DOCTOR OF PHILOSOPHY

Bank supervision in Zimbabwe

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BANK SUPERVISION IN ZIMBABWE

by

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SOME PARTS EXCLUDED UNDER INSTRUCTION FROM THE UNIVERSITY

IN HONOUR OF MY FATHER AND MOTHER

THE REVEREND ELIJAH KURAI DHLIWAYO
AND MRS MAUD DHLIWAYO

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ABBREVIATIONS

AFC	Agricultural Finance Corporation
AMA	Agricultural Marketing Authority
ANA	Analysis report
Ass.	Assets
BAL	Balance sheet file
BIS	Bank for International Settlements
BPCM	Basic Performance and Condition Matrix
Cap.	Capital
CON	Constant assumption files
DEC	Decisions file
Dep.	Deposits
GDP	Gross domestic product
IBRD	International Bank for Reconstruction and Development
IMF	International Monetary Fund
LDCs	Less developed countries
LFR	Lender-of-first-resort
LLR	Lender-of-last-resort
POSB	Post Office Savings Bank
PTA	Preferential Trade Area
RAR	Risk assets ratio
RAT	Ratios report
ROA	Return on assets
SIM	Simulation files
SOFI	Simulation of Financial Institutions
UDI	Unilateral Declaration of Independence
VAR	Variable assumptions file
ZDB	Zimbabwe Development Bank
Zimbank	Zimbabwe Banking Corporation

SUMMARY

Concern with bank failures and crises due to the increased volume and complexity of banking risks has emphasised banking regulatory policy that is aimed towards helping to ensure bank safety. In response to the changing banking environment, prudential supervision has increased in importance. This study is an empirical evaluation of the impact of the present and evolving supervisory system in Zimbabwe. The ultimate aim is to identify the most appropriate system that can best meet supervisory objectives. It is found that capital adequacy supervision is a central requirement for effective supervision.

Three research methods were applied to the problem: field survey, theory and related statistical analysis, and simulation. The field survey established the pressures leading to supervision, and the objectives, instruments and likely effects of supervision in Zimbabwe. Theory and practical policy considerations were then used to draw out the potential empirical effects of supervision.

For statistical testing purposes, supervision was proxied as the imposition of capital adequacy constraints. The general methodological approach used was to analyse trends in performance and condition of banks before and after the implementation of supervision. Since the Zimbabwean supervisory system is new, a comparative study of other developing countries' supervision was undertaken. Non-statistical, financial simulation experiments were then carried out to illustrate more clearly the important policy implications of the results.

The results confirmed the importance of capital adequacy analysis. It was concluded that capital ratios should be strengthened as volume of operations increased and the operating environment became risky. Whilst gearing ratios were useful in relating the volume of operations to capital strength, the results indicated the comparative suitability of adopting the risk assets ratios which facilitates more detailed risk appraisal. However, it was concluded that capital ratios, used alone, are not adequate indicators of overall prudential soundness. Close and adequate monitoring of all bank operations are also essential.

CHAPTER 1

AIMS AND METHODOLOGY

1.1 AIMS OF THE STUDY

The primary aim of this study is to evaluate the costs and benefits of implementing different alternative bank supervisory (prudential regulation) systems in Zimbabwe. Bank supervision is concerned primarily with regulating and monitoring the 'prudential health' of financial firms. In the early stages of its use as a policy instrument it is also (wrongly) seen as an additional way of directing banking resources towards specific development aims. Present supervisory policies and plans in Zimbabwe will be compared with other possible supervisory 'policy mixes' that Zimbabwe might adopt. A related aim is to use this evaluation exercise in order to establish policies on how best to implement, operate and develop the most appropriate supervisory system for Zimbabwe.

The most appropriate supervisory system for Zimbabwe will be one which meets the stated aims of the government. Ceteris paribus supervision should improve the risk - return locus of banking. In this context the implementation of an appropriate supervisory process should help stimulate - or at the very least not hinder - real economic development.

This research involves necessarily an enquiry into the economic impact of supervision: whether a practical supervisory system can help to promote the growth of the banking system consistent with aiding economic development. Thus, an important research objective that is related directly to the primary aims of the study is to examine whether supervision can help to improve the performance of

banks, encourage them to use more efficient methods in their operations.

Various aspects of efficiency that are relevant to this hypothesis will be explored - a fundamental economic one is improving the risk:return (efficiency frontier) locus for banks. Supervision might promote the banking habit and help financial institutions by inspiring greater public confidence in the system. In this setting an appropriate system of bank supervision should help the development of a sound financial system, and this may induce the household sector to save a greater part of its surplus in the form of financial assets: this is essential for growth in a developing economy.

Although the development context of supervision cannot be ignored completely in a developing country like Zimbabwe, the primary aim of this research is not concerned directly with development. Our concern is with the design and implementation of a practical supervisory system for Zimbabwe. Concern with the related development aspects of supervision may be summarised in that any recommended system should ideally meet the following criteria:

1 The recommended system should, at the very least, not hinder real development

2 Faced with two competing (mutually exclusive) supervisory systems, for Zimbabwe, and subject to 1 being met, we should generally prefer that system which is likely to aid economic development to the greatest extent.

These are the normative objectives for which simple, pragmatic tests will be developed.

It is important to emphasise our primary concern with supervision. Zimbabwe has already committed itself to the implementation of a bank supervisory system. We shall explore this decision, but it is not our primary objective to question it. Our research orientation is rather: 'Given that supervision in Zimbabwe is a committed policy decision, how best may it be implemented ...?' A great deal of research into the bank supervisory process also adopts - often implicitly - this same approach. Most serious students of developed banking systems, for example, do not dispute the need for some supervision. The policy issue is the desirable extent and form of supervision.

Our adoption of this specialised and, admittedly, partial approach facilitates a more direct exploration of supervisory issues in a developing country. A more explicit concern with the rationale for supervision and associated development issues would open a veritable 'can of worms'. The 'model' we shall explore, then, is the design and implementation of a practical supervisory system in a developing country. We seek to strip out as much 'noise' as possible from our model in order to focus on the primary aim investigated. Zimbabwe is our case study. Nevertheless, the related and selective normative (positive) implications of a good supervisory system will be explored where relevant to the primary aim of the study. In particular it will be argued that supervision may need to be developed alongside structural deregulation (liberalisation) of a financial system in order to help 'capture' the alleged economic benefits of such a deregulation process. It is not the purpose of this study, however, to explore the exact tradeoffs between these two important policy areas.

1.2 METHODOLOGY OF THE STUDY

The general empirical approach used in this study is to evaluate the effects of supervision on the performance of banks before and after the implementation of supervision. Performance will be defined as a multi-attribute function and it will cover both micro and macro aspects of banking performance. Since supervision in Zimbabwe is still in its infancy (started March 1985), the study will rely heavily on four main methods of investigation namely:

1 field survey of regulators and regulatees in Zimbabwe

2 exploratory data analysis of banking performance in Zimbabwe before and after supervision

3 comparative study of other developing countries and developed countries' experiences with supervision

4 simulation tests of different identified supervisory system alternatives for Zimbabwe.

Figure 1.1 outlines the summarised chapter plan of the study. Initially, the economic, social and political system in Zimbabwe will be analysed (in Chapter 2) in order to determine the distinguishing characteristics of the Zimbabwean economy and the environment within which the banks operate. Chapter 3 analyses the level of banking and financial development in Zimbabwe. Concern with supervision of banks lies in the important role banks play in the economy. In order to understand how regulation in Zimbabwe has developed, the evolution of regulation is studied (in Chapter 4): all regulations pertaining to banks are examined. An analysis of monetary policy operations is also undertaken to determine overall

policy intentions and whether there has been any deliberate attempt to liberalise the banking system.

The next chapter (Chapter 5) will be to review the relevant literature on the objectives, rationale, methods and style of supervision. The present supervisory arrangements in Zimbabwe are also examined in this context.

Chapter 6 will report a field survey using structured questionnaires. This will be carried out in Zimbabwe by interviewing the Reserve Bank of Zimbabwe, and the commercial and merchant banks. The survey's main objectives will be to establish the pressures leading to supervision, the ultimate objectives of supervision, the methods and style of supervision, benefits and costs of supervision and its likely effects in Zimbabwe.

Figure 1.1 Chapter outline of the study

Chapter	
1	Aims and Methodology
2	The Economic System in Zimbabwe
3	The Banking and Financial System in Zimbabwe
4	The Regulatory Environment in Zimbabwe
5	Regulation and Supervision: Issues and Systems
6	Bank Supervision in Zimbabwe: Field Survey
7	Costs and Benefits of Supervision: An Empirical View
8	The Impact of Supervision: Empirical Analysis I
9	The Impact of Supervision: Empirical Analysis II
10	Supervision and Zimbabwe: Policy Implications
11	Conclusions and Limitations

Chapter 6 provides the final bridge into the more detailed and specific research objectives.

In order to investigate the main hypothesis of this study an analysis of the effects of implementing supervision will be carried out by evaluating the benefits and costs of various supervisory requirements. The benefits and costs of supervision will be identified in Chapter 7 by:

1 reviewing the relevant literature on costs and benefits of supervision

2 using the results of the field survey reported in Chapter 6

3 using the other preceding results from Chapters 2-5.

An important part of this study will be the comparative ex ante/ex post country models undertaken in Chapter 8. The identified benefits and costs of Chapter 7 will be the basis for evaluating the experiences of these countries. An object of this analysis is to identify formally the different kinds of supervisory 'policy mixes', together with their associated costs and benefits, that are relevant (may be used) for Zimbabwe.

In this regard, ex ante/ex post exploratory data analysis (EDA) of banking performance and condition will be undertaken using the developed model framework. The expected return and variance analysis will be one measure of banking performance analysed to establish the general trends in the risk:return locus and other relevant aspects of banking performance and condition.

Initially, the task will be to locate 'country models' which are comparable to Zimbabwe. This selection of suitable countries will be based on the analysis of the economic/financial/regulatory analysis of Chapters 2-5 for Zimbabwe. In Chapter 8 developing countries with similar economic and financial characteristics as Zimbabwe will be selected and/or countries which have followed the same development path as Zimbabwe. It might be that these countries are at the same stage of development as Zimbabwe or behind Zimbabwe or ahead. Different 'sets' of countries will be selected on these kinds of criteria. The countries selected will have been operating a supervisory system for at least 3 years or more, a significant period.

Chapter 9 will be a continuation of the data analysis of Chapter 8 but employs a more formal statistical approach to analysing the effects of supervision on banking performance and condition. The analysis in Chapter 9 requires an identification of a further sample, a set of non-supervisory developing countries with broad economic and financial characteristics as Zimbabwe. The performance of banks of supervisory countries will be compared with that of non-supervisory countries. Statistical tests of significance are employed in Chapter 9 in order to help isolate the impact of supervision.

The findings from the study and the resultant policy implications for Zimbabwe will be analysed in Chapter 10. In order to test and evaluate the feasibility of the proposals on the Zimbabwean banking system and thus recommend the most appropriate supervisory policies for Zimbabwe, a sophisticated deterministic simulation model will be used to test the results. Different

supervisory instruments of supervision will be evaluated using this simulation model.

The overall conclusions, practical implementation aspects and limitations will be summarised in Chapter 11. Figure 1.2 summarises the more detailed chapter plan of the study.

Figure 1.2 Detailed chapter content

Chapter 1

Aims and Methodology

Chapter 2

The Economic System in Zimbabwe

Analysis of structural characteristics and development path taken by Zimbabwe. The aim is to present the environment in which banks operate and to help provide the database for the later comparative studies (Chapters 8 and 9).

Chapter 3

The Banking and Financial System in Zimbabwe

The structure of banking operations and the level of financial development in Zimbabwe are analysed. Concern about the financial health of the banks is based on the role banks perform in the financial system and the real economy. Any policy of supervision recommended in the study will have to take into consideration the environmental circumstances in Zimbabwe.

Chapter 4

The Regulatory Environment in Zimbabwe

This chapter analyses the evolution of regulation in Zimbabwe - what the regulations pertaining to banks are, when and why they have been imposed and how they are used in practice. This examination is important because banking supervision is inevitably part of a 'regulatory raft' applied to banks by the authorities. In this chapter, monetary policy is analysed in detail to see if there has been any deliberate policy to liberalise the system. Liberalisation tends to increase competition which might increase risk, thereby necessitating more supervision.

Chapter 5

Bank Supervision and Regulation: Issues and Systems

This chapter defines supervision and regulation, establishes the aims, rationale and forms of supervision and presents the supervisory system in Zimbabwe. The aim of this chapter is to draw out more formally the relevant issues which will be tackled in this study. The justification of supervision and its effects are reviewed.

Chapter 6

Bank Supervision in Zimbabwe: Field Survey Evidence

This chapter analyses the results of a field survey on the Reserve Bank of Zimbabwe and the banks. The aim is to establish the practical policy objective of supervision in Zimbabwe, the methods used in the supervisory process and the views of the regulated (the 'regulatees') on the likely effects and effectiveness of

supervision: that is, the costs and benefits of implementing supervision.

Chapter 7

Costs and Benefits of Supervision: An Empirical View

This chapter will be a review of the literature on the benefits and costs of supervision in order to identify the relevant measures that will be used to test the comparative attractiveness of alternative supervisory systems for Zimbabwe. The different measures identified will then be used to undertake an exploratory data analysis in order to obtain an understanding of the trends in the performance and condition of the Zimbabwe banking system. Chapters 1-6 provide part of the essential background for this exercise.

Chapter 8

The Impact of Supervision: Empirical Analysis I

This chapter aims to evaluate the effects of supervision in a 'set' of developing countries. These 'sets' will be selected on the basis of their comparative relevance to Zimbabwe. The measures used to test these effects will be those outlined in Chapter 7. Another important objective is to identify different 'supervisory mixes', alternative supervisory policy and instrument systems, that may be used in Zimbabwe.

Chapter 9

The Impact of Supervision: Empirical Analysis II

This chapter refines the analysis in Chapter 8 by comparing the effects of supervision in the set of supervisory countries with

those of non-supervisory countries. More powerful statistical techniques will be used, including some non-parametric tests. The latter are necessary because of the paucity of useful data.

Chapter 10

Supervision and Zimbabwe: Policy Implications

Recommendations on the best instruments, targets and supervisory framework for Zimbabwe will be made from the findings of the study. An appraisal of the proposals' practical policy implications will be undertaken using a simulation model.

Chapter 11

Conclusions and Limitations

CHAPTER 2

THE ECONOMIC SYSTEM IN ZIMBABWE

2.1 INTRODUCTION

This chapter analyses the structure and development of the economic system in Zimbabwe. The purpose of the analysis is twofold. The first objective is to present the environment within which the banks operate. Secondly, the analysis of the characteristics of the economy and the path of development taken will help to build up some of the necessary data for comparative studies in Chapters 8 and 9. Additionally, knowledge of the type of economy and financial system in Zimbabwe will be necessary when the researcher seeks to explore appropriate bank supervisory systems for Zimbabwe.

Section 2.2 will present an overview of the economy in terms of its size, location, natural resources and political standing. Section 2.3 analyses economic development, and section 2.4 will present the national objectives in Zimbabwe. Section 2.5 concludes the chapter.

2.2 OVERVIEW OF THE ECONOMY

2.2.1 Size and geography

Zimbabwe is situated in the Southern part of the continent of Africa (Figure 2.1). It is bordered by Mozambique to the east, South Africa to the south, Botswana to the west and Zambia to the north and north east. Zimbabwe's total land area is approximately 391,000 square kilometers and the country lies wholly within the tropics.

