per province are calculated based on the number of branches of banks in each province. Main data sources are TURKSTATS and the Banking Association of Turkey (BAT). Data for closed and start-up enterprises, as well as urban and rural populations in provinces, from 1975 to 2013, are obtained from TURKSTATS to measure the prosperity ratio and urbanization ratio, respectively. A detailed breakdown of the sources of data is given in Table 4.6.1. in Appendix.

Panel Data Descriptive Statistics							
Variables	Number of observation	Average	Standard Deviation	Median	Min	Max	
Panel A: Growth (Dependent Variable)							
GDP growth rate	83308	9.55	27.74	6.72	-62.68	238.13	
Panel B: Banking Intermediation	on and Nationa	l GDP Grov	vth (Explanat	ory Variabl	les)		
Provincial level intermediation	83308	14.38	12.07	11.55	-12.52	99.58	
Bank level intermediation	83308	17.62	27.54	18.50	-75.03	97.17	
National level GDP growth	83308	9.28	16.50	10.48	-27.22	41.57	
Panel C: Banking Structure							
Banking size	83308	5.85	2.39	5.92	-1.77	11.50	
Capital structure	83308	13.77	16.41	8.55	0.00	98.89	
Efficiency structure	83308	85.98	208.23	100.00	-5175.81	1094.19	
Profitability	83308	12.74	20.44	8.55	-300.89	98.89	
Liquidity ratio	83308	26.67	18.27	22.23	0.14	98.55	
Credit risk	83308	79.86	1313.09	1.94	-1.86	43803.98	
Panel D: Provincial Controls							
Net tax revenue (million \$)	83308	0.06	0.59	0.00	-0.28	8.31	
Number of branches	83308	2.37	10.59	0	0	350	
GDP per capita	83308	2898.39	3026.90	1578.71	152.62	19112.06	
Government development expenditure ratio (million \$)	83308	0.04	0.09	0.02	0.00	2.58	
Investment incentives (million \$)	83308	316.63	2107.54	35.31	0.00	86309.06	
Prosperity ratio	83308	4.32	10.34	2.88	0.09	241.00	
Socio-economic development index	83308	0.05	1.00	-0.10	-1.73	6.75	
Urbanisation rate	83308	2.08	3.41	1.67	-12.99	73.71	

Table 4.1 depicts the basic summary statistics of variables. The table is composed of four panels to provide information on the variables over four different characteristics. Panel A includes dependent variables, Panel B summarizes explanatory variables, while Panels C and D describe banking level and provincial level control variables, respectively.¹⁵⁰

¹⁵⁰ Correlation coefficients of the variables are presented in Table A.2 in Appendix 4.6.2.

4.4. Results and Discussion

A wide variety of econometric methods are used for the statistical analysis of the data in the study. The analysis starts with Ordinary Least Squares (OLS) estimation, then examines the fixed effects. Since the data covers 39 years, it is necessary to control for the autoregressive component.

The model is then estimated with the one-step system dynamic panel data estimator, which is widely used in finance-growth literature (see Casselli et al., 1996, and Levine et al., 2000 for cross-country studies; see Beck et al., 2000, and Hasan et al., 2009, for regional studies). In this method, equations in first differences of the variables with equations in levels of the variables are combined. Lagged levels are used as instruments for difference equations and lagged differences are used as instruments for level equations (Blundell and Bond, 1998). In this way, the presence of unobserved province-specific effects is controlled, as well as the potential joint endogeneity among explanatory variables. With this method, consistent estimates are obtained of the impact of banking activity on the provincial GDP growth rate.

The set of instruments includes second lags of levels of bank intermediation variables for difference equations and second lags of differences of bank-specific and province specific variables for level equations. The reliability of the estimation method depends on the validity of the instruments, which can be tested with Sargan's test of over-identifying restrictions, asymptotically distributed as X^2 in the number of restrictions. First-order serial correlation is expected, yet no second-order serial correlation is anticipated if the instruments are appropriately uncorrelated with the errors.

Results are presented in seven sets of tables, with the main results shown in Table 4.2. The rest of the tables show the tests carried out to check the robustness of the results.

Table 4.2. Standard and Dynamic Panel Estimations of the Effect of Banking Intermediation on Provincial GDP Growth

This table reports the impact of financial intermediation on the provincial GDP growth rate¹⁵¹ through implementing 5 different estimation methods, i.e. Random Effects (RE), Fixed Effects (FE), Autoregressive Random Effects (ARRE), The Autoregressive Fixed Effect (ARFE) and Dynamic Generalised Methods of Moment (DGMM). The first panel includes the explanatory variables, i.e. banking intermediation for different levels and national level GDP growth. The provincial level intermediation rate measures banks' contribution in each province. The bank level intermediation rate measures banks' contribution in each province. The bank level intermediation rate measures each bank's intermediation efficiency. The national level GDP growth rate shows the effect of national growth on provincial growth. The second and third panels show provincial GDP growth. GDP per capita (log) is the natural logarithm of provincial GDP per capita. Government expenditure is the indicator of the central government's investments in provinces. The net tax revenue is the difference between the revenues and the expenses of the provincial managements. The prosperity ratio is calculated by dividing the number of closed firms over number of start-ups. Bank size is measured by total assets. The capital structure of banks is obtained by dividing shareholder equity by total assets. Credit quality is estimated by non-performing loans to total loans ratio. Profitability is represented by shareholders' equity to total assets ratio. Efficiency structure is captured by total expenditure to total income ratio. The liquidity ratio is calculated by dividing liquid assets by total assets. All monetary values are deflated and converted to US dollars.

	RE	FE	ARRE	ARFE	DGMM
Panel 1: Intermediation					
Provincial level intermediation	-1.7359***	-1.8066***	-1.3757***	-1.3894***	-1.7326***
Frovincial level intermediation	(0. 010)	(0.009)	(0.011)	(0.012)	(0.013)
Park level intermediation	-0.0649***	-0.0305**	-0.0441***	-0.0586***	-0.0820***
Panel 1: Intermediation Provincial level intermediation Bank level intermediation National level GDP growth Panel 2: Provincial controls GDP growth (first lag of dependent variable) GDP per capita (log) Government development expenditure ratio Net tax revenue Prosperity ratio Socio-economic development index Panel 3: Banking controls	(0.003)	(0.004)	(0.003)	(0.004)	(0.006)
National level CDP growth	0.3773***	0.6732***	0.3864***	0.3909***	0.3602***
National level GD1 growin	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
Panel 2: Provincial controls					
GDP growth (first lag of dependent					0.1283***
variable)					(0.004)
CDP per capita (log)	8.2696***	8.6706***	8.7351***	8.5270***	6.9677***
ODI per capita (log)	(0.068)	(0.132)	(0.211)	(0.228)	(0.902)
Government development expenditure	0.7226**	2.3701**	-1.0033	0.9113**	2.5833*
ratio	(0.305)	(1.154)	(1.145)	(0.321)	(1.381)
Nat tax rayanya	1.0689***	-0.4622**	0.4330**	0.6442***	1.0665***
Nei iux revenue	(0. 127)	(0.225)	(0.217)	(0.248)	(0.148)
Prosperity ratio	-0.0886***	-0.0797***	-0.1288***	-0.1306***	-0.1159***
Trosperity ratio	(0.009)	(0.006)	(0.010)	(0.013)	(0.014)
Socio aconomic development index	-3. 8331***	-7.8336***	-4.3747***	-4.1921***	-2.5451**
Socio-economic development index Panel 3: Banking controls	(0.555)	(0.497)	(0.535)	(0.584)	(1.182)
Panel 3: Banking controls					
Panking size	-0.2201***	-1.9863***	-1.6682***	-0.1942**	-0.3353***
banking size	(0.073)	(0.087)	(0.173)	(0.079)	(0.082)
Capital structure	-0.1656***	-0.2182***	-0.0872***	-0.1939***	-0.0234*
Capital structure	(0.012)	(0.021)	(0.008)	(0.013)	(0.010)
Drofitability	0.0373***	0.1494***	-0.0135*	0.0514***	0.0467***
Ττομασιαίγ	(0.006)	(0.018)	(0.006)	(0.007)	(0.003)
Efficiency structure	0.0026**	0.1013***	0.0521***	-0.0029**	0.0261***
	(0.001)	(0.006)	(0.003)	(0.001)	(0.002)
Liquidity natio	-0.0495***	-0.2003***	0.0045	-0.0951***	-0.0341***
	(0.004)	(0.008)	(0.005)	(0.006)	(0.004)
Credit quality	-0.0095***	-0.0078	-0.0093***	-0.0051***	-0.0187***
Credit quality	(0.002)	(0.008)	(0.003)	(0.002)	(0.006)
Constant	31.6636***	6.7467***	35.2854***	12.7623***	32.8594***
Constant	(0.454)	(1.216)	(0.1301)	(0.164)	(0.500)
Number of observations					83308
AR(1)					0.000
AR(2)					0.158
Sargan/Hansen					0.425

Notes: Dependent variable is provincial GDP growth rate. Robust standard errors are in parentheses. AR(2) and AR(1) represent the Arellano-Bond tests for second-order and first-order autocorrelation in the residuals of differenced equation, respectively. Sargan test of over-identification tests for Ho: the group of instruments is exogenous. *, **, and *** show that the coefficient is significantly different from zero at 10%, 5%, and 1%, respectively.