Figure 2.1 Countries of Southern Africa

Source: Statistical Yearbook, CSO, 1987

2.2.2 Population and demographic indicators

According to the latest census for 1982, the population of Zimbabwe was reported to be 7.6 million. Almost 98 per cent of the population is of African origin. Europeans comprise around 2 per cent and Asians and coloureds make up 0.1 per cent and 0.3 per cent, respectively. About 47.3 per cent of the population are at the age of 14 and below; 3.1 per cent are above the age of 65. There are more females than males, 51 per cent and 49 per cent respectively. The rate of population growth has been around 3 per cent between 1970-81.

About 56 per cent of the population of Zimbabwe are peasants who live in communal areas and 23 per cent consist of people living in urban areas. Communal areas account for 42 per cent of total land area, and only 25 per cent of this land is suitable for intensive cultivation. The rest of the communal land is only suitable for livestock grazing. Thus the population in the communal areas exceeds the carrying capacity of the land. The main demographic indicators are given in Table 2.1.

Table 2.1 Demographic indicators (per '000)

(estimates for 1982)

	1969	1982
Crude birth rate	47	39
Crude fertility rate (age 15-49)		176
Crude death rate	15	11
Life expectancy	50.8 years	57.4 years
Infant mortality rate	101	83

Sources: Statistical Yearbook 1987, CSO, Harare
Socio-Economic Review 1980-85 (1986)

The above table indicates that in Zimbabwe the mortality rate and birth rate have decreased from the 1969 level. Life expectancy has increased from 50.8 years in 1969 to 57.4 years in 1982.

2.2.3 Natural resources

Zimbabwe is relatively rich in natural resources. There are about 8.6 million hectares of potentially arable land, 5.4 million hectares of forests, national parks and wild life estates. Surface and underground water is potentially ample for irrigation, domestic consumption, power generation and industrial uses.

Minerals with known reserves include gold and silver, chromium, iron ore, copper, nickel, tin, asbestos, magnesite, lithium, sulphur and coal. Other minerals (with less reserves) include aluminium, platinum, lead and zinc, phosphate and mica. Energy resources include hydro, thermal and solar power potential, as well as forests and woodlots.

2.2.4 Political structure

Zimbabwe gained political independence from British rule on 18 April 1980. The country was colonised in 1890 when the first settlers arrived in Harare: the capital city previously known as Salisbury.

The main historical developments of the political structure before 1980 were: the British South Africa Company Administration between 1890 and 1923, Responsible Government Administration between 1923 and 1954, the Federation period between 1954 and 1963 and the Unilateral Declaration of Independence (UDI) from 1965 to 1980.

UDI was a significant development in the history of Zimbabwe. Britain immediately imposed economic sanctions and the United Nations followed suit. The country was expelled from the sterling area and the Commonwealth preference for the country's goods was brought to an end. Full mandatory sanctions against Zimbabwe's main exports were imposed in May 1968. Exports to Zimbabwe were banned.

In the beginning of the colonial era, land was divided between Europeans and Africans. Separate housing conditions for Africans and Europeans were defined. Jobs, wages and employment opportunities were defined by race (The Masters and Servants Act 1891 and the Industrial Conciliation Act 1934). Administrative jobs were restricted to Europeans (the Public Servants Act 1931). Entry and movement within urban areas by Africans was restricted (the Native Registration and Identification Act 1957). There were also separate social and recreational facilities and schools for Africans and Europeans.

The Land Apportionment Act limited the land available to Africans for permanent settlement. As a consequence there was a shift to the traditional system of continuous cultivation which caused soil erosion. This reduced the productivity of land.

Thus, restrictions of land available to Africans, deterioration of peasants productivity, curtailment of African investment and declining real wages created frustration and insecurity among Africans. This led to the War of Liberation which started in 1965 and ended in 1980, when, after the Lancaster House Agreement, Zimbabwe attained political independence.

2.2.5 Characteristics of the Zimbabwean economy

2.2.5.1 Size and level of development

According to the World Bank, World Development Report (1983), Zimbabwe is classified on the international level as a small, lower-middle income country. The Gross Domestic Product at factor cost was $9,000 million as at the end of 1987. With an estimated population of 8 million, per capita gross domestic product (GDP) was $1,000 in 1987. Exports and imports constituted 25.1 per cent and 20.7 per cent respectively of GDP.

Wages and salaries accounted for 59.7 per cent of gross domestic income in 1987. Like other developing nations, Zimbabwe has a dual economy with no less than two thirds of the labour force engaged in traditional agriculture and other subsistence production. Commercial agriculture was responsible for the employment of around 26.7 per cent of the total number of employees in the modern economy in 1984. Commercial agriculture is the largest employer of the labour force. Other sectors that provide employment are: manufacturing industry (16% of total workforce) private domestic service (9.5%), public administration (8.6%), distribution (7.7%), mining (5.3%) and transport and communications (4.8%).

Like other developing nations, at the time of independence in Zimbabwe there were striking wage differentials between black and white workers. For example, black unskilled workers in the agricultural sector receive on average $400 per annum, whilst the white skilled workers in the financial, insurance and real estate sectors were receiving $5,300 per annum. The new Government introduced minimum wage legislation and it is undertaking the training and employment of blacks in more skilled occupations. The

new government's policy is to narrow these differentials, and this has been evidenced by giving high priority to the development of the large subsistence sector.

2.2.5.2 Large private sector and diversified production structure

Zimbabwe has a broadly based economy, with production largely carried out by the private sector. Central government, local authorities and public corporations are responsible for the provision of modern infrastructural services: namely general administration, education, health, transport, communications, electricity and water services. The private sector is responsible for production in agriculture, mining, manufacturing, construction, distribution, finance, insurance and real estate.

Agriculture, which plays a dominant role in the economy takes the form of both commercial farming and subsistence production. Production is widely diversified amongst the major crops like tobacco, cotton, maize, sugar, wheat and coffee. There is also a large beef and dairy produce industry. Maize is the major subsistence crop, but the industry as a whole is export-oriented with tobacco, beef, sugar, maize, coffee and tea as major foreign exchange earners. Agriculture contributed 12.1 per cent to GDP in 1987 (Table 2.2).

Another important sector in Zimbabwe is mining: it contributed 7.6 per cent to GDP in 1987. The industry is export-oriented and its contribution to exports was 26.1 per cent in 1987. The manufacturing sector is the leading sector with a contribution of 24.3 per cent to GDP in 1987. This situation is unlike other

developing countries whose manufacturing sector is usually negligible.

Table 2.2 Sectoral contribution to GDP and to exports

Sector	% contribution
Contribution to GDP by each sector 1987	
Agriculture and forestry	12.1
Mining and quarrying	7.6
Manufacturing	24.3
Electricity and water	3.1
Construction	1.6
Distribution, hotels	10.5
Transport and communications	5.8
Finance, insurance	4.9
Real estate	1.2
Public administration	10.1
Education	10.3
Health	2.8
Domestic service	1.7
Other services	6.7
Contribution to exports by each sector 1987	
Agriculture and forestry	40.0
Mining (excluding gold)	14.2
Gold	24.5
Manufacturing*	45.8

Sources: Socio-Economic Review, 1980-85 (1986)
Quarterly Digest of Statistics (1988)

Note: * Other products classified under the manufacturing sector originate from agriculture. If these products are excluded, the contribution of the manufacturing sector would fall. These products include: sugar, cotton lint and processed meat.

The growth of the manufacturing sector benefited from the import-substituting industries which developed during the UDI period. The sector's contribution to exports was 41.4 per cent in 1987, although other products classified under manufacturing (like sugar, cotton lint, processed meat) originate from agriculture. If adjustments were to be made in this respect, the manufacturing sector's contribution to exports would be slightly lower.

Other important sectors in the Zimbabwean economy (Table 2.2) are distribution, hotels and restaurants (10.5% of GDP); education (10.3%); public administration (10.1%); finance, insurance and real estate (6.1%) and transport and communications (5.8%).

Most of the manufacturing establishments are privately owned, although government has a 49 per cent interest in the country's iron and steel industry. A significant proportion of overall production is provided by a small number of large companies which are generally foreign owned.

Although the primary sectors (agriculture and mining) together contribute only about 19.7 per cent to GDP (1987 figures) they provide almost 70 per cent of the country's total merchandise exports, with the remainder coming from the manufacturing sector. Thus, from a foreign trade point of view, Zimbabwe is very much a primary producer, despite the fact that primary production contributes significantly less to GDP than is the case for most developing countries. Although the manufacturing sector provides almost 40 per cent of total merchandise exports, it remains a net user of foreign exchange. This is because of the very large imports of capital equipment and industrial raw materials, which comprised 90.6 per cent of total imports in 1984 (see Table 2.3).

Thus the economic development of Zimbabwe, which has been based to a significant extent on growth in secondary industries, has only been made possible by the large export earnings of the primary sectors.

Table 2.3 Structure of foreign trade in 1984

Exports	% share in total exports	Imports	% share in total imports
Agriculture	**41.0**	**Agriculture**	**7.9**
Tobacco	20.1	**Mining**	**1.5**
Cotton	8.2	**Industry**	**90.6**
Sugar	3.9	Energy (oil, products and electricity)	20.9
Coffee and tea	3.8	Chemicals	16.8
Meat and hides	3.5	Metal products	4.8
Other agricultural products	0.5	Textiles, wood and paper	4.7
Mining	**26.9**	Iron and steel	3.4
Gold	11.2	Other intermediates	0.8
Asbestos	5.2	Cables, screws, tools and engine spares	4.0
Nickel	4.4	Machinery and equipment	27.1
Copper	3.0	Consumer goods	8.1
Coal and coke	1.1		
Other mining products	2.0		
Industry	**32.1**		
Ferro-alloys	10.8		
Iron and steel	4.0		
Textiles	3.5		
Chemicals	1.8		
Machinery and equipment	1.5		
Other manufactures	10.5		

Source: First Five-Year National Development Plan (1986), volume 1

Zimbabwe has a well-developed economic infrastructure. Transport facilities are also well-developed. The rail system connects all the major cities and there are four links to ports. Effective communications systems also exist with a widespread

network of telephone and telex links within Zimbabwe and with the international community. Power requirements are met mainly by hydro-electric power, supplemented by thermal generators. However, there is a need to increase existing capacity in order to be self-sufficient as power is being imported from Zambia.

2.3 TRENDS IN ECONOMIC DEVELOPMENT

2.3.1 Background to economic structure and development

Before independence, economic policies were designed to cope with the state of isolation. This was brought about by UDI in 1965 and the resultant imposition of economic sanctions. Most of the economic growth which took place up to 1975 was enhanced by the import-substitution strategy and export promotion in order to save and earn foreign exchange.

The import substitution was directed at consumer goods while the export promotion effort, directed at the processing industries for minerals and agricultural products, was by way of increased production and the setting up of new industries. As a result, most of the country's exports came from the primary industry sector. The effort directed towards the manufacturing sector was primarily for production to supply the domestic market.

Although the economic strategy adopted was meant to foster self-reliance and counter the effects of economic sanctions, economic growth and development were highly dependent on external factors: industrial production depended on large importations of raw materials, machinery and equipment (as stated in the previous section). Thus the country continued to maintain external links, mainly with South Africa.

The pre-independence regime relied heavily on exchange controls and import controls because of the shortage of foreign exchange. This state of affairs continues to exist today.

Besides economic sanctions, other factors which had a significant impact on the growth of the economy were the escalation of the war of liberation. As a result of the war, there was a large drain of skilled personnel from economic activity to meet the demands of the war. The war also resulted in most rural infrastructure being either partially or totally destroyed. Agricultural extension services and animal disease control measures became limited, thereby having adverse effects on agricultural performance.

Also during the war, a large proportion of total Government expenditures went into defence and general administration connected with the war. For example, general administration and defence rose from 29 per cent in 1971 to 46 per cent in 1979, while education and health declined from 26 per cent in 1971 to 19 per cent in 1979.

2.3.2 Trends in economic growth

The previous section outlined the factors which influenced the growth and performance of the economy. The factors included the imposition of sanctions during the UDI period, the war of liberation, the unfavourable world economic climate and occasional drought periods which affected agricultural output and incomes.

Growth in GDP was approximately 7 per cent between 1971 and 1974, but declined to -2.3 per cent between 1975 and 1978 (Table 2.4).

Table 2.4 GDP at factor cost: compound growth rates for selected periods (per cent)

	1971-74	1975-78	1979-81	1980-81	1981-84	1981-86
Agriculture and forestry	8.2	-2.4	3.8	5.7	-1.2	1.0
Mining and quarrying	4.0	-0.3	-2.5	-3.7	1.5	-0.5
Manufacturing	9.4	-3.9	11.9	12.4	-2.8	0.8
Electricity and water	-1.1	-6.3	0.0	4.6	0.0	9.1
Construction	8.0	-14.0	2.8	5.5	-6.4	-10.6
Distribution and hotels	7.8	-3.9	17.1	24.8	-7.1	-1.9
Transport and communications	2.1	-5.5	13.2	17.9	0.7	2.0
Total material production	7.0	-3.9	8.6	12.4	-2.5	0.3
Finance and insurance	12.1	5.1	6.4	18.4	-1.0	-0.9
Real estate	4.6	-12.7	-1.9	2.1	0.8	0.5
Public administration	2.7	11.8	6.8	10.3	2.4	2.9
Education	3.5	0.0	22.9	36.3	12.3	9.4
Health	5.0	2.7	9.0	13.8	7.0	6.9
Domestic services	3.3	-1.7	-3.0	-1.6	-2.2	-0.2
Other services	4.6	-0.8	4.5	6.2	5.3	6.3
Total non-material production	5.1	2.5	7.9	14.1	4.5	4.3
Total GDP	6.7	-2.3	8.5	12.2	-0.1	1.8
Per capita GDP		-6.9	8.7	12.3	-1.3	0.7

Sources: Adapted from Socio-Economic Review 1980-85 (1986)
Annual Economic Review of Zimbabwe (1986)

The period up to 1974 was characterised by the import substitution/export promotion strategy, diversification and increased processing of agriculture and mining products. After 1975, several factors affected the growth in output. These factors included the 1973 oil price shock, poor balance of payments performance resulting in cuts in foreign exchange allocations to industry, and the war situation resulting in skilled manpower shortages.

GDP grew at an annual average of 8.5 per cent between 1979 and 1981 and 12.3 per cent between 1980 and 1981. The high growth rates during 1980 and 1981 were due to a number of factors. Recovery which had started in 1978 was enhanced by the removal of economic sanctions (the opening up of the economy), a factor which helped the much needed inflow of capital. There were large allocations of foreign exchange to industry during this period. Secondly, with the ending of the war, demand conditions increased due to the following: increase in incomes due to the new government's incomes policy, the return of refugees, other residents, former combatants as well as new immigrants. This period also experienced good rains resulting in high growth in agricultural incomes. Lastly, the reconstruction exercise after the war gave rise to a high level of economic activity.