¹⁵¹ GDP growth and GDP per capita as dependent variable give the same results.

Intermediation Variables

Overall, it can be observed that the coefficient of province and bank level intermediation is significantly negative in all estimations, with slight variations in magnitude. This result is consistent with the model, which proposes that branch banking leads to a flow of capital from rural regions to highly developed regions. The implication of the negative value for bank level intermediation is that the funds created in the regions are not used in local investments, as represented in the theoretical model built in the previous chapter. These results support the result of the previous model: the banking system in Turkey is in the form of branch banking, which fails to facilitate effective loan distribution. The branches have limited decision-making authority; instead they depend on the head offices for their funding decisions, leading a capital flow from one region to another. Deposits are collected in a pool, where funding decisions are made by a central authority functioning without the control of the branches in the regions¹⁵².

National level GDP growth has a positive and significant coefficient for all methods. This finding is consistent with the researcher's expectations, and can be attributed to a spillover effect. That is to say, a nationwide development in a country is reflected in each region of that country.

The literature on bank intermediation and growth presents various views on the effect of the financial system on output growth, such as the branch-banking system might restrain the free flow of capital among regions. Greenwald et al.'s (1993) findings support the hypothesis of capital market imperfections in the USA, employing regional data during the period 1972–1982. Another study by Faini et al. (1993) finds evidence that firms are more likely to satisfy their financing needs at local banks than at banks with headquarters located in other regions in southern Italy. Porteous (1995) argues that, in spatially centralized financial systems, financial intermediaries may be biased towards firms in close proximity and centralized systems may result in unbalanced regional growth, whereas, decentralized

¹⁵² The test for first order serial correlation in the residuals AR(1) show that the null hypothesis of no first order serial correlation is overwhelmingly rejected in all estimations. For the whole-country sample, the estimations have no problem of second order serial correlation, since AR(2) test statistics are unable to reject the null of no second order serial correlation. The Hansen test for over-identification meanwhile indicates the null of exogenous instruments is accepted, with p-value equal to 1.000. Nevertheless, the implausibly good p-value of 1.000 for Hansen J test should be interpreted with caution, since the test is apparently weakened by a too high instrument count. Henceforth, we do not make additional comments on these aspects of the estimates.

financial intermediaries may provide financing to small- and medium-sized enterprises located in peripheral regions (Klagge and Martin, 2005).

Provincial Controls

The first lag of the dependent variable is used in Dynamic GMM analyses. In the regressions, the first lag of GDP growth is used as an instrument that has a positive and significant coefficient. The size of the region, which is approximated by the log of GDP per capita, has positive and significant coefficients, with slight variations in the magnitude in all specifications. The government development expenditure ratio has a positive and significant impact on regional growth, which is in line with the study's expectations. The only exception is the auto regressive panel estimations with random effects, where the output is negative and insignificant. The government development expenditure ratio is a fiscal policy tool of government in order to redistribute income among provinces, eventually leading to an increase in regional development. Government expenditure over GDP is used and positively related to economic growth. Our results are consistent with King and Levine 1993a; Beck et al., 2008 findings.

Net tax revenue, the net budget expenses of the local governments, has a positive and significant coefficient in all estimations, except for the fixed-effects specification. This result matches with the researcher's expectation that an increase in provincial tax revenue, which is a policy tool of local government, will stimulate regional growth.

The coefficients of the prosperity rate and socio-economic development index have a significant and negative effect on regional growth in all estimations. The prosperity rate reflects the level of regional business activities and level of risk of the local enterprises. This result indicates that, since the resources are not allocated locally, the local economy does not develop. Large enterprises can survive but SMEs are not efficient in the smaller regions.

Banking Controls

Banking size (log of the total asset), capital structure, liquidity ratio and credit quality have significantly negative coefficients in all of the estimations. It is anticipated that, as the size of banks increases, the allocation of the funds to small regions will fall. Therefore, the relationship is expected to be negative (see King, Levine, 1993a; Demirgüc-Kunt and Maksimovic, 1998).

More specifically, resources collected from regions are shifted to outside the regions. A higher liquidity ratio implies that a bank makes less investment. Hence, a negative relationship is expected, as the literature suggests (Demetriades and Liuntel, 1996). Since credit quality is measured by non-performing loans, it should be expected that the first action banks take with more credit risk is to decrease funds in the provinces, which, in turn, causes an economic recession.

In contrast to the other four bank level controls, the coefficients of efficiency structure and profitability are positive and significant, as expected. These results are consistent with the literature. For instance, Hasan et al. (2009), investigating 25 EU countries, find a positive relationship between the profitability of banking and economic growth. Operational efficiency is another indicator of the efficiency level of the bank, which is also positively related to growth. In other words, the more efficient bank is, the more resources are provided to local economies.

The results reveal a significant and positive relationship. All other variables give similar results with other regression analyses.

4.4.1. Robustness Tests

The analysis is extended by examining whether key results are robust to the inclusion of further control variables or a change in the sample size.

Table 4.3. The Effect of Banking Intermediation on Provincial GDP Growth Rate Including Number of Branches - Robustness Test (1)

This table depicts branching effect with the new variable, i.e. log of number of branches of each bank in each province by implementing RE, FE, ARRE, ARFE, DGMM. The last column shows the results after excluding the three largest provinces, Istanbul, Ankara, and Izmir.

	RE	FE	ARRE	ARFE	DGMM	DGMM [†]
Panel 1: Intermediation						
Provincial level	-1.7308***	-1.3924***	-1.7605***	-1.3840***	-0.6524***	-0.5249***
intermediation	(0.010)	(0.012)	(0.010)	(0.012)	(0.020)	(0.031)
	-0.1264***	-0.1220***	-0.0605***	-0.0598***	-0.1942***	-0.0552***
Bank level intermediation	(0.005)	(0.005)	(0.003)	(0.004)	(0.024)	(0.096)
National level GDP	0.6125***	0.5975***	0.3924***	0.3865***	0.5724***	0.3375***
growth	(0.031)	(0.003)	(0.002)	(0.003)	(0.011)	(0.104)
Panel 2: Provincial cont	trols			· · ·		· · · ·
GDP growth (first lag of					0.2598***	0.2400***
dependent variable)					(0.007)	(0.035)
CDP ner capita (log)	8.4547***	8.1886***	8.7149***	8.6917***	7.9255**	3.8197***
GDF per cupita (log)	(0.210)	(0.218)	(0.301)	(0.227)	(0.141)	(1.459)
Government development	0.7450**	2.2558*	0.6321*	0.8891**	-0.0654	-0.1671***
expenditure ratio	(0.754)	(0.357)	(0.317)	(0.320)	(0.735)	(0.529)
Nat tax rayanya	1.3766***	1.2629	1.3509***	1.2096***	1.2358***	0.3052*
wer tax revenue	(0.131)	(0.273)	(0.124)	(0.250)	(0.158)	(0.152)
Prosperity ratio	-0.0884***	-0.1013***	-0.0916***	-0.1375***	-0.1322***	-0.1352***
Trosperity ratio	(0.009)	(0.013)	(0.009)	(0.012)	(0.001)	(0.007)
Socio-economic	-3.9641***	-3.9668***	-3.7989***	-4.2386***	-9.0221***	-7.0154**
development index	(0.556)	(0.565)	(0.574)	(0.582)	(1.281)	(0.989)
Number of branches	-1.1488***	-0.7953***	-1.7605***	-0.9420***	-0.7881***	-1.3051***
Number of branches	(0.096)	(0.156)	(0.010)	(0.144)	(0.141)	(0.154)
Panel 3: Banking controls						
Banking size	-0.2057***	-0.4852***	-0.6021***	-0.6098***	-0.1052	-0.8777***
Dunking size	(0.073)	(0.069)	(0.048)	(0.076)	(0.090)	(0.081)
Capital structure	-0.1615***	-0.1965***	-0.2258***	-0.2120***	-0.2151***	-0.1314*
Capital structure	(0.011)	(0.012)	(0.018)	(0.012)	(0.024)	(0.008)
Profitability	0.3844***	0.0534***	0.2192***	0.0609***	0.2235***	0.2888
110/110/11119	(0.005)	(0.006)	(0.016)	(0.006)	(0.018)	(0.486)
Efficiency structure	0.0384***	0.0370***	0.0966***	0.0403***	0.0452*	-0.0051
Efficiency structure	(0.005)	(0.003)	(0.004)	(0.004)	(0.025)	(0.018)
Liquidity ratio	-0.0568***	-0.1077***	-0.1107***	-0.1178***	-0.0887***	-0.0807***
Equally fund	(0.004)	(0.005)	(0.005)	(0.006)	(0.008)	(0.241)
Credit quality	-0.0204***	-0.0071	-0.0168***	-0.0041**	-0.0754*	-0.0219***
erean quanty	(0.003)	(0.008)	(0.003)	(0.001)	(0.031)	(0.007)
Constant	13.0356***	-0.1798***	13.1042***	13.8506***	13.2469**	-4.6287**
Consiani	(0.617)	(0.003)	(0.457)	(0.659)	(1.135)	(2.102)
Number of observations	78857	78857	78857	78857	78857	78857
AR(1)					0.000	0.000
AR(2)					0.258	0.565
Sargan/Hansen					0.302	0.019
Notes: The dependent variable	is the provincial (DD growth rota	Pobust standard a	rrors are in parant	has as $AP(2)$ and	AD(1) represent