After 1981 growth in GDP fell to -1.7 per cent between 1982 and 1983. During this period the country experienced three years of drought. The economy experienced a large deficit on its balance of payments, resulting in further cuts in import allocations. The drought caused a reduction in agricultural export earnings, which are a substantial proportion of total exports. Another factor

contributing to the decline in growth was the weakness in international commodity prices. The positive growth rate in GDP of 1.8 per cent between 1981 and 1986 was due to the good agricultural season in 1984/85. In 1985 the real agricultural growth was 23.8%, manufacturing 11.5%, distribution 12%, and overall GDP grew by 9.3%. Because of the decline in growth performance after 1981, the average annual growth rate for the post-independence period of 1980-86 was only 1.8 per cent. The growth target of 8 per cent envisaged in the national transitional development plan of 1982 was not, therefore, met.

The trends analysed can be depicted by reviewing the individual sectors' output and performance (Tables 2.4 and 2.5). The growth rates in the main sectors of the economy help to explain the trend growth of the overall GDP. During the years 1975 to 1978, the agricultural sector's growth was -2.4%; growth was 5.7% in 1980/81; and for the years 1981-84 growth was -1.2%; growth accelerated to 1.0% between 1981-86. The manufacturing sector followed the same general trend and the growth rates for the above-mentioned periods: -3.9% (1975-78), 12.8% (1980-81), -2.8% (1981-84) and 0.8% (1981-86). Other sectors followed a similar trend.

However, although the material production sectors registered negative growth rates after 1981, except for 1985 (see Table 2.5), the non-material production sectors continued to register positive growth rates. This was mainly due to the new Government policy to provide social services, particularly education and health. As a result, the proportion of material production sectors as a proportion of GDP declined while the proportion of non-material production sectors increased (Table 2.6).

Table 2.5 **Annual rates of growth in GDP at factor cost (per cent) 1974-86**

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Agriculture and forestry	18.9	-5.9	11.3	-21.3	10.2	0.0	3.2	8.3	1.0	-6.4	1.7	30.8	-12.1
Mining and quarrying	-2.3	1.4	9.0	-5.2	-5.5	0.0	-2.4	-4.9	4.8	0.4	2.8	1.0	-1.0
Manufacturing	7.1	-1.0	-5.8	-4.9	-3.7	10.8	15.1	9.8	-0.5	-2.9	-5.0	12.2	1.4
Electricity and water	-17.3	3.3	-9.6	-31.8	20.7	-8.6	9.4	0.0	-10.0	7.9	2.9	15.7	36.7
Construction	3.7	-6.0	-21.2	-11.3	-16.5	-2.2	-2.2	13.8	-2.0	-8.2	-4.5	5.9	-6.3
Distribution and hotels	9.3	-2.1	-6.6	-4.5	-2.4	3.0	33.0	17.1	-14.6	-13.1	-5.1	12.4	1.2
Transport and communications	-2.4	-6.2	-3.6	-12.7	1.2	4.2	21.3	14.7	-1.7	-6.3	3.1	5.7	-0.8
Total material production	5.9	-2.5	-1.6	-10.6	-0.6	3.8	12.6	9.4	-2.9	-5.4	-1.9	13.9	-1.4
Finance and insurance	13.8	35.7	1.1	0.0	-10.9	-14.0	8.2	29.5	16.0	-11.7	-5.2	-1.0	-8.8
Real estate	5.7	-12.9	-11.1	-8.3	-18.2	-11.1	-10.4	18.6	-17.6	0.0	0.0	0.0	0.0
Public administration	4.7	11.9	10.6	11.9	13.1	0.0	4.7	16.2	-1.4	1.2	8.0	5.2	5.7
Education	3.3	5.5	0.0	2.2	-7.3	0.0	33.1	39.6	20.3	9.2	7.7	6.0	4.2
Health	5.1	3.3	0.0	7.9	0.0	0.0	4.4	23.9	1.1	3.4	3.3	2.1	7.1
Domestic services	0.0	0.0	0.0	-2.7	-4.1	-5.8	0.0	-3.1	-3.2	-1.6	-1.7	0.0	-3.4
Other services	6.3	0.0	-1.8	-1.2	0.0	1.2	4.8	7.8	9.7	5.4	0.9	-0.9	6.3
Total non-material production	5.9	8.1	1.2	2.6	-1.5	-3.4	8.1	20.3	7.2	1.2	3.5	2.8	2.7
Imputed banking charges	-6.9	-16.9	0.0	-5.6	0.0	-3.2	-10.2	-0.9	-6.4	-3.4	-3.3	-1.6	-6.3
Total GDP	6.0	-0.2	-0.8	-7.2	-0.9	1.5	11.3	13.0	0.0	-3.4	-0.1	10.3	0.2

Sources: Adapated from Socio-Economic Review 1980-85 (1986)
Annual Economic Review of Zimbabwe (1986)

Table 2.6 The share of each sector as a proportion of GDP

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Agriculture and forestry	15.6	14.7	16.5	14.0	15.5	15.3	14.2	13.6	13.7	13.3	13.6	16.1	13.6	10.9
Mining and quarrying	9.4	9.6	10.5	10.7	10.2	10.1	8.8	7.4	7.8	8.0	8.3	7.6	5.2	5.5
Manufacturing	23.5	23.3	22.1	22.7	22.0	24.1	24.9	24.2	24.1	24.2	23.0	23.4	30.4	31.3
Electricity and water	2.9	3.0	2.7	2.0	2.5	2.2	2.2	1.9	1.7	1.9	2.0	2.1	3.5	4.2
Construction	5.3	5.0	4.0	3.8	3.2	3.1	2.7	2.7	2.7	2.5	2.4	2.3	2.6	2.4
Distribution and hotels	12.3	12.1	11.4	11.7	8.4	11.7	14.0	14.5	12.4	11.1	10.5	10.7	12.7	12.8
Transport and communications	6.7	6.3	6.1	5.7	5.8	6.0	6.5	6.6	6.5	6.3	6.5	6.3	5.4	4.8
Total material production	75.7	73.9	73.3	70.6	70.8	72.4	73.3	71.0	68.9	67.5	66.3	68.4	73.4	71.9
Finance and insurance	4.5	6.1	6.2	6.7	6.0	5.1	4.9	5.7	6.6	6.0	5.6	5.1	4.2	4.5
Real estate	3.0	2.6	2.3	2.3	1.9	1.7	1.3	1.4	1.2	1.2	1.2	1.1	0.9	0.9
Public administration	5.6	6.3	7.1	8.5	9.7	9.6	9.0	9.2	9.1	9.5	10.2	9.8	6.5	6.8
Education	4.1	4.3	4.3	4.8	4.4	4.4	5.2	6.5	7.8	8.8	9.4	9.1	7.8	8.4
Health	1.9	2.0	2.0	2.4	2.4	2.3	2.2	2.4	2.4	2.6	2.7	2.5	2.2	2.3
Domestic services	2.4	2.4	2.4	2.5	2.4	2.2	2.0	1.7	1.7	1.7	1.7	1.5	1.7	1.7
Other services	5.4	5.4	5.3	5.7	5.7	5.7	5.4	5.1	5.6	6.1	6.1	5.5	6.0	6.2
Total non-material production	26.8	29.0	29.6	32.7	32.5	31.0	30.0	32.0	34.3	35.9	37.2	34.7	29.3	30.8
Imputed banking charges	-2.5	-2.9	-2.9	-3.3	-3.3	-3.4	-3.3	-3.0	-3.2	-3.4	-3.5	-3.1	-2.8	-2.7
Total GDP	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Adapated from Socio-Economic Review 1980-85 (1986)
Quarterly Digest of Statistics, June 1988

For example, the material production sectors' share declined from 73.3 per cent in 1980 to 68.4 per cent in 1985, while the non-material production sectors' share increased from 30 per cent in 1980 to almost 35 per cent in 1985. The sectors which registered significant reductions were the manufacturing, distribution and hotels and restaurants.

The trends in GDP growth rates can also be looked at in terms of the share of each sector in fixed capital formation. Sectoral gross fixed capital formation can only be analysed up to 1983 as no breakdown is yet available beyond this year. Table 2.7 shows that the share of gross fixed capital formation in material production declined from 73.7 per cent in 1980 to 69.8 per cent in 1983, while the share of gross fixed capital formation in non-material production increased from 26.3 per cent in 1980 to 30.2 per cent in 1983. These figures reflect the relative growth rates for the material and non-material production sectors.

Data for the distribution of fixed capital formation by type of asset (see Table 2.8) indicate increasing investment in civil engineering work and non-residential buildings. Table 2.9 shows the decline in the private sector's share in gross fixed capital formation; the public sector's share is corespondingly rising, especially between 1981 and 1983. The public sector's share increased from 28.6 per cent in 1981 to 55 per cent in 1983, while the private sector's share fell from 71.4 per cent in 1981 to 45.1 per cent in 1983.

Table 2.7 Percentage share of each sector in gross fixed capital formation 1974-83

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Agriculture and forestry	9.7	8.1	11.9	11.9	12.3	11.1	10.0	12.0	11.9	12.8
Mining and quarrying	8.1	8.5	14.1	17.4	17.3	21.0	15.7	16.0	9.1	8.5
Manufacturing	24.9	24.6	18.0	12.9	12.9	12.7	23.3	24.2	16.4	15.5
Electricity and water	6.4	7.7	8.4	5.0	5.3	3.5	4.9	5.7	12.9	14.8
Construction	2.6	1.9	1.9	1.1	0.9	1.5	2.3	2.0	2.7	2.7
Distribution and hotels	4.0	3.6	4.4	4.5	5.6	6.1	8.3	6.0	4.6	2.6
Transport and communications	12.4	12.8	10.1	9.5	9.7	9.4	9.1	7.2	15.4	12.9
Total material production	68.3	67.3	68.9	62.3	63.9	65.3	73.7	73.3	73.1	69.8
Finance and insurance	1.2	1.1	1.6	2.4	2.6	8.1	2.8	4.1	3.7	3.9
Real estate	11.2	12.2	10.3	12.7	10.6	7.6	6.4	6.4	5.6	5.2
Public administration	2.6	2.6	2.1	4.7	6.2	4.6	4.0	3.1	3.2	4.9
Education	1.4	1.3	1.9	1.8	2.3	2.0	1.3	0.8	0.8	1.0
Health	2.6	2.6	3.0	3.4	3.2	2.5	1.5	2.2	2.3	2.5
Domestic services	1.7	1.7	2.1	2.4	2.1	1.8	2.5	4.5	3.9	3.5
Other services	11.2	11.3	10.1	10.3	9.1	8.1	7.8	5.7	7.4	9.0
Total non-material production	31.8	32.7	31.1	37.7	36.1	34.7	26.3	26.7	26.9	30.2
Total GFCF	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Adapated from Socio-Economic Review 1980-85 (1986)

Table 2.8 Distribution of fixed capital formation by type of asset (per cent)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Residential buildings	11.2	12.2	10.3	12.7	10.6	7.6	6.4	6.4	5.6	5.2
Non-residential buildings	16.2	19.4	16.4	25.9	16.4	18.5	20.3	22.0	19.3	20.2
Civil engineering work	26.4	30.3	24.8	24.3	19.6	27.3	20.6	23.3	38.3	40.2
Transport equipment	14.3	12.2	12.4	5.3	11.1	9.9	15.9	12.8	13.1	12.8
Other equipment, plant and machinery	32.1	25.9	36.1	31.9	42.2	36.7	36.7	35.5	23.7	22.0
Total GFCF	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Adapted from Socio-Economic Review 1980-1985 (1986)

Table 2.9 Gross fixed capital formation in the public and private sectors ($ million)

	Public Sector						Private sector					
	1978	1979	1980	1981	1982	1983	1978	1979	1980	1981	1982	1983
Agriculture and forestry	8	8	6	17	35	52	35	37	48	84	88	83
Mining and quarrying	-	-	-	-	-	-	59	83	83	133	94	89
Manufacturing	2	3	2	2	6	5	42	47	121	199	162	158
Electricity and water	18	14	26	47	133	156	-	-	-	-	-	-
Construction	-	1	1	4	8	8	3	5	12	13	19	20
Distrubtion, hotels	1	-	1	3	4	7	18	24	43	47	43	20
Transport and communication	23	21	23	38	129	115	9	17	24	22	31	21
Total material production	52	47	59	111	315	343	166	213	331	498	437	391
Percentage of total	36.4	34.6	36.4	46.8	61.5	59.4	83.8	81.6	90.4	84.0	84.4	82.7
Finance and insurance	-	-	-	-	1	1	9	32	14	34	37	40
Real estate	26	25	27	36	46	46	9	5	6	16	11	9
Public administration	21	18	21	26	33	52	-	-	-	-	-	-
Education	5	5	5	9	20	22	7	4	2	9	4	4
Health	6	7	7	6	5	7	2	1	1	1	4	4
Other services	2	2	2	2	14	11	5	6	12	35	25	25
General purpose investment by Government	31	32	41	47	76	95	-	-	-	-	-	-
Total non-material production	91	89	103	126	197	234	32	48	35	95	81	82
Percentage of total	63.6	65.4	63.6	53.2	38.5	40.6	16.2	18.4	9.6	16.0	15.6	17.3
Total	143	136	162	237	512	577	198	261	366	593	518	473
Percentage share in total GFCF	41.9	34.3	30.7	28.6	49.7	54.9	58.1	65.7	69.3	71.4	50.3	45.1

Source: Adapted from Socio-Economic Review 1980-1985 (1986)

2.4 NATIONAL OBJECTIVES

2.4.1 General objectives

The objectives and policy measures of the Zimbabwe Government are directed towards 'the attainment of a socialist and egalitarian society' (Growth with Equity: An Economic Policy Statement, February 1981, p. 1). The general objectives include full employment, price stability, dynamic efficiency in resource allocation and the equitable distribution of the benefits. The resultant uneven structure and development of the economy in terms of economic sectors (rural and urban), income distribution, distribution of benefits brought about by policies of the colonial regime need readjustment. Other objectives like local participation of the production means in the country and reduction of the foreign ownership and control of assets are among the priorities of the new national government.

Most of the previous regime's policies were racial (discriminatory) in character, thereby creating imbalances in education and manpower developent. This kind of inequity led to the war of liberation, which caused the partial destruction of the economic infrastructure. Another policy of the Government is, therefore, to restructure and develop the economic and social framework of Zimbabwe.

Thus the Government's objectives as stated in the Economic Policy Statement (Growth with Equity, 1981, p. 2) can be summarised as follows:

1 establish progressively a society founded on socialist, democratic and egalitarian principles

2 achieve a sustained high rate of economic growth and speedy development in order to raise incomes and standards of living of all the people and expand productive employment of rural peasants and urban workers

3 develop and restructure the economy in ways which will promote rural development, and achieve desired changes in patterns of consumption, technology, exports

4 end imperialist exploitation, and achieve a greater and more equitable degree of ownership of natural resources; promote participation in, and ownership of, a significant portion of the economy by nationals and the state

5 create and maintain high levels of employment for Zimbabweans in all sectors and at all levels of skill and responsibility

6 train, mobilise and utilise fully the country's human resources which are its creative and greatest asset

7 democratise the work place in all sectors of the economy by encouraging worker participation in decision-making at the office and shop floor levels

8 provide, improve and extend the basic economic and social infrastructure so as to serve adequately the Zimbabwean urban and rural economy

9 provide, improve and extend the rural economic infrastructure with particular emphasis on extension of marketing services, credit and agricultural factor input faciliites

10 provide, improve and extend social services (housing, health, education) to lower income groups in the urban and rural areas

11 reform the fiscal and monetary systems in order to achieve greater equity and efficiency, and use fiscal and monetary instruments to achieve price and balance of payments stability consistent with high levels of employment

12 fully exploit opportunities for oil substitution in order to reduce the economy's dependence on external sources and move towards domestic reliance and self-sufficiency in energy

13 conserve natural resources so that production is sustained

14 promote regional co-operation in various spheres, especially with our neighbours, as well as contribute to greater international economic co-operation

The specific objectives of the Government with regard to the financial sector include:

1 examination of the whole monetary and financial sector with a view to establishing a suitable policy framework which will assist in the achievement of economic and social objectives

2 firmer influence on credit allocation to ensure equitable distribution of credit to priority areas of economic and social development

The need for restructuring was found necessary because the financial and banking sector is mostly foreign-owned. In the past it has tended to neglect serving the small businessmen and the non-commercial agricultural sector.

Zimbabwe has a firm belief that it is 'only within the framework of a planned economy that Government is better able to influence and purposefully direct development, create appropriate institutions, and establish the magnitude of investment and its allocation as well as the formation of a pattern of income and wealth, distribution in harmony with socialist 'objectives'.

2.5 SUMMARY AND CONCLUSIONS

Zimbabwe possesses a relatively sophisticated and well-developed economic system, which is predominantly owned by the private sector and in which there is a relatively high level of foreign control. But most of the characteristics of underdevelopment exist in Zimbabwe. The country remains a dual economy with a rural sector depending on peasant agriculture.

On the examination of the rate and composition of foreign trade, Zimbabwe's exports consist of mainly raw materials including tobacco (20 per cent of total exports), gold (11.2 per cent), ferro alloys (10.8 per cent) and cotton (8.2 per cent). On the import side, 84 per cent of the total imports are intermediate and capital goods. Imports range from light and heavy duty machinery to precision instruments. Intermediate goods include screws, bolts, plate glass and explosives. This situation does not provide a sound base for self-reliant and self-sustained economic development. The

high dependence of imports in turn depends on earnings of foreign exchange from exports.

The country also relies on exports of agricultural and mineral raw materials. Dependence on agricultural exports creates a problem in that the capacity of the agricultural sector to generate a surplus for exports decreases significantly during the years of drought, and this has affected agriculture significantly. Another problem of depending on agriculture and mining products comes about when fluctuations occur in prices on the world market and world economic recessions. This has been one of Zimbabwe's main problems of economic development because it depends heavily on foreign exchange earnings. Zimbabwe's dependence on international markets is also illustrated by the ratios of exports and imports to GDP which stood at 27 per cent and 21 per cent respectively in 1984.

CHAPTER 3

THE BANKING AND FINANCIAL SYSTEM IN ZIMBABWE

3.1 INTRODUCTION

Having outlined inter alia some of the broad features of the economic, financial and political system and aspirations in Zimbabwe, this chapter analyses the characteristics of the banking and financial system in Zimbabwe. The aim is to determine the level of financial development in Zimbabwe and the path taken in the process of that development. This analysis also provides some necessary data for the comparative studies in later chapters.

In this chapter an attempt is also made to assess the economic contribution the banks have made by analysing their mobilisation and allocation of financial resources. The banks' operating policies and attitudes are thus reviewed in this chapter. The evaluation of how banks have performed ex post is essential in order to devise policies that may help to guide banks ex ante in their operations.

Thus the analysis of the banking and financial sector should provide an appreciation of the importance of banks to Zimbabwe: the supervisory concern for safety and soundness stems from the important role that banks play in the economy. Explicit knowledge of the characteristics of the banking system will also be necessary when devising the most appropriate bank supervisory system for Zimbabwe. Any supervisory system recommended will have to be appropriate to the particular system of banking in Zimbabwe.

Table 3.1 The financial institutions

1 **The Reserve Bank of Zimbabwe**

2 **Registered institutions**

Commercial banks
Barclays Bank of Zimbabwe
Bank of Credit and Commerce Zimbabwe Limited
Grindlays Bank plc
Zimbabwe Banking Corporation Limited
The Standard Bank Limited

Accepting houses
Merchant Bank of Central Africa Limited
RAL Merchant Bank Limited
Standard Merchant Bank Zimbabwe Limited
Syfrets Merchant Bank Limited

Discount houses
BARD Discount House Limited
DCZ Discount Company of Zimbabwe Limited

Finance houses
Fincor Finance Corporation Limited
Grindlays Industrial and Commercial Finance Limited
Scotfin Limited
Standard Finance Limited
UDC Limited

3 **Other financial intermediaries**

Building societies
Beverly Building Society
Central Africa Building Society
Founders Building Society

International banks (representative offices)
Banque Internationale pour l'Afrique Occidentale (BIAO)
Citibank NA
The First National Bank of Boston
Druzena Beogradska Bank (BAnk of Yugoslavia)
Societe Generale de Surveillance

Table 3.1 (continued) The financial institutions

Export credit
Zimbabwe Credit Insurance Corporation

Trust companies
Barclays Bank International Executor and Trust Company
Grindlays Executor and Trust Company Limited
NBR Executor and Trust Company Limited
Sagit Trust Limited
Syfrels Trust and Executor Limited
Von Seidel Grindlays Trust Company Limited
Bulawayo Board of Executors and Trust Company Limited

Stock exchange
Member firms
Registered members
Non-broking members
Non-member institutions

Insurance companies
Direct insurers (59)
Professional re-insurers (8)
Insurance brokers (17)

Development institutions
Anglo-American Development Corporation
Edesa
Ipcorn
Agricultural Finance Corporation
Zimbabwe Development Bank
Industrial Development Corporation
Agricultural Marketing Authority

3.2 OVERVIEW OF THE FINANCIAL SYSTEM

The main financial institutions in Zimbabwe are shown in Table 3.1. The financial system is sophisticated considering the size of the economy, and it consists of a wide range of banking institutions, insurance companies, development institutions, stock exchange and trust companies. Table 3.2 shows that these financial institutions undertake a variety of functions in the economy.

3.2.1 The Reserve Bank of Zimbabwe

The Reserve Bank of Zimbabwe is at the apex of the financial system and performs the normal central banking functions. The bank issues notes and coin, and controls the country's foreign exchange reserves. In the performance of these functions, it also administers exchange control and is responsible for the marketing of the country's gold. The Bank acts as banker to the Government and to the banking system, and operates as lender of last resort. It also advises Government on monetary policy and implements these policies.

The Central Bank's role has increased since independence in 1980 due to the country joining international financial organisations like the IMF and the African Development Bank. The PTA (Preferential Trade Area) clearing facility arrangement, introduced in 1984, also provided an additional role for the Bank.

3.2.2 The commercial banks

All the banks in Zimbabwe are international in character with head offices overseas. The commercial banking sector is the largest financial subsector.

Table 3.2 Institutional services in financial markets

Commercial banks	Merchant banks	Discount houses
Advances/overdrafts	Acceptance credits	Treasury bills
Loan facilities	Commodity finance	Bankers acceptances
Bill collection and discounting services	Corporate finance	AMA bills and bonds
Business advice and intelligence	Deposits including NCDs	Government stock
Cash dispensers	Foreign exchange transactions	Municipal stock
Cheque cards	Import and export financing	ESC stock
Commodity finance	Local and foreign share transactions	Negotiable certificates of deposit
Corporate finance	Medium term loans	Consultancy in portfolios
Current accounts	Mortgage bond loans	
Drafts	New issues	
Drive-in banking	Operations on local and foreign capital markets	
Economic reviews	Portfolio management	
Exchange control/advice	Takeovers, mergers, reconstructions	
External loan facilities	Trade information	
Finance of imports and exports	Capital reconstruction	
Foreign exchange transactions	Documentary collections	
Guarantees	Economic surveys	
Investment advice	Exchange control advice	
Investments:	External loan facilities	
savings accounts	Investment advice	
short-term deposits		
fixed and notice deposits		
NCDs		
Letters of credit		
Mail and telegraphic transfers		
Mobile agencies		
Night safes and safe custody of valuables		
Overdraft insurance		
Stop orders		
Trade promotion		
Travellers cheques		
Travel insurance		

Table 3.2 (continued) Institutional services in financial markets

Finance houses	Building societies	Representative international banks	Export credit
Acceptance of deposits Block discounting deposits Hire purchase Lease hire Medium term loans Revolving credit loans Stocking facilities Lease-back facilities Factoring Import finance	Residential loans Commercial property finance Savings institutions	External loans Local representatives Regional operations Collection of payments Confirmation of letters of credit Regional links	Credit investigation Commercial risks Political risks Export contracts cover

Table 3.2 (continued) Institutional services in financial markets

Trust companies	Stock exchange	Development finance	Insurance	Other financial bodies
Administration of deceased estates Agents for foreign and local executors Appointment as administrators or trustees of private, public and charitable trusts Trustee debentures	Listings Broking issues Regulation Share transactions Portfolio advice Investment management Foreign purchases	Loans Venture capital Advisory services Merger negotiations Capital issues Share registration Equity holdings Lease-back	Life insurance Endowments Accident cover Broking Fire cover Motor insurance Personal risk Re-insurance Risk mangement Illness insurance Retirement annuities Group pensions	Auctioneers Estate agency Property management valuations Tax consultancy Data processing Legal services Management and accounting Auditing pension funds

In 1985 its assets comprised a 48.8 per cent of the total assets of the banking sector (Table 3.3) and 25.3 per cent of the total assets of the financial sector.

Barclays Bank is a wholly owned subsidiary of Barclays Bank plc of the United Kingdom. The bank is closely associated with the mining industry and it is the only commercial bank in Zimbabwe that can realise gold bullion. With its bullion and chemical analysis division laboratories in Harare and Bulawayo, Barclays is the only commercial bank that carries out gold and mining analysis.

Barclays marketing division, based in Harare, obtains for the manufacturer, importer and exporter confidential information on the financial standing of companies, firms or individuals in Zimbabwe and overseas. To assist in the development of infrastructure, Barclays formed a corporate finance division in Harare. Barclays has a close working relationship with a finance house.

Standard Chartered Bank Zimbabwe Limited is a wholly owned subsidiary of the Standard Chartered Bank plc of the United Kingdom. This is the first commercial bank to operate in Zimbabwe (in 1892). It is also the largest commercial bank in Zimbabwe with a network of more than 40 branches covering 23 towns and cities throughout the country. As an international bank and through Standard Chartered plc, Standard Bank provides connections to all major money and capital markets.

Zimbabwe Banking Corporation (Zimbank) is a wholly-owned Zimbabwean bank in which Government have a 61.8 per cent interest. The bank has 32 branches and agencies in thirteen centres. The bank has grown rapidly and has acquired a finance house (Scotfin), an

Table 3.3 Major operations of the banking institutions ($ million)

End of December	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1 Commercial banks										
Total deposits	573.4	596.0	616.3	672.2	854.5	1051.2	1265.2	1321.1	1512.0	1784.5
Loans and advances	348.3	365.6	358.9	325.9	388.4	616.6	759.8	832.4	858.1	1095.7
Total assets/liabilities	666.8	677.0	700.1	765.7	981.0	1227.2	1438.9	1500.8	1807.6	2177.9
(percentage of total)	41.5	40.8	38.7	38.0	40.5	45.4	45.1	45.2	46.5	48.8
2 Accepting houses										
Deposits	128.7	127.1	154.0	163.6	213.0	191.3	227.2	198.4	234.0	276.3
Bills of exchange	49.7	52.8	59.2	76.9	105.5	76.8	103.2	87.5	125.0	151.8
Loans and advances	53.9	54.5	60.7	59.8	61.2	87.7	145.6	135.1	134.7	151.8
Advances	155.5	158.2	190.4	222.6	220.4	328.4	329.7	419.0	429.7	474.9
Total assets/liabilities	202.3	193.4	218.7	255.2	313.5	264.8	345.8	305.2	353.8	407.0
(percentage of total)	12.6	11.7	12.1	12.7	12.9	9.8	10.8	9.2	9.1	9.1
3 Discount houses										
Money at call	71.1	68.2	84.0	73.2	91.5	100.2	92.9	93.1	153.5	102.4
Total assets/liabilities	78.1	76.3	92.3	82.2	101.3	110.2	104.6	131.1	168.0	140.2
(percentage of total)	4.9	4.6	5.1	4.1	4.2	4.1	3.3	3.9	4.3	3.1
4 Finance houses										
Deposits	103.1	94.2	86.8	83.7	109.8	155.7	146.4	170.5	179.7	204.5
Hire purchase agreements	35.2	37.5	41.2	44.7	75.7	106.7	112.3	126.1	144.1	156.5
total assets/liabilities	125.0	114.0	108.8	1078.5	136.2	184.8	176.8	202.1	217.7	245.9
(percentage of total)	7.8	6.9	6.0	5.3	5.6	6.8	5.5	6.1	5.6	5.5
5 The Post Office Savings Bank										
Total deposits	160.2	182.1	197.0	212.9	230.1	262.4	315.5	376.9	469.2	652.7
Total assets/liabilities	178.9	204.9	223.9	246.5	271.7	313.2	375.1	445.4	527.0	745.1
(percentage of total)	11.1	12.4	12.4	12.2	11.2	11.6	11.8	13.4	13.5	16.7
6 Building societies										
Total deposits	168.4	205.5	246.1	286.5	338.0	310.2	330.9	318.8	359.5	419.2
Share capital	183.5	185.2	194.2	209.4	224.8	258.6	271.7	285.6	237.9	224.5
Mortgage advances and loans	297.6	316.7	345.6	381.1	422.7	437.4	444.2	475.6	495.1	517.8
Total assets/liabilities	380.9	415.6	467.9	526.3	596.3	605.8	643.4	652.0	643.6	700.5
(Percentage of total)	23.7	25.1	25.9	26.1	24.6	22.4	20.2	19.6	16.5	15.7
7 Total assets and liabilities of the banking sector	1604.9	1657.4	1807.4	2017.1	2421.0	2703.1	3187.3	3323.8	3889.7	4460.2

Source: Quarterly Digest of Statistics, June 1987

accepting house (Syfrets) and other companies in the spheres of trusts and deceased estates, insurance broking and trade and freight services. Being wholly Zimbabwean controlled, it relies on a network of correspondent banks for its overseas connections. Among recent ventures, Zimbank has introduced off-shore commodity financing, particularly in tobacco and oil.

Grindlays Bank plc, which was previously linked to London, now has close links in the pacific basin: in September 1984 the Australia and New Zealand Banking Group acquired ownership of Grindlays Bank. The bank has eight branches in the main centres of the country. The bank concentrates on the larger deposit (wholesale) market, especially corporate business. Grindlays is the only bank which has not yet sought local registration.

The Bank of Credit and Commerce Zimbabwe Limited was established after independence in 1981. It has European and Arab origins, and it entered Zimbabwe in conjunction with the Zimbabwe Government who hold a 47 per cent interest.

Assets of commercial banks expanded at an average annual rate of almost 16 per cent between 1973 and 1982 (Table 3.4). This growth was in excess of the growth of the national product of 14 per cent and the money supply 15 per cent during the same period. Growth of assets accelerated sharply from 5.9 per cent between 1975 and 1979 to 18.7 per cent between 1979 and 1983 (Table 3.4).

3.2.3 The merchant banks (accepting houses)

Accepting houses were the first banking institutions set up in Zimbabwe after the establishment of the Reserve Bank in 1956. The four merchant banks' assets constituted 9.1 per cent of the total

assets of the banking sector in 1985 (Table 3.3). The merchant banks are authorised foreign exchange dealers and, together with the Reserve Bank and commercial banks, they form the country's foreign exchange market.