Notes: The dependent variable is the provincial GDP growth rate. Robust standard errors are in parentheses. AR(2) and AR(1) represent the Arellano-Bond tests for second-order and first-order autocorrelation in the residuals of differenced equations, respectively. The Sargan test of over-identification tests for Ho: the group of instruments is exogenous. *, **, and *** show that the coefficient is significantly different from zero at 10%, 5%, and 1%, respectively. \dagger = Excluding 3 largest provinces (Istanbul, Ankara, Izmir).

Overall the results do not change after adding the number of branches variable to the regression model, except for efficiency structure and profitability, which now have

insignificant coefficients. Moreover, as expected, the number of branches has a significant and negative coefficient in all estimations (see Rajan, 1992; Crouzille et. al., 2008).

Table 4.4. Effect of Banking Intermediation on Provincial GDP Growth Rate Controlled for Elections and Crisis Years Separately-Robustness Test (2)

This table presents the results with the two macroeconomic dummy variables: election and crisis. The election dummy is a multilevel						
dummy variable representing the general election years (namely: 1977, 1983, 1987, 1991, 1995, 1999, 2002, 2007, 2011); Election _t =						
1, Election _{t-1} = -1, Election _{t+1} = 2, and 0 otherwise. The crisis dummy represents the crisis years (1978, 1980, 1982, 1986, 1988, 1988, 1980, 1982, 1986, 1988, 19						
1989, 1990, 1991, 1994, 199	8, 1999, 2000, 20	101, 2008) and eq	uals 1 for the crisis	years, 0 otherwise		6
	RE	FE	ARRE	ARFE	DGMM [†]	DGMM [§]
Panel 1: Intermediati	on					
Provincial level	-1.3650***	-1.3666***	-1.7242***	-1.2909***	-1.7141***	-1.7736***
intermediation	(0.011)	(0.012)	(0.010)	(0.015)	(0.076)	(0.114)
Bank level	-0.0499***	-0.0546***	-0.060***	-0.1895***	-0.0782***	-0.0793***
intermediation	(0.003)	(0.004)	(0.003)	(0.005)	(0.010)	(0.011)
National level GDP	0.3955***	0.3925***	0.4014***	0.3969***	0.3669***	0.3637***
growth	(0.002)	(0.030)	(0.003)	(0.003)	(0.004)	(0.004)
Panel 2: Provincial co	ontrols					
GDP growth (first lag					0.1229***	0.1116***
of dependent variable)					(0.016)	(0.011)
	8.2143***	7.9129***	8.4412***	8.4188***	7.1652***	-6.9854***
GDP per capita	(0.209)	(0.217)	(0.210)	(0.227)	(0.921)	(0.220)
Government	0.0220***	0.00(7**	0.0207***	0 0707***	1 2010	1 4401
development	(0.8239)	$(0.800)^{11}$	$(0.339)^{(1)}$	(0.220)	1.2010	1.4491
expenditure ratio	(0.303)	(0.309)	(0.302)	(0.320)	(1.052)	(2.008)
Not tax revenue	-0.0803	0.5461**	-0.0808	0.6283**	1.0778***	2.6254***
Net las revenue	(0.124)	(0.233)	(0.155)	(0.247)	(0.157)	(0.268)
Prosperity ratio	-0.0795***	-0.0964***	-0.0787***	-0.1240***	-0.1089	-0.1239***
Trosperity railo	(0.009)	(0.011)	(0.009)	(0.012)	(0.022)	(0.181)
Socio-economic	-3.8402***	-3.8252***	-3.8654***	-4.1540***	-4.1057***	-3.0852
development index	(0.555)	(0.561)	(0.554)	(0.583)	(0.103)	(0.358)
Flection	1.3615***	1.301***	1.3626***	1.2708***	0.7299***	
Liccuon	(0.062)	(0.064)	(0.062)	(0.067)	(0.119)	
Crisis	Yes	Yes	Yes	Yes	Yes	Yes
Panel 3: Banking con	trols					
	-0.3390***	-0.3540***	-0.3380***	-0.2690***	-0.5301*	-1.0422***
Banking size	(0.074)	(0.075)	(0.073)	(0.078)	(0.032)	(0.070)
	-0.1815***	-0.1816***	-0.1812***	-0.1910***	-0.1332***	-0.2150***
Capital structure	(0.011)	(0.012)	(0.006)	(0.013)	(0.101)	(0.017)
	0.5319***	0.0518***	0.06375***	0.0562***	0.2717***	0.1707***
Profitability	(0.006)	(0.006)	(0.006)	(0.007)	(0.019)	(0.017)
Efficience structure	0.002***	-0.0227*	-0.0024*	0.0053***	0.0375***	0.0896***
Efficiency structure	(0.001)	(0.006)	(0.004)	(0.002)	(0.002)	(0.005)
Liquidity natio	-0.0297***	-0.0813***	-0.0300***	-0.0851***	-0.0154***	-0.1164***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.007)	(0.006)
Credit quality	-0.0212***	-0.0049*	-0.0213***	-0.0005	-0.0242**	-0.0198***
	(0.003)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
	10 5688***	11 6/12***	10 5641***	11 8836***	10 0608***	26.6288**
Constant	(0.1331)	(0.162)	(0.134)	(0.170)	(1.084)	*
	(0.1331)	(0.102)	(0.137)	(0.170)	(1.007)	(1.947)
No. of observations	83748	83748	83748	83748	83748	83748
AR(1)					0.000	0.000
AR(2)					0.021	0.162
Sargan/Hansen					0.434	0.014
Notes: The dependent variab	le is the provincia	al GDP growth rat	te. Robust standard	errors are in parer	theses. AR(2) and	AR(1) represent

Notes: The dependent variable is the provincial GDP growth rate. Robust standard errors are in parentheses. AR(2) and AR(1) represent the Arellano-Bond tests for second-order and first-order autocorrelation in the residuals of differenced equation, respectively. The Sargan test of overidentification tests for Ho: the group of instruments is exogenous. *, **, and *** show that the coefficient is significantly different from zero at 10%, 5%, and 1%, respectively. \dagger election, § = Crisis,

The coefficient of election is significantly positive with similar magnitudes in all estimations, as anticipated. In general, during the election period, local investments rise dramatically. Especially in emerging economies, during the election period, short-term promises increase the employment level, starting from one year prior to the elections. Even though most of the variables show similar results to Table 4.1., the coefficients of the prosperity ratio lose significance when the election dummy is added into the model. Elections are one of the most studied political events in banking literature. Several studies have documented that banks change their lending behaviour in favour of rural regions during election years, especially in developing countries (Dinc, 2005; Micco et al., 2007; Baum et al., 2010; Önder and Özyildirim, 2013).