Table 3.4 Growth of total assets of commercial banks

Year	Total assets	Percentage increase
1970	272.9	
1971	299.0	9.6
1972	337.1	12.7
1973	403.0	19.5
1974	460.7	14.3
1975	608.6	32.1
1976	666.8	9.6
1977	677.0	1.5
1978	700.1	3.4
1979	765.7	9.4
1980	981.0	28.1
1981	1227.2	25.1
1982	1438.9	17.3
1983	1500.8	4.3
1984	1801.4	20.0

Source: Quarterly Economic and Statistical Review, June 1985, Reserve Bank of Zimbabwe

Merchant banks have experienced substantial growth in business over the period 1965 to 1985. Their assets have grown from $202.3 million in 1976 to $407.0 million in 1985. Although acceptances are their main line of business, they have taken a large amount of deposits (67.9 per cent of total liabilities in 1985). Share capital and reserves also increased during this period from $3.0 million in 1965 to $18.6 million in 1975 and $62.3 million in 1985 (Table 3.5).

Table 3.5 Assets and liabilities of accepting houses ($ million)

At the end of	Share capital and reserves	Deposits	Other liabilities	Total liabilities /Total assets	Balance with Reserve Bank	Money at call	Treasury bills	Bills of exchange	Loans and advances	Government securities	Other assets	Acceptances
1965	3.0	11.7	7.7	44.4	0.2	3.6	1.9	2.8	1.4	0.4	12.3	21.9
1966	3.4	17.5	5.3	41.3	0.4	4.5	8.2	0.3	2.5	0.9	9.4	15.1
1967	3.8	25.6	3.9	47.2	0.5	6.8	9.2	2.0	2.7	1.7	10.5	13.8
1968	4.2	20.9	7.8	52.5	3.1	4.2	3.3	0.2	5.4	2.1	14.6	19.5
1969	4.3	23.8	7.5	63.7	2.5	6.2	3.4	1.3	4.8	2.2	15.3	28.0
1970	4.6	28.7	6.0	39.3	1.1	7.2	4.0	3.0	6.2	2.2	15.6	28.6
1971	7.3	52.7	9.6	69.6	1.9	14.6	5.3	7.9	16.0	3.0	20.9	46.4
1972	8.5	78.2	22.1	108.8	2.8	10.5	6.3	12.2	18.9	6.2	51.9	53.9
1973	10.6	84.4	45.1	140.1	3.5	10.8	4.3	16.1	19.2	8.9	71.3	66.3
1974	11.7	111.2	57.9	180.8	4.5	15.1	2.4	28.4	29.7	5.7	95.0	112.3
1975	18.6	109.5	55.4	183.5	4.4	22.9	3.3	39.2	42.6	7.7	63.4	157.3
1976	21.5	128.7	52.1	202.3	4.7	15.2	4.6	49.7	53.9	9.9	64.3	155.5
1977	23.3	127.1	43.0	193.4	5.4	14.4	7.5	52.8	54.5	8.9	49.9	158.2
1978	26.5	154.0	38.0	218.7	5.9	31.8	7.3	59.2	60.7	9.4	44.4	190.4
1979	27.8	163.6	63.8	255.2	5.9	1.6	6.8	76.9	59.8	17.1	77.1	222.6
1980	31.3	213.0	69.2	313.5	7.4	18.8	6.9	105.6	61.2	28.2	85.4	220.4
1981	35.9	191.3	37.6	264.8	9.0	16.7	6.5	76.8	87.7	22.2	45.9	328.4
1982	40.9	227.2	77.7	345.8	11.6	16.6	6.0	103.2	145.6	15.0	47.8	329.7
1983	42.5	198.4	64.3	305.2	9.9	9.5	7.6	87.5	135.1	18.7	36.9	419.0
1984	48.5	234.0	71.3	353.8	11.4	6.8	6.4	125.0	134.7	20.6	48.9	429.7
1985	62.3	276.3	68.4	407.0	12.1	11.5	18.4	151.8	151.8	35.2	43.2	474.9

Sources: CSO Monthly Digest of Statistics, 1978, Harare
CSO Monthly Digest of Statistics, 1987, Harare

3.2.4 The discount houses

The discount houses act as intermediaries between the Reserve Bank and the financial sector. They are also involved in the investment field. They accept call money from banking and other institutions which they invest in Government securities, Treasury bills, acceptances, agricultural marekting authority bills and negotiable certificates of deposit.

Assets of the discount houses were 3.1 per cent of the total assets of the banking institutions in 1985. Assets and liabilities of discount houses have grown from $29.9 million in 1965 to $74.4 million in 1975 to $140.2 million in 1985, a fivefold increase. Most liabilities of discount houses are in the form of money at call. The houses remain an important source of finance for short term paper: for example, Treasury bills constituted 51.1 per cent of their total assets in 1984. Their role in the purchase of Government securities increased over the period, although after independence in 1980 there was a decline from $26.8 million in 1980 to $5.5 million in 1985 (Table 3.6).

3.2.5 The finance houses

The finance houses are primarily involved in financing hire purchase agreements. They receive time deposits in the form of negotiable certificates of deposit and fixed deposits. Their assets constituted 5.5 per cent of the total assets of the banking sector institutions and 3.5 per cent of the total assets of the financial sector at 1985 figures. Their assets grew from $125.0 million in 1976 to $245.9 million in 1985 (Table 3.7).

Table 3.6 Assets and liabilities of discount houses ($ million)

At the end of	Share capital and reserves	Money at call	Other liabilities	Total liabilities/ total assets	Treasury bills	Other bills	Government securities	Other assets
1965	1.0	28.5	0.4	29.9	14.2	12.2	3.5	0.1
1966	1.1	33.8	0.5	35.5	21.7	8.3	5.3	0.2
1967	1.2	38.3	0.6	40.2	26.9	5.9	7.2	0.1
1968	1.4	34.6	0.6	36.7	15.5	11.3	9.0	0.9
1969	1.6	41.4	0.7	43.6	12.8	14.0	15.9	0.9
1970	1.7	46.3	1.0	49.0	10.9	14.1	16.1	7.9
1971	1.9	55.5	1.5	58.9	11.5	21.9	17.4	8.1
1972	2.2	50.0	1.7	53.9	6.4	14.0	21.7	11.8
1973	2.7	67.1	2.5	72.3	15.5	20.1	18.6	18.6
1974	3.1	56.2	2.9	62.2	5.8	20.0	16.6	19.8
1975	3.5	68.3	2.6	74.4	5.5	36.0	15.8	17.1
1976	4.0	71.1	3.0	78.1	24.0	31.1	12.2	10.8
1977	4.7	68.2	3.4	76.3	15.9	29.1	21.4	9.9
1978	5.2	84.0	3.1	92.3	17.3	37.9	32.7	4.4
1979	5.7	73.2	3.3	82.2	23.1	34.2	22.9	2.0
1980	6.2	91.5	3.6	101.3	45.8	19.4	26.8	9.3
1981	6.4	100.2	3.6	110.2	24.9	76.4	0.9	8.0
1982	6.8	92.9	4.9	104.6	56.5	41.4	1.1	5.6
1983	7.5	93.1	30.5	131.1	32.8	73.5	-	24.8
1984	8.2	153.5	6.3	168.0	71.7	83.3	6.1	6.9
1985	9.0	102.4	28.8	140.2	58.9	67.0	5.5	8.8

Sources: CSO Monthly Digest of Statistics, 1978, Harare
CSO Quarterly Digest of Statistics, June 1987, Harare

Table 3.7 **Assets and liabilities of finance houses** ($ million)

At end of	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1965	3.6	7.4	1.8	2.0	14.8	-	3.3	0.2	-	0.6	7.0	-	2.6	-	-	1.1
1966	3.9	10.5	1.0	1.6	17.0	-	5.1	0.2	0.4	1.2	4.9	-	3.7	0.1	0.2	1.2
1967	4.2	13.8	1.0	2.0	21.0	-	7.3	-	0.4	0.7	4.5	-	5.0	0.4	1.0	1.7
1968	4.5	26.4	2.2	2.2	35.9	-	4.3	1.1	-	5.9	7.1	-	11.1	3.0	0.2	3.2
1969	5.5	66.0	2.0	2.0	77.1	2.0	11.6	3.3	4.5	11.6	8.1	10.0	14.3	5.2	4.5	2.0
1970	6.7	94.8	1.7	1.7	108.4	2.9	13.4	3.9	9.7	14.5	9.6	15.5	20.9	14.7	1.9	1.4
1971	7.5	79.6	3.1	3.1	97.2	2.4	8.9	4.3	0.7	8.1	18.7	22.5	16.9	11.9	1.4	1.4
1972	8.7	101.0	3.1	3.1	121.0	3.0	17.1	4.8	1.7	6.5	24.0	27.0	24.2	10.7	0.7	1.3
1973	12.6	117.4	3.0	3.0	142.8	3.6	22.8	4.0	0.1	2.8	25.0	30.2	28.8	12.3	1.2	2.0
1974	13.5	120.7	3.2	3.2	147.7	3.7	18.4	0.8	0.1	3.6	27.7	28.2	49.8	10.4	1.9	3.1
1975	14.0	113.4	2.8	2.8	140.1	3.5	7.3	6.7	0.1	3.8	29.0	26.6	43.9	8.4	7.1	3.6
1976	13.0	103.1	2.8	2.8	125.0	3.2	1.8	3.7	0.1	4.6	35.2	20.9	39.0	12.1	1.9	2.5
1977	11.6	94.2	1.8	1.8	114.0	3.0	1.4	2.5	1.1	4.6	37.5	17.1	31.0	11.4	1.9	2.5
1978	12.2	86.8	1.4	1.4	108.8	2.7	1.6	2.6	0.1	3.3	41.2	12.8	26.1	11.1	3.0	4.3
1979	12.2	83.7	1.6	1.6	107.5	2.6	1.1	0.5	0.1	4.1	44.7	10.4	22.6	13.5	2.0	5.9
1980	13.8	109.8	1.7	1.7	136.2	3.4	-	0.2	-	3.8	75.7	9.5	21.6	16.8	2.3	2.9
1981	15.3	155.7	2.8	2.8	184.8	6.6	0.7	5.1	0.2	11.5	106.7	6.9	17.9	22.3	2.8	4.1
1982	15.2	146.4	2.1	2.1	176.8	6.2	2.3	2.4	-	8.6	112.3	4.6	14.0	21.3	2.8	2.3
1983	17.9	170.5	2.5	2.5	202.1	6.9	1.4	2.6	-	14.5	126.1	3.3	18.3	23.1	1.5	4.4
1984	19.7	179.7	1.7	1.7	217.7	7.5	-	2.7	-	7.8	144.1	2.7	18.5	18.8	2.6	3.0
1985	24.2	204.5	1.1	1.1	245.9	8.3	0.7	4.5	-	7.7	152.5	2.7	29.4	33.3	2.3	4.5

Sources: CSO Monthly Digest of Statistics, 1978, Harare
CSO Monthly Digest of Statistics, 1987, Harare

Key:
1 Share capital and reserves
2 Time deposits
3 Loans advances and acceptances
4 Other liabilities
5 Total liabilities/Total assets
6 Balance with Reserve Bank
7 Balance with commercial banks
8 Money at call
9 Treasury bills
10 Bills and notes receivable
11 Hire purchase agreements
12 Leasing agreements
13 Advances
14 Government securities
15 Other investments
16 Other assets

The growth of share capital and reserves of finance houses increased from $3.6 million between 1965 and 1975, and started falling until 1980 when it picked up again. The leasing agreements followed the same trend, increasing from $10 million in 1969 to $30.2 million in 1973; they started declining to a level of $2.7 million in 1975 as a result of reduced consumer demand. Advances followed the same general trend.

3.2.6 The building societies

The building societies' main liabilities constitute share capital and savings deposits. The societies specialise in providing mortgage finance for existing buildings and new construction activities. They are also significant providers of funds to Government and local authorities through their holdings of short-dated stock. They play a major role in providing funds for the development of low-cost housing schemes.

Assets of the building societies constituted 15.7 per cent of total assets of the banking sector and 9.6 per cent of total assets of the financial sector in 1985. Assets increased from $380.9 million in 1976 to $700.5 million in 1985, rising more than sevenfold (Table 3.8). Share capital and reserves increased from $43.8 million in 1965 to $224.5 million in 1985. Most of the expansion in deposits over the period has been in the form of savings deposits (74.8 per cent of total deposits in 1985). As expected, a high proportion of assets is in the form of mortgage advances and loans (73.9 per cent of total assets in 1985).

Table 3.8 **Assets and liablities of building societies** ($ million)

	LIABILITIES							ASSETS				
At the end of	Share capital	Deposits Fixed	Saving	Accrued interest	Total	Other	Total liabilities /Total assets	Mortgage advances and loans	Gvt and Municipal stock	Bills	Demand deposits and cash	Other
1965	43.8	19.1	26.7	0.8	46.7	6.3	96.7	71.5	17.8	0.6	1.3	4.5
1966	47.2	20.2	32.3	0.9	53.5	5.9	106.7	74.7	23.5	2.4	1.1	5.1
1967	55.5	24.9	37.5	1.1	63.5	6.8	125.8	87.7	27.8	3.6	1.2	5.5
1968	65.9	28.0	41.7	1.3	70.9	8.5	145.3	108.7	28.0	1.6	2.4	4.6
1969	79.9	29.1	47.9	1.4	78.4	9.6	167.9	123.9	28.9	1.9	8.1	5.1
1970	94.5	30.4	56.7	1.7	88.8	10.5	193.8	147.9	29.8	1.8	1.8	12.5
1971	109.6	35.2	65.5	2.1	102.8	12.5	224.9	172.9	34.2	2.7	2.1	13.0
1972	123.8	27.1	79.3	2.4	118.8	15.7	258.3	198.3	38.6	1.8	2.1	17.5
1973	148.6	39.9	92.8	2.7	135.4	16.8	300.8	233.7	45.5	0.7	6.6	14.3
1974	171.6	42.7	105.3	3.0	151.0	19.2	341.8	271.7	47.0	0.1	3.9	19.1
1975	179.1	38.3	108.9	3.2	150.4	24.8	354.4	280.1	36.9	1.3	6.5	29.6
1976	183.5	37.7	127.2	3.5	168.4	29.0	380.9	297.6	39.6	5.7	3.4	34.5
1977	185.2	59.5	141.9	4.1	205.5	24.9	415.6	316.7	50.7	7.2	3.7	37.3
1978	194.2	78.6	162.8	4.7	246.1	27.6	467.9	345.6	76.6	7.3	10.0	28.5
1979	209.4	97.0	183.7	5.8	286.5	30.5	526.4	381.1	103.9	7.1	10.0	24.3
1980	224.8	110.0	221.3	6.7	338.0	33.5	596.3	422.7	129.5	4.8	11.3	28.0
1981	258.6	68.1	232.3	9.8	310.2	37.0	605.8	437.4	101.9	26.0	12.4	28.1
1982	271.7	53.5	262.9	14.5	330.9	40.8	643.4	444.2	91.3	53.6	20.5	33.8
1983	285.6	43.7	262.1	13.0	318.8	47.6	652.0	475.6	82.0	19.1	13.6	61.7
1984	237.9	63.6	280.4	15.5	359.5	46.2	643.6	495.1	73.8	26.0	8.4	40.3
1985	224.5	87.9	313.6	17.7	419.2	56.8	700.5	517.8	109.5	23.4	7.8	42.0

Sources: CSO Monthly Digest of Statistics, 1978, Harare
CSO Monthly Digest of Statistics, June 1987, Harare

3.2.7 The Post Office Savings Bank

The Post Office Savings Bank (POSB) accepts time and savings deposits and invests all its funds in Government securities. Thus it is the largest single holder of Government securities within the entire banking and financial system. The POSB's assets constituted 16.7 per cent of the total assets of the banking system and 10.8 per cent of the total assets of the financial sector in 1985. Asset growth was from $178.9 million in 1976 to $745 million in 1985 (Table 3.9).