The other dummy variable added for the robustness tests is crisis, which has a negative and significant coefficient. When crisis is added into the regression model, the coefficient of the size of province becomes negative, while the coefficients of the government development expenditure ratio and socio-economic development index lose significance. This finding is consistent with the literature, which suggests that, during periods of economic crisis, banks reduce their lending activities by investing in securities, especially government securities (Bernanke and Lown, 1991).

Table 4.5. Effect of Banking Intermediation on Provincial GDP Growth Rate;Controlled for Urbanisation, Excluding Three Most Developed Provinces andMetropolitan Provinces -Robustness Test (3)

This table reports test results with an urbanisation indicator, excluding the three largest provinces (Istanbul, Ankara, and Izmir), and tests containing the provincial dummy i.e. metropolitan provinces. Urbanization is calculated by the percentage of the urban population in the total provincial population. Metropolitan provinces are determined by legislation. If a province is metropolitan, it is defined as 1, otherwise 0.

	DGMM [†]	DGMM§	DGMM [‡]
Panel 1: Intermediation			
Provincial level intermediation	-2.0503***	-1.5488***	-1.8374***
Frovincial level intermediation	(0.045)	(0.045)	(0.004)
Park level intermediation	-0.0695***	-0.0785***	-0.0687***
bunk level intermediation	(0.122)	(0.011)	(0.012)
National level CDP growth	0.0369***	0.2654***	0.3631***
National level GDT growth	(0.005)	(0.002)	(0.096)
Panel 2: Provincial controls			
CDP arouth (first lag of dependent variable)	0.0483***	0.3524***	0.0711***
(III) growin (IIIsi iug of dependent variable)	(0.009)	(0.004)	(0.004)
CDP per capita	4.7776***	6.5272***	5.9856***
	(0.128)	(0.526)	(0.153)
Covernment development expenditure ratio	-1.3810	1.5658	2.0195**
Government development expenditure ratio	(1.062)	(2.065)	(0.926)
Net tax revenue	0.3146**	2.6261***	3.4468**
	(0.140)	(0.633)	(0.927)
Duo an anita natio	-0.1594	-0.1239***	-0.1212***
r rosperuy rano	(0.013)	(0.020)	(0.018)
Socia cooramia davalanment inday	-0.5529	-8.2712	-5.4097**
socio-economic development index	(1.412)	(4.432)	(2.672)
Unhanization nato	0.3567***		
Urbanization rate	(0.051)		
Panel 3: Banking controls			
Ranking size	-1.3722***	-1.6541***	-0.0019
Dunking size	(0.161)	(0.055)	(0.064)
Capital structure	-0.2685***	-0.0265**	-0.0347***
Capital structure	(0.007)	(0.010)	(0.002)
Profitability	0.0777***	0.0423**	0.0319
Trojnability	(0.012)	(0.018)	(0.024)
Efficiency structure	0.0274***	0.0228***	0.0244***
	(0.004)	(0.002)	(0.002)
Liquidity ratio	-0.0888***	-0.0349***	-0.0345***
	(0.026)	(0.009)	(0.013)
Credit quality	-0.8067**	-0.0161*	-0.0356***
Crean quanty	(0.050)	(0.009)	(0.010)
Constant	23.6195	32.9864***	31.5382***
Consum	(1.498)	(0.838)	(0.7492)
No of observations	79546	79546	55896
AR(1)	0.000	0.000	0.000
AR(2)	0.440	0.162	0.000
Sargan/Hansen	0.722	0.014	0.845
Natan The dama dant mainhle is the amouncial CDB area	the set of Data states of		AD(2) - 1

Notes: The dependent variable is the provincial GDP growth rate. Robust standard errors are in parentheses. AR(2) and AR(1) represent the Arellano-Bond tests for second-order and first-order autocorrelation in the residuals of differenced equations, respectively. The Sargan test of over-identification tests for Ho: the group of instruments is exogenous. *, **, and *** show that the coefficient is significantly different from zero at 10%, 5%, and 1%, respectively. \dagger = urbanizasion, § = Excluding Biggest 3 province, \ddagger = Excluding metropolitan

The urbanization rate, the percentage rate of the population in urban regions, is another variable introduced for robustness checks and represented in the first column of the table. As expected, a positive and significant effect of urbanization on local GDP growth is observed. Adding urbanization does not create a remarkable change, except for the significant loss in
the coefficients of the government development expenditure ratio, prosperity ratio and, socioeconomic development index. Urbanization is another indicator highly correlated to growth, particularly in developing countries. The reason is that the transformation of an economy to an industrial based economy leads to high rates of urbanization, which will increase economic growth by creating a knowledge spillover effect and promoting more effective functioning of the financial sector, as well as goods and labour markets (Black and Henderson, 1999).

The three largest provinces (Istanbul, Ankara, and Izmir) are excluded from the analysis for a further robustness check, in order to eliminate their effect. The second and third specifications in Table 4.5. show the results after exclusion of these provinces from the sample.

The last two specifications represent results excluding metropolitan provinces from the sample. The indication is that there is not a significant change in the results once the two groups of provinces are excluded from the sample, except for variation in the magnitudes of the coefficients. Banking size and profitability do not have significant coefficients in these estimations.

Table 4.6. Effect of Banking Intermediation on Provincial GDP Growth Rate Controlled for Priority Provinces for Development (PPD) - Robustness Test (4)

This table represents the results for another provincial dummy: priority provinces for development (PPD). The PPD dummy is equal to 1 if the province is a PPD, 0 otherwise.

	RE	FE	ARRE	ARFE	DGMM	
Panel 1: Intermediation						
	-1.7349***	-1.3898***	-1.3819***	-1.3900***	-1.7529***	
Provincial level infermediation	(0.010)	(0.011)	(0.011)	(0.012)	(0.074)	
Bank level intermediation	-0.0651***	-0.0531***	-0.0531***	-0.0590***	-0.0815***	
bank level mermediation	(0.003)	(0.003)	(0.003)	(0.004)	(0.009)	
National level GDP growth	0.3776***	0.3897***	0.3883***	0.3915***	0.3548***	
- 0	(0.022)	(0.002)	(0.002)	(0.031)	(0.008)	
Panel 2: Provincial controls						
GDP growth (first lag of dependent variable)				0.1201***	
	° 0002***	0 7665***	9 5560***	0 1071***	(0.015)	
GDP per capita	(0.211)	(0.210)	(0.211)	(0.228)	(0.152)	
Government development expenditure	(0.211)	(0.210)	(0.211)	(0.228)	(0.132) 0.2245	
ratio	(0.325)	(0.306)	(0.303)	(0.321)	(0.968)	
14110	-0.0725	-0.0734	-0.0742	0 6446***	1 1658***	
Net tax revenue	(0.125)	(0.125)	(0.126)	(0.247)	(0.166)	
	-0.0809***	-0.0808***	-0.0800***	-0.1329***	-0.1226**	
Prosperity ratio	(0.009)	(0.009)	(0.009)	(0.013)	(0.022)	
	-3.3589***	-4.0032***	-4.0165***	-4.2887***	-3.9058***	
socio-economic development index	(0.158)	(0.557)	(0.553)	(0.585)	(0.439)	
Priority provinces for development	2.8124***	2.9187***	2.7038***	2.6000***	2.2101***	
Thority provinces for development	(0.575)	(0.575)	(0.576)	(0.621)	(0.749)	
Panel 3: Banking controls						
Banking size	-0.2636***	-0.2636***	-0.2619***	-0.1918**	-0.3182***	
Danking Size	(0.024)	(0.470)	(0.073)	(0.079)	(0.120)	
Capital structure	-0.1840***	-0.1840***	-0.1839***	-0.1892***	-0.0578***	
Cupital structure	(0.011)	(0.011)	(0.011)	(0.013)	(0.012)	
Profitability	0.0466***	0.0466*** 0.0471***		0.0472***	0.0520***	
	(0.006)	(0.006)	(0.006)	(0.007)	(0.013)	
Efficiency structure	0.0001	0.0001	-0.000	0031*	0.0276***	
<i>33 2</i>	(0.001)	(0.001)	(0.001)	(0.001)	(0.014)	
Liquidity ratio	-0.0332***	-0.03032***	-0.0334***	-0.0946***	-0.0504***	
	(0.004)	(0.004)	(0.004)	(0.058)	(0.047)	
Credit quality	(0.0201)	-0.0201	(0.0201)	-0.0119	-0.0293	
	(0.002) 11 251/***	(0.002) 11 251/***	(0.002) 11 3454***	(0.003)	(0.000)	
Constant	(0.128)	(0.128)	(0.129)	(0.173)	(0.702)	
Number of observations	83752	83752	83752	83752	83752	
$\Delta R(1)$	00102	03732	00102	05152	0.000	
$\Delta R(2)$					0.127	
Saroan/Hansen					0.127	
	(1) D.1	4 1 1		AD(2) 1 AD(1	0.747	

Notes: Dependent variable is provincial GDP growth rate. Robust standard errors are in parentheses. AR(2) and AR(1) represent the Arellano-Bond tests for second-order and first-order autocorrelation in the residuals of differenced equation, respectively. Sargan test of overidentification tests for Ho: the group of instruments is exogenous. *, **, and *** show that the coefficient is significantly different from zero at 10%, 5%, and 1% respectively.

Priority provinces for development (PPD) are defined by the central government to give precedence to those provinces by directing industrial investments in order to reduce interregional disparities. Prioritised provinces are the less developed provinces of Turkey. PPD is a dummy variable, which is equal to 1 if the province is a PPD, and otherwise 0. The results also demonstrate robustness with the inclusion of PPD into the model. The sign and significance of the coefficients for the intermediation variables remain similar to those

reported in the main results. This case is also valid for the control variables. PPD has a significant and positive effect on regional growth in all specifications.

This table presents the results with the investment incentives indicator (US dollars). According to the General Investment Incentives Scheme, all projects meeting both the specific capacity conditions and the minimum fixed investment amount are supported. Major investment incentive instruments are exemption from customs duties and VAT exemption (Investment Support and Promotion Agency Investors Guide, 2017).											
	RE	FE	ARRE	ARFE	DGMM	DGMM [†]					
Panel 1: Intermediation											
Provincial level intermediation	-1.3986***	-1.3924***	-1.4490***	-1.4620***	-1.4771***	-1.4686***					
	(0.011)	(0.012)	(0.011)	(0.012)	(0.089)	(0.090)					
Bank level intermediation	-0.0460*** (0.003)	-0.0486*** (0.004) 0.2850***	-0.0438*** (0.003)	-0.0546*** (0.004) 0.4012***	-0.0598*** (0.014)	-0.0611*** (0.013)					
National level GDP growth	(0.003)	(0.003)	(0.003)	(0.003)	(0.007)	(0.007)					
Panel 2: Provincial controls			/								
GDP growth (first lag of depende	ent variable)				0.1240*** (0.013)	0.1230*** (0.012)					
GDP per capita	8.3390***	8.0863***	7.1151***	6.7927***	6.5349***	6.5547***					
	(0.212)	(0.213)	(0.207)	(0.222)	(0.877)	(0.877)					
Investment incentives	0.1121***	0.2162***	0.1071***	0.2462***	0.1423**	0.1484**					
	(0.036)	(0.042)	(0.035)	(0.048)	(0.059)	(0.062)					
Net tax revenue	1.8683***	2.7976***	1.9514***	3.3548*	0.2532	0.2596					
	(0.601)	(0.638)	(0.609)	(0.673)	(0.132)	(0.132)					
Prosperity ratio	-0.0814***	-0.0875***	-0.0860***	-0.1411***	-0.0129***	-0.1308**					
	(0.009)	(0.011)	(0.009)	(0.012)	(0.011)	(0.011)					
Socio-economic development	-3.9811***	-3.9453***	-3.5178***	-3.4685***							
index	(0.558)	(0.567)	(1.105)	(1.081)							
Priority Provinces for Developm	ent					3.0230*** (0.539)					
Panel 3: Banking controls											
Banking size	-0.3272***	-0.3085***	-0.3161***	-0.2448***	-1.2004***	-1.2054**					
	(0.074)	(0.075)	(0.077)	(0.082)	(0.142)	(0.142)					
Capital structure	-0.1872***	-0.1834***	-0.1883***	-0.2064***	-0.2211***	-0.2222**					
	(0.011)	(0.012)	(0.018)	(0.012)	(0.020)	(0.020)					
Profitability	0.0603***	0.0563***	0.0566***	0.0562***	0.0616***	0.0607***					
	(0.005)	(0.006)	(0.006)	(0.006)	(0.014)	(0.014)					
Efficiency structure	0.0968***	-0.0142***	0.0101***	0.0167***	0.0240*** 0.0237***						
	(0.004)	(0.001)	(0.001)	(0.002)	(0.001) (0.001)						
Liquidity ratio	-0.0332***	-0.0892***	-0.0315***	-0.0992***	-0.0827***	-0.0837***					
	(0.004)	(0.005)	(0.003)	(0.005)	(0.023)	(0.023)					
Credit quality	-0.0182***	-0.0160	-0.0184***	-0.0139***	-0.0576***	-0.0571***					
	(0.002)	(0.004)	(0.002)	(0.005)	(0.012)	(0.012)					
Constant	11.3281**	12.3715***	11.3643***	12.7971***	21.9700	22.0384					
	(0.128)	(0.167)	(0.121)	(0.178)	(1.272)	(1.290)					
No of observations	83949	83949	83949	88556	83308	83308					
AK(1) AB(2)					0.000	0.000					
Sargan/Hansen					1.000	0.451					
Sargan/Hansen 1.000 0.451 Notes: The dependent variable is the provincial GDP growth rate. Robust standard errors are in parentheses. AR(2) and AR(1) represent the Arellano-Bond tests for second-order and first-order autocorrelation in the residuals of differenced equations respectively. The											

Table 4.7. Effect of Banking Intermediation on Provincial GDP Growth Rate Controlled for Provincial Investment Incentives- Robustness Test (5)

the Arellano-Bond tests for second-order and first-order autocorrelation in the residuals of differenced equations, respectively. The Sargan test of over-identification tests for Ho: the group of instruments is exogenous. *, **, and *** show that the coefficient is significantly different from zero at 10%, 5%, and 1%, respectively. †= PPD dummy is included

There are two investment incentive tools. The first is the exemption from customs duties that are applied to imported machinery and equipment for projects with an investment incentive certificate. Second, there is VAT exemption, implemented for imported or domestically purchased machinery and equipment for projects with an investment incentive certificate. The provincial Investment Incentives Scheme involves the support of the sectors in each region that are determined in accordance with regional potential and the level of development in the province (Investment Support and Promotion Agency Investors Guide, 2017).

The inclusion of investment incentives does not create a significant change in the results. Again, the underlying intermediation variables have similar signs with similar magnitude to those given in the main results in Table 4.1. Investment incentives have a positive and significant impact on regional growth in all specifications.

Table 4.8. Effect of banking intermediation on provincial GDP growth rate

in three sub-periods -Robustness Test (6)

This table reports the Dynamic GMM estimates for the robustness checks, dividing the sample period into three alternative sub-periods (namely: 1975-1989, 1990-2000, 2001-2013) to investigate whether the provincial policy changes (structural changes) impact on regional growth.

DGMM	1975-1989	1990-2000	2001-2013		
Panel 1: Intermediation					
	-1.6883***	-0.4697**	-1.0936***		
Provincial level intermediation	(0.416)	(0.014)	(0.144)		
Doubles distance disting	-0.0135*	-0.1995***	-0.1098***		
Bank level intermediation	(0.007)	(0.006)	(0.009)		
National land CDD arouth	0.2206***	0.3793***	0.7194***		
National level GDF growin	(0.018)	(0.007)	(0.033)		
Panel 2: Provincial controls					
GDP growth (first lag of dependent	2.8625***	0.1149***	0.1445***		
variable)	(1.712)	(0.010)	(0.038)		
	6.6677***	-1.3627***	14.7076***		
GDP per capita	(1.090)	(0.113)	(7.41)		
Government development	3.4402	2.1027	9.0271***		
expenditure ratio	(5.654)	(2.067)	(3.291)		
		1.1933***	-0.2416*		
Net tax revenue		(0.393)	(0.220)		
י י י	0.1318*	-0.1563	-1.1214*		
Prosperity ratio	(0.061)	(0.018)	(0.581)		
	-4.8528	-2.3887	-0.5209		
socio-economic aevelopmeni inaex	(4.263)	(1.953)	(1.542)		
Panel 3: Banking controls					
	-2.9907***	-0.1238	-1.2860***		
Banking size	(0.177)	(0.086)	(0.321)		
	-0.1897***	-0.0294***	-0.4324***		
Capital structure	(0.024)	(0.003)	(0.040)		
Dusfitability	0.0580	0.0011	0.0646***		
Projuability	(0.011)	(0.012)	(0.011)		
	-0.0778	0.1112	0.0316***		
Efficiency structure	(0.059)	(0.011)	(0.005)		
Liquidity natio	-0.2479***	-0.0344***	-0.1372***		
	(0.013)	(0.001)	(0.015)		
Credit quality	-0.2245**	-0.0492	-0.0401***		
Crean quanty	(0.014)	(0.032)	(0.007)		
Constant	36.3463***	15.7614***	9.8317***		
Constant	(2.043)	(0.909)	(1.417)		
No of observations	26357	35041	24388		
AR(1)	0.000	0.000	0.000		
AR(2)	0.104	0.000	0.001		
Sargan/Hansen	0.970	0.005	0.684		

Notes: The dependent variable is the provincial GDP growth rate. Robust standard errors are in parentheses. AR(2) and AR(1) represent the Arellano-Bond tests for second-order and first-order autocorrelation in the residuals of differenced equation, respectively. The Sargan test of over-identification tests for Ho: the group of instruments is exogenous. *, **, and *** show that the coefficient is significantly different from zero at 10%, 5%, and 1%, respectively.