Thus the POSB has been the fastest growing deposit-taking institution in Zimbabwe. Along with the POSB, the insurance companies and pension funds are the fastest growing segments of the financial sector.

3.2.8 Insurance companies and provident funds

Zimbabwe has a large number of insurance companies and pension funds. Insurance is controlled by the Insurance Act of 1966 and the pension and provident funds by the Act of 1976. Most of the insurance companies are foreign-owned, whilst the pension funds consist of private and quasi-government institutions. Although after independence there was a trend towards local incorporation of foreign controlled subsidiaries and the merging of the smaller insurance companies, control still remains largely foreign.

These institutions play an important role in the operation of the stock exchange and the capital market in general by channelling funds both to Government and the private sector. Insurance companies and pension funds play a significant role as a source of non-bank finance for central Government.

Table 3.9 **Assets and liabilities of The Post Office Savings Bank ($ million)**

At the end of	LIABILITIES Reserve fund accounts	Deposits Fixed	Deposits Savings	Interest	Other liabilities	Total liabilities /Total assets	ASSETS Local registered	London registered	Stocks Foreign Gvt	Municipalities	Public Corporations	Total	Other Assets
1965	1.6	-	46.1	1.5	-	49.2	37.1	-	9.6	-	-	46.7	2.6
1966	1.9	-	46.7	1.5	-	50.1	41.0	-	7.7	-	-	48.7	1.4
1967	2.5	-	52.1	1.6	-	56.2	45.1	-	7.2	-	-	52.3	3.9
1968	2.6	-	57.6	1.8	-	62.0	53.3	-	3.0	-	0.1	56.4	5.5
1969	3.1	-	62.0	2.0	-	67.1	58.0	-	2.3	-	0.2	60.5	6.4
1970	3.8	-	67.9	2.1	-	73.8	58.8	3.6	2.3	0.1	0.6	65.4	8.4
1971	5.0	-	75.5	2.4	-	82.9	62.2	2.5	2.3	0.5	1.0	68.5	14.4
1972	6.1	-	86.0	2.7	0.3	95.0	80.8	2.5	1.9	1.2	2.3	88.7	6.3
1973	7.4	-	96.9	3.0	0.1	107.4	87.0	2.5	1.8	1.6	3.2	96.1	11.3
1974	8.9	-	109.8	3.4	0.1	122.1	99.5	2.5	1.5	1.9	5.4	110.8	11.3
1975	11.0	31.8	110.2	4.1	-	157.1	122.0	1.9	1.1	2.8	5.4	133.2	23.9
1976	14.0	41.7	118.5	4.6	0.1	178.9	135.3	1.8	1.0	13.0	15.4	166.5	12.4
1977	17.6	50.2	131.9	5.2	-	204.9	149.8	1.7	1.0	17.5	15.4	185.4	19.5
1978	21.1	57.2	139.8	5.8	-	223.9	168.4	2.1	1.1	17.5	19.4	208.5	15.4
1979	27.5	65.3	147.6	6.1	-	246.5	190.4	2.3	1.2	17.5	18.9	230.3	16.2
1980	35.0	70.8	159.3	6.6	-	271.7	206.5	2.0	0.7	18.1	23.4	250.7	21.0
1981	42.8	82.9	179.5	7.9	0.1	313.2	237.2	1.3	0.2	18.3	31.2	288.2	25.0
1982	42.7	99.6	215.9	16.9	-	375.1	284.0	1.2	0.2	24.1	32.1	341.6	33.5
1983	45.4	120.0	256.9	23.1	-	445.4	342.5	1.0	0.3	24.7	25.1	393.7	51.7
1984	47.9	156.6	312.6	9.9	-	527.0	407.7	1.1	0.3	24.9	24.1	458.1	68.9
1985	50.5	250.3	402.4	41.9	-	745.1	536.4	1.4	0.3	25.2	39.8	603.1	142.0

Sources: CSO Monthly Digest of Statistics, 1978, Harare
CSO Monthly Digest of Statistics, 1987, Harare

The insurance companies' investment in Zimbabwe Government securities increased from $222.5 million in 1980 to $591.8 million in 1985. Total assets of insurance companies increased from $691.1 million in 1980 to $1389.1 million in 1984. The insurance companies' assets constituted 21.7 per cent of the total assets of the financial sector and the pension and provident funds' assets constituted 12.3 per cent of the total assets of the financial sector at the end of 1985.

3.2.9 The Zimbabwe stock exchange

The stock exchange started operations in Bulawayo in 1946 and opened a duplicate floor in Harare in 1951. The stock exchange deals in primary equity issues and in the secondary market for equities, as well as in Government stock.

The number of companies quoted on the stock exchange is around fifty five. This figure is lower than the number of quoted companies in 1963 when there were 98 listed companies. There has been a decline in membership since independence.

3.2.10 The development institutions

The development institutions in Zimbabwe comprise the Agricultural Finance Corporation, the Zimbabwe Development Bank, the Industrial Development Corporation, and the Agricultural Marketing Authority.

The Agricultural Finance Corporation (AFC) was set up in 1924 to meet long term (25 years) loan requirements of plantation enterprise. This was state funded in the form of long term fixed capital from parliamentary appropriations and redeemable loans.

Seasonal needs were met from temporary facilities obtained through Treasury bill sales supplemented by drawings on private banks.

Before independence the corporation used to serve the commercial farming sector, excluding the communal farmers, but it has now extended its services to the communal farmers in line with the Government policy of ensuring equitable distribution of credit to priority areas of economic and social development.

Thus the AFC has been the major pillar of finance for plantation agriculture, especially in terms of long term capital (54 per cent of liabilities in 1985). Long term loans go principally to the farmers' co-ops (98 per cent of total long term loans in 1985).

The AFC has also taken a more active role in short-term financing, especially after independence (1980). Short term loans increased from $61.5 million in 1980 to $148.6 million in 1985.

The Zimbabwe Development Bank was established in 1983 by Act of Parliament as a joint venture between the Government (majority shareholder with 51 per cent of the shares) and a number of international banks. The role of the development bank is to act as a central institution to mobilise both domestic and external financial resources for development. The Bank lends to both the public and private sectors in order to promote projects of national priority.

The Industrial Development Corporation was established in 1963 to assist in the development of industry by providing advice, guidance, and medium and long term finance to industrialists interested in expanding their operations or in launching new ventures with local and foreign partners.

The Agricultural Marketing Authority is not strictly a finance organisation, but it is a major user of the banking system's credit. The Agricultural Marketing Authority is responsible for the purchase, distribution, processing, marketing, import and export of all regulated agricultural products.

3.3 THE PATH OF FINANCIAL DEVELOPMENT

The path of financial development will be analysed in terms of the changes in financial structure. Financial structure is said to consist of the present stock of various financial assets, together with the pattern of financial institutions. Financial development is defined by Goldsmith (1969, p. 37) as the change in the financial structure over shorter or longer periods of time. Methods which can be used to analyse changes in the financial structure are to compare financial structure at different points in time and to analyse information on the flows of financial transactions over continuous periods of time.

The main tools of analysis of changes in financial structure often used are the ratios derived from national balance sheets, like the share of financial institutions in financial assets, the distribution of total financial assets among instruments and the distribution of financial institutions.

During the period between 1975 and 1984, the assets of financial institutions increased at an annual average rate of 11.9 per cent (Table 3.10). This growth was more than the growth rate of real GNP of 3.3 per cent during the same period.

Table 3.10 Growth of assets of financial institutions

Year end	Total assets	Growth rate (%)	Assets/GNP (%)
1975	1822.3		
1976	2000.2	9.8	93.3
1977	2078.6	3.9	94.9
1978	2186.1	5.2	96.6
1979	2499.5	14.2	98.0
1980	2967.5	18.7	94.3
1981	3509.9	18.3	87.4
1982	3946.8	12.4	81.3
1983	4471.6	13.3	79.6
1984	4999.1	11.8	77.9

Source: Quarterly Economic and Statistical Review, December 1985, Reserve Bank, Harare Statistical Yearbook (1985), CSO Harare

Note: Financial institutions included are: Reserve Bank, commercial banks, accepting houses, discount houses, finance houses, Post Office Savings Bank, building societies, Agricultural Finance Corporation

Total assets in absolute terms followed an upward trend during this period, but the annual growth rate was irregular. The growth rate was higher between 1979 and 1982 than in the periods between 1975 and 1978 and 1982-84. This correlates with the trend growth in GDP. It resulted mainly from poor economic performance during the review period and therefore low demand for credit. The high growth rate during the first two years of independence, for example, reflects the boom economic conditions that existed during that period with large increases in both deposits and loans and advances. By the end of 1982, the effects of drought and generally poor demand conditions adversely affected the financial sector. This also affected the sector's contribution to GDP, which fell from 17.6 per cent between 1980-82 to 8.5 per cent between 1983.84.

Since 1979 the annual growth rate of financial assets was above 10 per cent. It reached a peak of 18.7 per cent in 1980 and then fell to 11.8 per cent by 1984.

Table 3.10 also shows the ratios of financial assets to GNP which ranged between 77.9 per cent and 98 per cent. The high ratios follow the generally observed trend during the process of economic development (Gurley and Shaw, 1968; Goldsmith, 1969). This trend has been found to be common worldwide. It has been observed that, as a country develops, generally incomes per capita tends to rise and usually it experiences a more rapid growth in financial assets than in national wealth. This trend indicates the growing role of financial institutions in the economy.

Factors contributing to the increase in financial assets include the newly independent government's policy urging commercial banks to expand their services to rural sectors and the increase of bank branches to previously urban, underbanked areas. Also the growth of the financial system reflects the development of new financial institutions like the development bank and small enterprise development corporations.

Different types of financial institution did not grow at a uniform rate during the period 1975-85. The average annual growth rate for the Reserve Bank was 17.7 per cent, 11.5 per cent for commercial banks, 6.4 per cent for finance houses, 6.6 per cent for building societies, and 16.3 per cent for the Post Office Savings Bank. These trends are shown in Table 3.11.

However, considering the trend growth year-by-year, a declining rate of growth, especially of the banking institutions, is noticeable.

Table 3.11 Growth rates of assets of each financial institution 1975-85

(percentages per year)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985 June	1975-85 (av. annual growth rates
Reserve Bank of Zimbabwe	24.6	7.4	-11.5	47.4	9.4	54.6	5.1	45.9	-0.9	-5.3	17.7
Discount houses	4.9	-2.3	20.9	-10.9	23.2	8.8	-4.9	25.2	28.1	-21.2	7.2
Commercial banks	8.2	2.6	3.7	9.2	28.3	25.1	17.2	4.9	18.8	-2.6	11.5
Accepting houses	10.2	-4.4	13.0	16.7	22.8	-15.5	16.5	-1.4	15.9	4.0	7.8
Building societies	7.5	9.1	12.6	12.5	13.3	1.6	6.2	1.3	-1.3	2.7	6.6
Post Office Savings Bank	15.1	12.2	7.9	11.7	10.7	20.9	22.4	12.9	34.9	14.7	16.3
Finance Houses	-10.8	-8.8	-4.6	-1.2	26.7	35.7	-4.3	14.3	7.7	9.5	6.4
Total											

Source: Quarterly Economic and Statistical Review (various issues)

For example, the assets of the Reserve Bank grew at 24.6 per cent in 1976, declined to 9.4 per cent in 1980, and growth was -0.9 per cent in 1984 (Table 3.11).

Because financial institutions did not grow at a uniform rate (either cross-sectionally or year-by-year), changes in the distribution of assets among financial institutions also vary (Table 3.12). The share of the monetary banking sector in the assets of the financial institutions decreased from 44.2 per cent in 1980 to 42.2 per cent in 1985, a decrease of 2 per cent. The share of the non-bank sector increasd from 55.8 per cent in 1980 to 57.8 per cent in 1985, an increase of 2 per cent. These changes correspond to those commonly observed as a financial system develops. It has been found to be common that as economic development has progressed, the share of the banking sector in the assets of all financial institutions declines (Goldsmith, 1969, p. 46).

3.4 FINANCIAL DEEPENING IN THE ECONOMY

This section will appraise the performance of the commercial banking system. The role of commercial banks in mobilising financial resources for development is analysed by examining the extent of financial deepening in the economy. The role of bank finance in supporting different sectors will be analysed by examining the commercial banks' loans and advances.

3.4.1 Mobilisation of financial resources

The quantitative indicators used to evaluate the role of commercial banks in mobilising financial saving and in reducing

urban-rural financial dualism by increasing the availability of banking services beyond urban centres are:

1 the ratio of demand deposits of commercial banks to money supply

2 ratio of time and savings deposits to money supply

3 total commercial bank liabilities/assets to GNP

4 with regard to the spreading of banking services, the density criterion which relates bank offices to total population is used

Table 3.12 Distribution of financial sector assets (%)

	1980	1981	1982	1983	1984	1985	1980-85
Reserve Bank	12.3	13.2	13.3	15.2	16.7	13.8	14.1
Commercial banks	25.0	25.6	28.6	27.4	25.6	25.3	26.3
Merchant banks	7.7	6.8	6.7	5.9	5.6	5.3	6.3
Discount houses	3.0	2.7	2.1	2.7	2.4	1.9	2.5
Monetary banking sector	44.2	43.0	45.0	45.1	45.2	42.2	44.1
POSB	7.6	7.7	8.1	8.4	8.8	10.8	7.2
Building societies	15.9	15.5	13.1	12.2	10.5	9.6	12.8
Insurance companies	18.8	18.8	18.3	19.4	20.4	21.7	19.6
Pension and provident funds	10.3	10.6	11.5	11.3	11.6	12.3	11.3
Non-banking sector	55.8	57.0	55.0	54.9	54.8	57.8	55.9
Total (million)	3713.5	4394.0	5008.3	5725.1	6600.9	7055.6	

Source: Statistical Yearbook (1985), CSO Harare

The last ratio indicates how banks have penetrated through (beyond urban, high population-density cities and towns) to the rest of the population. It also has a bearing on competition in banking and educating people to use bank money.

Banking services in Zimbabwe were concentrated in cities only until recently (after independence) when there has been an introduction of mobile units to rural areas. Table 3.13 shows the concentration of banking services in largest towns. For example, advances to Harare residents were 83.5 per cent of the total advances made in 1987.

The number of commercial bank offices per 10,000 of the population was 0.2 (Table 3.14) which is very low. This indicates that banking services have not yet spread out to the people.

In order to assess the degree with which the commercial banks have been able to mobilise financial resources, one may examine the degree of financial intermediation that has occurred. The ratio of commercial banks' assets/liabilities to national output (GNP) is used (Table 3.15). Commercial banks' assets have been used since their assets constitute the great bulk of the assets of the financial sector (as has been established earlier) and thus it is hoped that the ratio calculated will be reasonably representative of the extent of financial intermediation. In addition to the financial intermediation ratio, the ratios of demand deposits to money supply, time and savings deposits to money supply are examined (Table 3.15).