For robustness checks, the total sample period is divided into three sub-intervals: 1975-1990, 1990-2000, 2000-2013, based on changes in regional policies. For example, the first sub-period is the planned period of transition from state control to the more liberal economy. Moreover, PPDs emerged and, Specialized Industrial Zones were created. In the second period, large-scale regional development projects, such as GAP, were established (see Chapter 2 for detailed discussion). The major structural regional change within this period was the effect of the EU harmonization process. In order to accelerate regional development, government expenditures and investment incentives were used as main policy intermediaries. The results are slightly different than for the other periods, since the most serious economic crisis happened in 1994, with a long lasting impact. Several banking and provincial controls' coefficients are not significant, including government development expenditure ratio, socio-economic development index and profitability, efficiency structure, and credit quality. Finally, in the third sub-period, regional policies acquired a new spatial dimension by focusing on SMEs. In addition, research and development activities gained importance, with university-industry collaboration. The cluster concept also emerged for the first time under the influence of EU regional policies.

Table 4.8 demonstrates results for the sub-periods (1975-1989, 1990-2000 and 2001-2013). Provincial and bank level intermediation have a negative and significant impact on regional growth in all three periods, while national level intermediation demonstrates a positive and significant effect, in line with the results represented in Table 4.1 (for the whole sample). The convergence term has a positive and significant impact on regional growth in all specifications. For the rest of the control variables, the results are similar to those given in Table 4.1, with slight variations in magnitude.

4.5. Conclusion

This study presents empirical evidence of the effect of banking intermediation on provincial economic performance. To conduct the analysis, the study utilises unique panel data, collected from Turkey over the period 1975 to 2013, including all the deposit banks in the financial sector. The key variables of interest are a set of intermediation indicators, which capture the effects of the banking system on local economic growth.

Inspecting the coefficients of intermediation variables at provincial, bank, and national level reveals the impact of banking activity on the provincial GDP growth rate. The model specified captures the effects of bank intermediation, controlling for regional fiscal tools (government expenditure; investment incentives), macroeconomic factors, and changes in bank performance ratios in relation to provincial GDP growth rate. In contrast to previous studies, this analysis provides evidence that banks are one of the factors causing growth imbalances between regions within a country. The results quantify the significance of the influence of banking structure on growth in a developing country. This is an interesting result on its own, as several country-specific studies have found that branching has a stimulating effect on regional growth.

The second set of results, obtained from the robustness tests, indicates that fiscal policy tools adopted by central government, that is, government expenditure and investment incentives, have a significantly positive effect on the provincial GDP growth rate. From this finding, new insights can be added to the existing understanding of regional growth and finance found in the literature. There are several possible interpretations. First, the empirical model in the current study differs from models proposed in earlier research, as it considers the difference between deposits and loans divided by GDP to measure the financing gap in provinces. Second, earlier research has been based on regional panel data, employing a smaller subset of provincial and banking data, while the data set used here covers more provincial data and a longer sample period.

The findings imply that more authorization should be given to the managers of the branches in the regions, in order to better utilise locally generated information when banks are approving/rejecting the funding of projects. This would ultimately lead to a reduction in regional imbalances.

4.6. Appendix

Table 4.6.1.	. Data	Sources
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Variable	Data Source
Growth Variables	
Provincial GDP and GDP per capita (USD)	Istanbul Chamber of Industry (1975-1986) TURKSTATS (1987-2001), Author (2002-2003), TURKSTATS (2004-2012)
Dravingial agging anomia davalanment inday	SBO(Ministry of Davalarment)
Provincial socioeconomic development index	SFO(Winistry of Development)
Banking variables	DAT
Balance sheet and income statement indicators (USD)	BAI Author's coloritations based on DAT
Provincial and bank level loans and deposits (USD)	Author's calculations based on BAT
Provincial number of branches per bank	BAI
Saving deposits (USD)	BAI
Certificate of deposits (USD)	BAI
Public sector deposits (USD)	BAI
Commercial deposits (USD)	BAI
Interbank deposits (USD)	BAI
Foreign currency deposits (USD)	BAI
Other institutions deposits (USD)	BAI
Precious metals deposits (USD)	BAI
Interbank/tot rate	BAI
Specialized loans agriculture (USD)	BAI
Real Estate (USD)	BAI
Vocational (USD)	BAI
Maritime (USD)	BAI
Tourism (USD)	BAI
Non-specialized loans (USD)	BAI
Control Variables	
Priority to development classification of provinces	Gazette (2002-2013)
Provincial total population	TURKSTATS
Provincial literacy	TURKSTATS
Provincial in-migration	TURKSTATS
Provincial out-migration	TURKSTATS
Provincial opened firms	TURKSTATS
Provincial closed firms	TURKSTATS
Provincial rural population	TURKSTATS
Provincial urban population	TURKSTATS
Total provincial imports (USD)	TURKSTATS
Total provincial exports (USD)	TURKSTATS
Provincial government expenditure (USD)	Ministry of Development
Provincial investment incentives (USD)	Ministry of Economy
Provincial tax income (USD)	Ministry of Finance
Provincial tax expenditure (USD)	Ministry of Finance
Provincial and sectoral imports (USD)	TURKSTATS
Provincial and sectoral exports (USD)	TURKSTATS
National Level Variables	
National GDP, and GDP per capita at market prices (current USD)	TURKSTATS
GDP Deflator (1998=100)	Ministry of Development
General government final consumption expenditure (current USD)	World Bank
CPI (2010=100)	TURKSTATS
Exchange Rate (USD)	CBRT
National population	TURKSTATS
Rural population	TURKSTATS
Urban population	TURKSTATS
Total national exports	TURKSTATS
Total national imports	TURKSTATS

Variable	Source	Description
Panel A: Growth		
GDP growth rate	 Özötün(1980,1988) for 1975-1986 TURKSTATS for 1987-2001 and 2004-2013 Author's calculations for 2002-2003 	Percentage change in GDP is calculated for each province. GDP for 2002 and 2003 are not available in the sources, therefore are estimated using the interpolation method.
Panel B: Banking Inter	mediation & Other Explanatory	Variables
Provincial level intermediation	Author's calculations using BAT	The percentage rate of intermediation is calculated by taking the difference between the deposits and loans per bank for each province divided by provincial GDP.
Bank level intermediation	Author's calculations using BAT	The percentage rate of intermediation is calculated by taking the difference between the deposits and loans per bank divided by total assets.
National level GDP growth	Author's calculations using TURK- STATS	The percentage rate of growth is calculated using national GDP.
Panel C: Banking Strue	cture	
Banking size (%)	Author's calculations using BAT	Total assets of each bank
Capital structure (%)	Author's calculations using BAT	Shareholder's equity / total assets
Efficiency structure (%)	Author's calculations using BAT	Total Expenditure / Total Income
Profitability (%)	Author's calculations using BAT	Net Profit(Losses)/ Total Assets
Liquidity ratio (%)	Author's calculations using BAT	Liquid Assets/ Total Assets
Credit quality (risk) (%)	Author's calculations using BAT	Non-Performing Loans/ Loans Missing years are estimated by interpolation. (1975- 1980)
Panel D: Provincial Co	ntrols	
Net tax revenue	Republic of Turkey Ministry of Finance	Provincial tax income- tax expenses (budget revenues- expenses)
Number of branches	BAT	Number of branches of each bank in each province
GDP per capita	Özötün (1980,1988) for 1975-1986 TURKSTATS for 1987-2001 and 2004-2013 Authors' calculations for 2002-2003	This variable is calculated by dividing provincial GDP by total population, and then taking the log of the values.
Government development expenditure ratio (%)	Republic of Turkey Ministry of Development	The value is scaled by dividing the value by the GDP of the province
Investment incentives rate ¹⁵³ (%)	Ministry of Economy for 2001- 2013	The value is scaled by dividing the value by the GDP of the province
Prosperity ratio	Author's calculations using TSTATS	Number of start-ups /closed enterprises. If the value is greater than 1, then there are more start-ups than closed businesses. This includes only SMEs
Socio-economic development index	SPO(Ministry of Development)	The missing years (years between 1975-1980 and 2010-2013) are estimated by an interpolation method.
Urbanisation rate	Author's calculations using TSTATS	Percentage of the urban population in total provincial population.
Crisis		Dummy variable; crisis= 1, otherwise 0.
Election	Republic of Turkey Prime Ministry	Dummy variable; election= 1, 1 year before election= - 1, 1 year after election= 2, otherwise 0.
PPD	Official Gazettes of the relevant years	Dummy variable; if the province is classified as prior to development PPD=1 otherwise 0

Table 4.6.2.Variable descriptions

¹⁵³ The author is grateful to Professor Nuri Yavan, of Ankara University (Faculty of Languages, History and Geography), for supplying the data between 1980 and 2000.

	ΔGDP	INTPR	INTBR	GDPGRO WTH	SIZE	САР	EFF	PRO	LIQ	CREQ	TXR	NOB	GDPPC	GOVEX	INV	PROS	SEDI	URB	CRISIS F	LEC	PPD
ΔGDP	1.000																				
INTPR	0.037***	1.000																			
INTBR	0.017***	0.193***	1.000																		
GDPGRO WTH	0.565***	-0.219***	• -0.067***	-0.067***																	
SIZE	0.035***	0.127***	0.052***	-0.089***	1.000																
САР	0.019***	-0.074***	• -0.352***	-0.009**	-0.270***	1.000															
EFF	0.020***	0.005	-0.266***	0.000	-0.323***	0.846***	1.000														
PRO	-0.024***	* -0.069***	• -0.112***	0.044***	-0.029***	0.169***	0.033***	1.000													
LIQ	-0.071***	* -0.065***	* 0.107***	0.005	-0.446***	0.102***	0.066***	0.035***	1.000												
CREQ	-0.048***	* 0.092***	0.087***	0.154***	-0.025***	0.006	0.064***	-0.094***	0.015***	1.000											
TXR	0.010***	-0.009***	[•] 0.001	-0.223***	0.051***	0.014***	0.020***	-0.005	-0.019***	0.003	1.000										
NOB	-0.009**	-0.025***	* 0.027***	-0.364***	0.189***	-0.024***	-0.038***	0.004	-0.099***	-0.011**	0.456***	1.000									
GDPPC	0.077***	-0.081***	• -0.116***	0.236***	0.403***	0.151***	0.179***	-0.012***	-0.143***	-0.007*	0.341***	0.210***	1.000								
GOVEX	-0.019***	* -0.132***	• -0.002	0.054***	-0.091***	-0.005	-0.017***	0.012***	0.033***	-0.008*	0.263***	0.257***	-0.035***	▶ 1.000							
INV	-0.004*	-0.031***	• -0.012***	0.087***	0.008*	-0.004	-0.007*	0.002	0.012***	-0.005	0.241***	0.155***	0.080***	0.229**	1.000						
PROS	-0.024***	* -0.072***	* 0.022***	0.046***	-0.066***	-0.019***	-0.029***	0.005	0.044***	-0.013***	• 0.011***	-0.005	-0.099***	* 0.009***	0.004	1.000					
SEDI	-0.021***	* -0.094***	° 0.003	0.081***	0.016***	-0.001	0.001	-0.003	-0.005	0.001	0.505***	0.384***	0.363***	0.503***	0.293***	-0.026**	* 1.000				
URB	-0.100***	* -0.093***	• -0.062***	0.133***	-0.017***	0.022***	0.013***	0.013***	0.000	-0.008*	-0.046***	* -0.026***	* -0.036***	* -0.044***	* -0.031**	* 0.001	-0.076**	* 1.000			
CRISIS	-0.267***	* 0.220***	0.062***	-0.003	-0.086***	-0.142***	-0.112***	-0.041***	0.015***	0.037***	-0.029***	* -0.024***	* -0.261***	* -0.008***	* -0.019**	* -0.019**	* -0.001	0.035***	1.000		
ELEC	0.099***	0.004*	0.019***	-0.065***	0.043***	-0.042***	-0.006*	-0.069***	0.019***	-0.036***	0.003	0.002	0.064***	-0.007***	* -0.011**	* 0.002	0.003	-0.049***	-0.122**:1	.000	
PPD	0.025***	0.124***	0.015***	0.005	0.035***	0.003	0.009**	-0.005	-0.005	0.006	-0.160***	* -0.137***	* -0.176***	* -0.197***	* -0.111**	* 0.067***	-0.599**	* 0.034***	-0.014***0	.003	1.000

 Table 4.6.3. Correlation of Model Variables

* p<0.05, ** p<0.01, *** p<0.001

+1 (perfect positive correlation), 0 (no correlation), -1 (perfect negative correlation)

Chapter 5

General Conclusion

5.1. Summary of the Research

This thesis aims to examine the relationship between financial intermediation and regional growth. Specifically, the study examines the effect of the structure of the banking system on the provincial growth rate, from both a theoretical and empirical perspective.

This research contributes to existing literature in four main ways. Firstly, it provides a very recent and detailed historical background of Turkey, including the political, economic downturns at a national and provincial level, which is, to the best of knowledge, unique in the field of regional growth. Secondly, it suggests a theoretical model showing that differences in banking systems might cause interregional imbalances, in the presence of information asymmetry. The centralised nature of the banking system implies that deposits are not necessarily allocated to investments in the region where they are collected. Rather, they are channelled elsewhere, thus widening the gap between poor and rich regions. Thirdly, and consistent with theoretical predictions, the study finds evidence against financial intermediation as a driver of growth in the case of centralised banking, using data from Turkey. This evidence is different from findings of prior research reported in the regional growth literature.

The papers presented in the thesis can be summarised as follows. The first paper provides a chronological review of the turning points in the economic and financial history of Turkey in the light of a unique and comprehensive data set. In particular, the period from 1975 to 2013 period is discussed in detail at national and regional levels. Discussion highlights how an emerging market progressed over a number of decades under highly volatile political and economic circumstances. The paper links the evolution of the Turkish economy and financial system with the role of banking activities in regional economic development. It can be seen that the Turkish economy is fast growing over the period researched, with the financial system

dominated by the banking system. Therefore, the overall performance of the national economy, as well as regional economy, mainly depends on the banks. The banking system is comprised of state-owned, privately owned, and foreign owned deposit banks, investment banks, development banks, and participant banks. The study focuses on deposit banks, as they are the only institutions collecting deposits and have the largest market share among all other banks.¹⁵⁴ After a highly strict state ruled economy, the financial system went through a liberalisation period in the 1980s. The effect of new regional development policies was seen, especially after the EU candidacy process started. At the same time, the banking system was affected by new policies and a significant number of foreign and domestic banks entered the system. However, funds could not be channelled to productive investments and were, instead, used to finance government budget deficits. The 1990s were years of high fluctuations, and several international and domestic crises affected the country's economy. The Turkish Banking System started to become unstable and insufficient to finance the needs of a growing economy due to the low level of capital accumulation in the country. Subsequently, the 2000 and 2001 crises severely affected the economy. However, structural reforms adopted under the IMF programmes and the positive circumstances in international markets helped the Turkish economy to grow substantially by 2013. In the 1973 to 2013 period, there was an overall decrease in the number of banks and significant increase in the number of branches. All small local banks disappeared before the 1980s, either by closure or becoming a branch of one of the large commercial banks. Therefore, a major shift towards centralisation in the banking system can be observed. Moving from west to east, a decline in the prosperity rate and increase in imbalances between provinces is evident. The redistribution policies that were introduced were not fully successful in achieving convergence across Turkish provinces. One of the main

¹⁵⁴ Participant banks are also allowed to collect deposits but are not within the scope of this study.

reasons for this is the ineffectiveness of the banking system, and the fact that, among other components of the Turkish financial system, it is the banking sector which conducts almost all of the capital and money market transactions and activities in the economy. The deposits collected were not redistributed efficiently in the provinces. Overall, these observations can be summarised as follows: at a national level, there is an improvement in overall socio-economic and banking indicators over the period researched. However, since the beginning of 1975, regional discrepancies have persisted in particular regions, such as the eastern and southeastern provinces. The regional financial disparities have increased alongside the economic differences between provinces. Finally, it is argued that the decentralisation trend that has taken place in regional economic policies is not reflected in banking system policies. The economic and banking figures for provinces in Turkey summarised in this chapter underpin the theoretical and empirical chapters.