Table 3.13 Concentration of bank deposits and advances in large cities

Name of City	Deposits ($ million) 1982	1983	1984	1985	1986	1987	Advances ($ million) 1982	1983	1984	1985	1986	1987
Zimbabwe (total)	524.2	534.8	638.6	714.8	780.9	843.6	725.3	825.8	853.5	970.5	1126.8	1293.1
Harare	323.2	325.2	402.3	460.1	482.3	547.4	592.3	681.1	708.3	819.6	962.9	1079.7
Bulawayo	81.3	94.7	100.6	96.2	100.3	120.3	40.9	52.3	54.5	55.1	55.3	69.5
Mutare	16.8	17.0	22.2	24.1	29.5	30.2	6.9	6.4	6.8	7.5	11.4	18.4
Gweru	17.6	13.3	16.6	17.1	15.9	19.4	6.0	6.1	5.0	6.3	8.4	8.9
Masuingo	10.9	10.9	14.4	18.4	17.2	16.3	3.2	4.6	5.5	7.0	3.5	3.9
Kadoha	7.4	6.0	7.2	11.6	8.3	9.6	2.8	4.5	5.0	4.5	5.6	6.7
Kwekwe	8.7	11.1	12.5	12.7	15.9	12.1	29.5	28.3	27.6	27.4	28.4	32.7

Source: Economics Division, Reserve Bank of Zimbabwe, December 1987

Table 3.14 Basic characteristics of commercial banks in 1985

Number of banks	5
Number of branches	120
Total population	5,546,000
Population per branch	62,883
Total deposits	3,434.6 million
Deposits per branch	$28.6 million
Index of bank density	$\frac{120 \times 10{,}000}{7{,}546{,}000} = 0.2$

Source: Reserve Bank of Zimbabwe Economic and Statistical Review, December 1986
Economics Divisions, December 1987
CSO Statistical Yearbook, 1987

Table 3.15 Financial development ratios (percentages)

Year	Total assets/ GNP	Demand deposits/ Money supply	Time and savings deposits to money supply
1975	31.2	48.5	71.2
1976	31.0	44.2	67.2
1977	31.5	41.2	68.7
1978	30.2	40.9	58.8
1979	27.6	41.7	52.1
1980	28.9	43.4	46.3
1981	28.4	43.8	58.0
1982	28.9	39.7	64.6
1983	25.5	37.9	65.5
1984	27.7	34.7	62.8

Sources: CSO Quarterly Digest of Statistics, June 1987
Reserve Bank of Zimbabwe Quarterly Economic and Statistical Review, March 1987

The ratio of total assets to GNP was around 30 per cent between 1975-78, 27.6 per cent in 1979, and 25.5 per cent in 1983. The annual average ratio (total assets/GNP) between 1975 and 1984 was 29.1 per cent. The ratio fluctuated from year to year. The ratios of the demand deposits and time and savings to money supply followed the same general trend. The annual average ratio for demand deposits to money supply was 41.6 per cent and for time and savings deposits was 61.5 per cent, showing an increase in term deposits relative to demand deposits. These high ratios suggest corresponding high levels of financial intermediation.

3.4.2 Credit allocation

Table 3.16 presents data on advances and deposits by sector. The table indicates that some sectors were in a net recipient position, for example, agriculture and forestry. This was the position throughout the period 1970-85. Manufacturing was in a similar position except for the years 1975 and 1980. Mining was in a net deficit position throughout the period 1970 to 1985. The public sector was in a net recipient position during this period while private persons, distribution and finance and insurance were in a position where their deposits exceeded the loans they received. By 1985 the public sector received more loans than the private sector. Bank lending to private individuals has not been on a net basis, deposits greatly exceeded advances. Also, advances to non-residents remained minor but their deposits (especially time accounts) contributed to a large portion of the stock of net surplus funds available for lending.

Table 3.16 Deposit liabilities and advances of the commercial banks ($ million)

	Agriculture and forestry	Mining and quarrying	Manu-facturing	Construc-tion	Finance insurance + real estate	Distribu-tion	Other private sector	Total private sector	Public sector	Private persons	Non-resi-dents	Timing and un-allocated	Grand total
						Demand deposits							
1970	6.5	5.1	15.5	4.4	19.7	17.0	19.5	87.7	12.0	34.4	7.1	-1.2	140.0
1971	7.1	7.8	16.3	4.4	23.9	21.4	20.3	101.2	15.3	40.1	5.4	-13.6	148.4
1972	9.4	6.0	21.0	5.5	37.9	25.1	22.0	126.9	16.7	43.0	4.9	-19.6	171.9
1973	11.2	3.0	22.3	5.8	35.6	27.2	23.3	128.4	15.9	45.2	5.0	-0.7	193.8
1974	14.9	3.2	26.3	7.6	42.7	29.8	27.9	154.4	17.5	55.4	5.5	-5.8	227.0
1975	14.3	4.4	32.1	6.7	33.0	29.0	27.3	146.8	15.0	55.1	7.9	-11.2	213.6
1976	18.3	8.1	29.3	6.4	30.3	32.6	27.3	152.3	13.7	64.2	6.4	-7.8	228.8
1977	17.2	6.5	31.1	5.8	28.5	33.9	34.8	157.8	16.6	65.3	8.1	-20.3	227.5
1978	19.2	8.2	33.6	5.4	27.3	43.1	35.9	172.7	18.9	71.7	8.7	-16.2	255.8
1979	19.3	8.1	37.7	6.0	35.3	46.3	42.8	195.5	22.8	76.2	13.2	-11.5	296.2
1980	21.6	11.5	59.1	11.5	52.7	72.1	63.6	292.1	28.4	101.7	14.1	-22.9	413.4
1981	29.6	14.5	65.6	13.1	58.9	76.8	64.8	323.3	52.1	103.4	16.6	-42.4	453.0
1982	32.5	10.4	63.2	14.1	57.0	83.4	70.6	331.2	77.5	98.2	16.1	-32.0	491.8
1983	24.6	13.5	71.1	13.4	69.8	74.0	69.2	335.6	85.0	96.1	16.5	-52.4	480.8
1984	29.5	14.8	87.9	13.5	93.5	88.2	91.4	418.8	83.3	106.3	25.8	-51.6	582.6
1985	39.3	15.7	107.9	15.5	67.6	98.5	99.6	444.1	117.8	122.9	25.2	-38.7	671.3
						Fixed and savings deposits							
1970	2.5	2.4	3.4	1.1	8.2	2.9	5.7	26.2	1.0	41.7	23.0	-0.5	91.4
1971	3.3	1.8	7.1	1.5	8.9	5.2	4.9	32.7	1.3	44.2	27.6	4.6	110.4
1972	3.2	1.3	5.2	1.1	14.9	4.9	4.9	35.5	1.1	45.3	33.9	6.9	122.7
1973	4.1	5.4	5.2	1.2	14.9	4.0	8.8	43.6	2.6	50.5	37.6	11.1	145.4
1974	4.5	4.9	5.9	1.8	8.9	6.3	7.2	39.5	4.3	61.5	44.6	13.5	163.4
1975	19.4	21.8	21.5	4.2	40.2	11.0	13.0	131.1	15.5	63.9	62.5	40.8	313.8
1976	15.0	43.7	23.1	3.7	55.0	20.8	14.2	175.5	6.3	76.0	61.9	28.3	348.0
1977	8.9	36.2	27.2	3.7	46.3	18.0	16.4	156.7	5.1	89.4	72.1	56.0	379.3
1978	8.8	20.8	36.8	2.5	46.5	25.5	17.9	158.8	7.0	94.1	67.6	40.3	367.8
1979	9.4	2.5	38.6	2.5	50.5	24.9	19.8	148.2	9.1	101.0	110.9	0.5	369.7
1980	10.1	9.4	38.4	2.3	53.1	26.1	25.1	164.5	23.5	122.9	109.0	11.2	441.1
1981	16.7	7.3	39.8	5.7	132.3	32.2	28.8	262.8	35.0	134.9	108.5	59.1	600.3
1982	24.0	15.9	67.9	14.9	126.6	46.1	42.2	337.7	57.1	182.8	120.5	101.9	800.0
1983	17.4	7.8	71.0	11.2	146.1	42.2	69.5	336.8	87.3	198.0	145.7	63.5	831.3
1984	24.8	6.8	104.8	18.3	147.3	63.1	86.1	433.6		196.9	164.0	77.9	975.7
1985	27.6	7.9	133.7	30.5	262.0	85.3	102.4	631.4	103.3	207.4	166.0	-34.4	1072.6

Table 3.16 Deposit liabilities and advances of the commercial banks ($ million)

	Agriculture and forestry	Mining and quarrying	Manu-facturing	Construc-tion	Finance insurance + real estate	Distribu-tion	Other private sector	Total private sector	Public sector	Private persons	Non-resi-dents	Timing and un-allocated	Grand total
						Advances							
1970	28.8	4.7	21.6	1.9	20.5	18.7	6.0	102.2	20.7	18.7	0.8	-2.4	144.8
1971	33.7	11.2	31.8	3.7	19.7	19.6	9.7	129.4	28.3	21.0	0.5	-5.3	173.9
1972	34.6	7.8	23.3	4.2	18.2	22.7	11.5	122.3	48.0	26.7	0.7	-5.5	192.2
1973	37.1	9.9	31.2	4.9	20.9	33.1	14.3	151.4	36.8	31.6	0.9	-9.1	211.6
1974	45.9	6.8	45.7	7.3	25.8	45.4	14.9	191.8	54.7	35.6	0.4	-2.7	279.8
1975	53.2	12.3	47.4	8.2	29.0	37.0	16.7	203.8	88.7	35.5	2.4	-8.5	338.9
1976	55.6	10.6	74.9	7.4	26.0	30.6	16.1	221.8	103.2	30.5	2.3	-8.9	348.3
1977	49.1	17.1	83.5	6.2	26.9	34.3	14.1	231.2	110.6	33.8	0.6	-10.6	365.6
1978	52.7	15.3	86.6	4.7	30.5	33.8	14.0	237.6	103.5	27.0	0.5	-9.7	358.9
1979	52.3	13.9	75.0	3.8	36.5	28.6	12.2	222.3	73.9	24.7	0.9	4.1	325.9
1980	57.3	14.8	67.5	3.3	35.8	28.2	12.9	219.8	125.3	27.8	1.2	14.3	388.4
1981	57.4	27.1	103.6	3.7	55.8	31.7	15.3	294.6	271.7	35.3	0.4	14.6	616.6
1982	80.9	46.2	110.2	2.5	60.0	54.8	20.6	375.2	316.5	32.5	0.4	90.5	815.4
1983	98.5	38.5	127.2	4.6	69.8	80.2	23.0	441.8	344.8	38.0	0.5	7.3	832.4
1984	107.1	28.7	100.6	4.5	57.6	79.0	27.8	405.3	388.5	54.4	4.8	5.1	858.1
1985	110.1	24.9	93.9	4.7	54.7	86.7	30.4	410.4	508.6	45.6	3.4	127.7	1095.7

Source: CSO Quarterly Digest of Statistics, June 1987, Harare

The banks' contribution of advances to agriculture remained sizeable (Table 3.17). However, the significance of bank finance in the context of total agrarian sector short-term finance has fallen recently as the AFC and other co-operatives and companies have met more short-term credit requirements as shown in Table 3.17.

Table 3.17 Short term credit extended to farmers

($ thousand)

At the end of	Commercial banks	AFC*	Agricultural co-operatives and other companies
1965	27,066	9,056	12,636
1966	23,726	10,222	10,926
1967	25,334	11,818	10,942
1968	25,112	11,546	13,550
1969	24,130	11,216	17,105
1970	28,186	12,159	19,235
1971	32,804	13,494	26,603
1972	33,678	14,824	24,238
1973	36,309	14,619	29,003
1974	45,109	18,535	34,415
1975	51,917	26,222	33,014
1976	54,227	30,819	36,338
1977	47,753	36,751	33,264
1978	51,553	33,770	36,218
1979	51,613	38,944	37,544
1980	55,961	61,461	46,653
1981	54,084	61,943	63,844
1982	79,469	84,239	65,003
1983	97,622	124,211	82,403
1984	106,022	142,952	84,187

Sources: CSO Monthly Digest of Statistics, 1978
CSO Quarterly Digest of Statistics, 1987

Note: * AFC refers to Agricultural Finance Corporation

The above analysis has indicated how other sectors have received more loans and advances than others. In aggregate, loans and advances have shown an upward trend (Table 3.18), increasing from $144.8 million in 1970 to $833.0 million in 1984. The years between 1980/81 (when boom economic conditions were experienced) saw the greatest increase from $388.4 million in 1980 to $616.6 million in 1981, almost doubling over a period of one year.

However, from the point of view of economic development, it is essential to ascertain whether these resources were directed to sectors of economic priority. As stated in the First Five Year National Development Plan (vol. 1, 1986, p. 3), development of productive sectors should enable the country to achieve growth in the economy.

The distribution of loans and advances to different sectors is shown in Table 3.19. The general trend is that the share of commercial banks' loans and advances to the productive sectors has been declining during the period between 1970 and 1984. The ratio of loans and advances to the production sectors was 39.4 per cent in 1970, fell to 35.7 per cent in 1975 and was 27.5 per cent by 1984. An examination of individual productive sectors indicates that the share of loans to agriculture (which remains the leading priority sector, according to the First Five Year Development Plan, vol. 1, 1986), fell from 19.9 per cent in 1970 to 10.4 per cent in 1984. The share to the manufacturing sector showed the same trend except for the years 1976 and 1979.