In the third chapter, a model is developed to provide a better understanding of the effect of the structure of the financial intermediaries on the real economy at the regional level. In prior literature, the organizational structure of agents determines their incentives (Hart and Moore, 2005). In particular, hierarchical firms function better when information is hard, while decentralised firms perform better when information is soft (Stein (2001). If this argument holds true for the banking sector as an organisation, it can be deduced that branch banks may not perform better when information is soft (Berger et al., 2005). Considering a country's economy as a whole, branch banks stimulate financial and economic development. However, if regional effects of banking are taken into consideration, it cannot be claimed that, for all regions, branch banks are growth promoting. Even if branches in the target region collect soft information, the head office may not consider it reliable enough to base decisions upon. This may, in turn, discourage staff in those branches from gathering soft information. Since decisions for lending are made by the head office, certain projects might be rejected due to a lack of hard information, which may then cause a decrease in the profits of the target branch. Moreover, this leads to a capital flow from one region to another. Ultimately, one region may remain underdeveloped, and unable to match the national growth rate, while another becomes richer. In this way, regional disparities emerge within a country. In this paper, an endogenous growth model with financial intermediaries is used to demonstrate that a decentralised unit banking structure promotes regional growth, whereas a hierarchical branch banking structure causes capital to flow from poorer to richer regions, increasing regional economic disparities. In this study the banking system assumption that financial intermediaries are identical in an economy (Bencivenga and Smith, 1991) is relaxed. It is assumed that there may be differences in information quality across regions, with rural (urban) areas having soft (hard) information. The analysis finds that the return on capital in the branch banking system is less than in the unit banking system. Hence, it appears that unit banks function better in the rural areas. The main finding is that, when projects are rejected in a region, the difference in capital accumulation between this region and another with no rejections becomes infinite as time goes by; that is, regional disparities increase over time.

The fourth chapter empirically examines the effect of banking intermediation on provincial economic growth. The existing literature mainly argues that a better provision of financial intermediaries should provide efficient allocation of resources, reduce information asymmetries between lenders and borrowers, and ease the accumulation of capital (Pagano, 1993; King and Levine, 1993; Greenwood and Smith, 1996; Beck et al., 2000). Many studies analyse the roles of financial intermediaries in economic growth from a regional point of view in order to address the heterogeneity problems occurring in cross-country research (Higgins et al., 2006; Hasan et al., 2009). One of the main assumptions in the literature is that capital is perfectly mobile among provinces and, hence, plays a passive role in regional economic growth. However, studies by Roberts and Fishkind (1979), Moore and Hill (1982), Dow

(1987), Hutchinson and Mckillop (1990), Amos and Wingender (1993), Greenwald et al. (1993) and Harrigan and Mcgregor (1997) show that financial activities have a spatial dimension and capital is not perfectly mobile. The current study argues that banks with a hierarchical structure may hinder the positive impact of financial intermediation on economic growth. Moreover, hierarchical banks may have limited information about local investment opportunities. Therefore, these banks may ignore or reject profitable local investment opportunities or use scarce resources in unproductive local investments (Alessandrini and Zazzaro, 1999; Klagge and Martin, 2005). Different from many European countries, such as Germany (with a very well structured decentralised banking system), or the USA and Japan (with a large number of comparatively small and locally based banks), Turkey provides a unique setting to analyse the role of hierarchically structured banks in regional growth. The model presented in the theoretical paper suggests that the branch banking system may cause economic imbalances among regions by channeling funds from underdeveloped to highly developed ones. The empirical relevance of this assumption is tested for the 1975-2013 period using province-level data from Turkey, and evidence is found for a negative effect of branch banking system on regional growth. In addition, a new measure of banking intermediation is introduced to show the transformation of deposits to loans at the provincial, bank and national levels. The model is tested employing Dynamic GMM regressions, controlling for various province and bank level characteristics. The reliability of the results is then checked by applying several robustness tests, incorporating a number of macroeconomic and regional variables. Unlike previous regional studies (Samolyk, 1994; Guiso et al., 2002; Hao, 2003; Guiso et al., 2004; Hasan et al., 2007; Carbo-Valverde et al., 2007), the current analysis provides evidence that banks are one of the factors causing growth imbalances among provinces in Turkey. The results of this study provide a clear picture of the significance of the negative influence of banking structure on regional growth in a developing country. The findings are consistent with several studies that investigate other countries, in addition to Turkey (Porteous, 1995; McPherson and Waller, 2000; Klagge and Martin, 2005; Önder and Özyıldırım, 2010).

5.2. Policy implications

Since there are few or no regional disparities in developed countries, branch banking might be considered advantageous. Developing countries, however, have significant regional imbalances in terms of growth; therefore, branch banking might widen these disparities by causing capital flows from rural and poor regions to highly urbanised rich ones. For this reason, establishing decentralised unit (regional) banks or giving more authorisation to branch managers might spur more effective investment decisions in regions that are performing below the national growth level. Moreover, unit banks might be more welcomed by local people in poor regions, and they might save more if they knew the deposits collected would be used to fund investments in their region. Increasing savings, with an emphasis on reinvesting locally, could eventually lead to higher capital accumulation and development in these poorer areas. It is also recommended that fiscal policies be actively and efficiently applied, in order to help address the imbalances within the country. Finally, other financial institutions might be encouraged to enter the financial sector to ameliorate the monopolising effect of branch banks.

5.3. Limitations and Suggestions for Further Research

Although the research presented in this thesis contributes to the literature in many ways, and distinguishes itself from other studies in the field with its very comprehensive and unique dataset, the analysis could have been extended more if data constraints had been resolved. The shortcomings can be summarised as follows.

At the outset, the model developed in this work only focuses on the rejection of new investment projects, where funding decisions are based on soft information. In its current state, the model does not include other development components, such as regional banking development, regional public investments, technology, and education.

The unavailability of detailed balance sheets and income statement characteristics of bank specific information for each province presented a problem for the third paper's analysis, where regional financial indicators are linked with regional growth. The author estimated provincial loans and deposits because data on individual banks are not available. Therefore the amount of loans and deposits of each bank in each province does not necessarily reflect the real figures. The province and bank-specific interest rates on loans and deposits were not issued by the relevant authorities after a decision taken by the member banks of the Turkish Banking Association. Unfortunately, accessing such detailed bank- and province-specific information is not possible when the aim is to utilise a very large sample, as in this study. Moreover, provincial GDP for 2002 and 2003 has not been calculated by the authorities. Therefore, it was necessary to estimate the data using a bootstrap technique. Furthermore, the provincial population is only revealed for census years: hence, estimated population is used between the census years. Likewise, the SEDI for the years between 1975 and 1980, as well as 2012-2013, is interpolated. Finally, missing data or potential inaccuracies in old documents also contribute to the limitations of the study.

As an avenue for future research, it is suggested that studies could be developed to investigate the relationship between intermediation and economic growth in developed and emerging countries that have both types of banking systems. For instance, research could be carried out for the member countries of the EU, assuming each one of the countries to be a region within a whole economic area. As the branching regulations changed in the 1990s, the USA would also provide a suitable context to examine the effect of banking intermediation on the growth of states. As far as the author is aware, such research has not been undertaken and would provide a significant contribution to the regional growth literature by comparing decentralised and centralised banks in the regional economy. Additionally, data regarding lending decisions would also be useful. In order to carry out this type of study, one might need to make a comprehensive survey of the relationship between banks and investors. A further study could be done with information on whether a loan request is rejected, discouraged, or accepted, and the economic consequences of funding decisions. The theoretical model could be further tested if there were access to the confidential data (loans and deposits at the bank and province levels) collected by the Central Bank. This would provide more comprehensive results and better insights. Moreover, if the records of regional interest rates or bank-specific interest rates were available, this would be very useful for robustness tests. Owing to the unitary structure of the banking system in Turkey, it has not been possible to gather bank level loan pricing. Furthermore, a forecasting study, using simulation techniques such as Monte-Carlo, could be performed with the current data set at a regional and national level. This would test the implications of the theoretical model, which indicates that, if branch banks are not reinvesting the funds in their regions of origin, the gap between the poor and the rich regions will exponentially increase as time goes by. Lastly, the influence of elections could be investigated more, with interactions with other variables for further robustness tests.

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