The share of loans and advances to sectors grouped as services, increased from 47.7 per cent in 1970 to 62.9 per cent in 1984. However, individual sectors in the category of services showed a

Table 3.18 Analysis of loans and advances 1970-1984 (end of year) (Z$ million)

(Amounts)

Sectors	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984 (Sept)
Agriculture and forestry	28.8	33.7	34.6	37.1	45.9	53.2	55.6	49.1	52.7	52.3	57.3	57.4	80.9	98.5	87.5
Manufacturing	21.6	31.8	23.3	31.2	45.7	47.4	74.9	83.5	86.6	75.0	67.5	103.6	110.2	127.2	105.8
Mining and quarrying	4.7	11.2	7.8	9.9	6.8	12.3	10.6	17.1	15.3	13.9	14.8	27.1	46.2	38.5	33.3
Construction	1.9	3.7	4.2	4.9	7.3	8.2	7.4	6.2	4.7	3.8	3.3	3.7	2.5	4.6	4.9
Total production	57.0	80.4	69.9	83.1	105.7	121.1	148.5	155.9	159.3	14.50	142.9	191.8	239.8	268.8	231.4
Distribution	18.7	19.6	22.7	33.1	45.4	37.0	30.6	34.3	33.8	28.6	28.2	31.7	54.8	80.2	81.0
Finance insurance and real estate	20.5	19.7	18.2	20.9	25.8	29.0	26.0	26.9	30.5	36.5	35.8	55.8	60.0	69.8	62.1
Total services	39.2	39.3	40.9	54.0	71.2	66.0	56.6	61.2	64.3	65.1	64.0	87.5	114.8	150.0	143.1
Government	20.7	28.3	48.0	36.8	54.7	88.7	103.2	110.6	103.5	73.9	125.3	271.7	316.5	344.8	383.1
Private persons	18.7	21.0	26.7	31.6	35.6	35.5	30.5	33.8	27.0	24.7	27.8	35.3	32.8	38.0	39.0
Non residents	0.8	0.5	0.7	0.9	0.4	2.4	2.3	0.6	0.5	0.9	1.2	0.4	0.4	0.5	6.7
Other	8.4	4.4	6.0	5.2	12.2	25.2	7.2	3.5	4.3	16.3	27.2	29.9	111.1	30.3	39.1
Total 'others' and services	69.1	73.9	99.6	95.4	128.7	180.8	169.2	175.4	165.8	152.3	217.3	393.1	520.8	483.4	530.0
Total others	48.6	54.2	81.4	74.5	102.9	151.8	143.2	148.5	135.3	115.8	181.5	337.3	460.8	413.6	467.9
Grand Total	144.8	173.9	192.2	211.6	279.8	338.9	348.3	365.6	358.9	325.9	388.4	616.6	815.4	832.4	842.4

Source: Quarterly Digest of Statistics, December 1986, CSO Harare

Table 3.19 Analysis of loans and advances 1970-1984 (Percentages)

Sectors	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Production															
Agriculture and forestry	19.9	19.4	18.0	17.5	16.4	15.7	15.96	13.4	14.7	16.0	14.8	9.3	9.9	11.8	10.4
Manufacturing	14.9	18.3	12.1	14.7	16.3	13.9	21.5	22.8	24.1	23.0	17.4	16.8	13.5	15.3	12.6
Mining and quarrying	3.2	6.4	4.1	4.7	2.4	3.6	3.0	4.7	4.3	4.3	3.8	4.4	5.7	4.6	3.95
Construction	1.3	21.3	2.2	2.3	2.6	2.4	2.1	1.7	1.3	1.2	0.8	0.6	0.3	0.5	0.6
Total production	39.4	46.2	36.4	39.3	37.8	35.7	42.6	42.6	44.4	44.5	36.8	31.1	29.4	32.3	27.5
Services															
Distribution	12.9	11.3	11.8	15.6	16.2	10.9	8.8	9.4	9.4	8.8	7.3	5.1	6.7	9.6	9.6
Finance insurance and real estate	14.2	11.3	9.5	9.9	9.2	8.6	7.5	7.4	8.5	11.2	9.2	9.0	7.4	8.4	7.4
Total services	27.1	22.6	21.3	25.5	25.4	19.5	16.3	16.7	17.9	19.97	16.5	14.2	14.1	18.0	16.98
Others															
Government	14.3	16.3	24.9	17.4	19.5	26.2	29.6	30.3	28.8	22.7	32.3	44.1	38.8	41.4	45.5
Private persons	12.9	12.1	13.8	14.9	12.7	10.5	8.8	9.2	7.5	7.6	7.2	5.7	4.0	4.6	4.6
Non residents	0.6	0.3	0.4	0.4	0.1	0.7	0.7	0.2	0.1	0.3	0.3	0.1	0.04	0.1	0.8
Other	5.8	2.5	3.1	2.5	4.4	7.4	2.1	0.95	1.2	5.0	7.0	4.8	13.6	3.6	4.6
Total 'others' and services	47.7	42.5	51.8	45.1	45.9	53.3	48.6	47.97	46.2	46.7	55.9	63.8	63.9	58.1	62.9
Total others	33.6	31.2	42.4	35.2	36.8	44.8	41.1	40.6	37.7	35.5	46.7	54.7	56.5	49.7	55.5
Grand Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Calculated from Table 3.18

declining trend in the share of loans and advances to the distribution sector from 12.9 per cent in 1970 to 9.6 per cent in 1984, and in finance, insurance and real estate the ratios fell from 14.2 per cent in 1970 to 7.4 per cent in 1984. The overall banks' performance in terms of loans and advances to productive sectors was not encouraging during the period under review.

3.5 CONCLUDING REMARKS

Although at independence Zimbabwe inherited a fully established financial system with all the main institutions found in a developed economy, it still retains a number of features of underdevelopment. About 80 per cent of the commercial banks are still foreign-owned with head offices abroad. Most of the banks are concentrated in cities (Table 3.20). Zimbabwe has a total of five commercial banks operating a total of 120 branches and 39 per cent of all bank branches are in the capital. All bank branches are in towns and about 53 per cent of the branches are in the three largest towns.

With a population of 7,546,000 and only 120 branches, the population per branch is 62,883. Deposits and advances are also concentrated in the largest cities where 90 per cent of these services are in the four largest cities. However, within urban areas, there has been some progress in extending services to the high density suburbs. The underdeveloped banking habit is also indicated by the per capita deposit of $179.2.

Overall, the financial sector has increased in importance in the economy as shown by the increase in its contribution to GDP and the overall growth in assets. This fact has been a major

contributor to the development of the nation's commercial and industrial sectors and the economy as a whole.

Table 3.20 Commercial bank branches December 1987

Town	BCCZ	Standard	Barclays	Zimbank	Grindlays	Total
Harare/ Norton	3	13	13	13	3	47
Bulawayo	1	3	4	3	1	12
Gweru	-	2	1	1	1	5
Mutare	1	1	1	1	1	5
Masuingo	-	1	1	1	-	3
Kwekwe	1	1	1	1	-	4
Kadoma/ Cheguta	-	2	1	2	-	5
Chinhoyi	-	1	1	1	-	3
Hwange	-	1	1	-	-	2
Bindura	-	1	1	-	-	2
Victoria Falls	-	1	1	1	-	3
Chipinge	-	1	1	-	-	2
Chivhu	-	1	-	-	-	1
Gwanda	-	1	1	-	-	2
Kariba	-	-	1	-	-	1
Mhangura	-	1	1	-	-	2
Marondera	-	1	1	1	-	3
Redcliffe	-	1	1	-	-	2
Umvukwes	-	1	1	-	-	2
Rusape	-	1	1	-	-	2
Shurugwe	-	1	1	-	-	2
Zuishavane	-	1	1	-	-	2
Triangle/ Chiredzi	-	1	2	-	-	3
Beitbridge	-	1	1	-	-	2
Gokwe	1	-	1	-	-	2
Karoi	-	1	1	-	-	2
Total	7	40	41	6	6	120

Source: Reserve Bank of Zimbabwe Economics Division, December 1987

CHAPTER 4

THE REGULATORY ENVIRONMENT IN ZIMBABWE

4.1 INTRODUCTION

The previous two chapters have analysed broadly the structure and development of the Zimbabwean economic and financial institutions. This chapter sets out to analyse the regulatory environment in Zimbabwe by examining the evolution of regulation, specifically the regulations pertaining to banks, together with a detailed analysis of monetary policy operations.

The first main section analyses the history of regulation in Zimbabwe. The objective is to shed light on how, when and why regulations have been imposed on the operations of the financial institutions. All other regulations pertaining to banks are reviewed in this section.

The next main section will be an analysis of monetary policy in Zimbabwe, how it is operated, its 'posture' (relatively tight or easy) and the effects it has apparently had on the economy. One of the main aims of the analysis of monetary policy changes and performance is to provide some insight into whether there has been any deliberate policy to increase competition in the banking sector. The kinds of effects that might result are whether the policies have helped to activate or liberalise economic activity in order to improve performance. Some policies might have been relaxed, giving the banks more competition. This could have increased banking risks, thereby creating a defined need for banking supervision in the accepted (modern) regulatory sense.

4.2 EVOLUTION OF REGULATION

There are distinct periods in the history of Zimbabwe which have shaped the financial system and its control. These periods can be identified as the Currency Board Era, the establishment of the Central Bank, the period after UDI and the post-Independence period.

The main stages in the historical development of the financial system were the establishment of a Currency Board in 1938, the Bank of Rhodesia and Nyasaland in 1956, the Reserve Bank of Rhodesia (1965) and the Reserve Bank of Zimbabwe in 1980.

Before 1938 no central monetary authority existed either in the form of a Currency Board or a Central Bank. Direct private bank and Government relationships dictated monetary conditions. The influence of head office policy in London was important, together with general British policy, as Zimbabwe was still a British colony. No policies were formulated internally.

The Southern Rhodesia Currency Board started operations in 1938 (under a 1938 Act). It became the Central Africa Currency Board in 1954 due to the formulation of the Federation of Rhodesia and Nyasaland (now known as Zimbabwe, Zambia and Malawi) in 1953.

The Currency Board was exclusively a currency issuing institution. It did not have powers to formulate and execute monetary policy in the country. Its legal obligation was to trade Zimbabwean currency at parities fixed with sterling (pound for pound). There was no effective authority concerned with the operations and development of the monetary and financial institutions during that period. There were only two expatriate banks (Standard Bank and Barclays Bank) operating as branches of overseas banks, and there was no local capital or money market.

Dissatisfaction with the currency broad system, and the desire to obtain greater local control over policy which was at the time dictated by the United Kingdom, gave rise to the pursuit of establishing a Central Bank in Zimbabwe.

A Central Bank became operational in Zimbabwe in 1956 (Reserve Bank Act 1956). The Central Bank was invested with a conventional battery of monetary instruments, like the power to apply variable minimum cash reserve requirements against commercial bank demand and time deposits, power to enforce a variable minimum liquid assets ratio, power to request information from and to make recommendations to banks as well as, under ministerial approval, issue directives for compliance and the obligation to fix minimum discount and rediscount rates. However the formal administration of certain legal requirements was left outside the Bank's jurisdiction and placed under the control of the Registrar of Banks and Financial Institutions.

This was the start of formal regulation of banks and the conduct of their affairs. After this, the establishment of (defined) banks required ministerial approval. Stricter controls followed in 1959. However, before UDI (1965) the activities of the foreign banks were dictated largely by external influences. With the onset of sanctions, the control of the Reserve Bank over the monetary system was strengthened.

4.2.1 Effectiveness of Reserve Bank control over the banking system

During the early years of the Reserve Bank, its effectiveness was limited due to the nature of the banking system whose activities

depended on policies formulated in London. The policies adopted by the expatriate banks were determined by their head offices. For example, if interest rates were raised in the United Kingdom, interest rates would be raised more or less equally by all the branches in the country without any special reference to the needs and circumstances of the local economy. Similarly, the total volume of business undertaken locally would be determined by decisions of the head offices and would have no necessary connection with the demand for credit or the state of output and employment in the economy.

During this period banks relied for funds on their head offices in London when they needed more money to make advances. This position whereby the institutions depended on external assistance tended to lessen the Reserve Bank's control. Initially, a local lender-of-last-resort had little relevance to the needs of these institutions. This was evident in 1960, when due to the decline in foreign exchange reserves, the commercial banks reacted by raising rates locally without consulting the Central Bank. The commercial banks defended their action by claiming that the level of local interest rates were below those prevailing in London and that banks were overlent: the increase in rates were intended to curb that trend.

This dispute led to the 'commercial banks revolt', where there was an open rift between the Central Bank and the commercial banks. What emerged was that the commercial banks were now aware that there was a need to consult the Central Bank for such important matters. The situation strengthened the Bank's control over the banks.

The situation in the country changed significantly when the minority Government declared UDI, resulting in the imposition of economic sanctions. UDI involved immediate financial sanctions, including the severance of ties with the City of London and the freezing of all foreign assets held in London. The Government took several measures to counteract the effect of sanctions. Reserve requirements were reduced to boost local lending capacity. In consequence of the freezing of assets and trade restrictions, the government repudiated interest charges and redemption obligations both in London and to the World Bank. Tight exchange control measures were introduced. Exchange control had been introduced in February 1961 because of the excessive outflow of capital due to political uncertainties in the country.

After UDI the payment of dividends and other regular remittances were blocked in order to protect the balance of payments, boost local liquidity and increase domestic income and employment levels. These measures also supported the banks' credit base, and enabled maintenance of a low and stable interest rate structure. Historical dependence on the London money market finance was brought to an end. The move strengthened the Central Bank's control over domestic banking.

4.3 OTHER REGULATIONS PERTAINING TO BANKS

The functions of the commercial banks, discount houses and merchant banks are regulated in terms of the Banking Act (1964) Chapter 188. These institutions are regulated and guided further by the Reserve Bank of Zimbabwe Act (1956) (Chapter 173). The Reserve Bank powers under this act have already been outlined in Chapter 3.

4.3.1 The Banking Act

The Banking Act (1964) (Chapter 188) covers regulations on registration, general requirements, basic financial requirements, limitations of transactions, statements and secrecy.

4.3.1.1 Registration

The section states that no person shall carry on banking business unless registered as a commercial bank, accepting house, discount house or financial institution. No person other than a company shall be registered in a class of banking business. The industry as a whole is controlled by a Registrar of Banks and Financial Institutions, who is appointed by the Minister of Finance.

4.3.1.2 General requirements

The general requirements are that a bank must have a principal office in Zimbabwe. It must appoint a chief executive in Zimbabwe and a chief accounting officer. The name of the banking business must be displayed at the entrance of each place of business and on all letters, advertisements or communication, and that it is a registered commercial bank.

4.3.1.3 Basic financial requirements

A bank is obliged to maintain, in Zimbabwe, a paid-up equity capital and unimpaired reserves of not less than one million Zimbabwean dollars. Certain percentages of profits must be transferred to reserves. A bank shall maintain a minimum holding of liquid assets not less than 40 per cent of the liabilities to the public. Minimum reserve balances must be held with the Reserve Bank

of Zimbabwe amounting to 10 per cent of demand deposits and 4 per cent of time deposits.

4.3.1.4 Limitations of transactions

The banks may not purchase or lend against their own shares. They are not allowed to do any wholesale or retail trade. Only a commercial bank or accepting house may accept deposits withdrawable by cheque. A bank may not employ persons on a commission basis. A bank is not allowed to deal in immovable property other than for operations of its own business or its staff.

4.3.1.5 Statements

Banks are required to submit returns at specified times to both the Registrar of Banks and Financial Institutions and to the Reserve Bank of Zimbabwe.

4.3.1.6 Secrecy

Except for the performance of his duties or the exercise of his function, or when lawfully required to do so by any court or under the provision of an enactment, the Registrar, an inspector, officer or employee of the Reserve Bank of Zimbabwe shall not disclose any information relating to the affairs of any person registered in a class of banking business which he has acquired in the performance of his duties or the exercise of his function.

4.3.2 The Exchange Control Act - chapter 173

Exchange control policy regulates the outflows of foreign exchange from Zimbabwe for numerous types of transactions which

include: the importation of goods, loan repayments, payment of company dividends, freight and insurance for imports, royalties and technical fees, post secondary education, and travel allowances. It strictly regulates the restriction of foreign exchange for the export of goods. There is a borrowing restriction for companies which have an externally held controlling shareholding. Offshore borrowings in excess of a twelve month repayment period are also subject to approval by the authorities. Offshore borrowing in terms of exchange control includes loans, export credit backed loans and acceptance credit finance.

4.4 MONETARY POLICY

Like many other developed and developing countries, the execution of monetary policy is one of the most important functions of the Reserve Bank. It performs this function in consultation with the Ministry of Finance, Economic Planning and Development.

4.4.1 Objectives of monetary policy

Economic growth with minimum inflation is the prevailing national objective (Reserve Bank of Zimbabwe, October 1987). Before independence and after UDI, Reserve Bank policy aimed generally at ensuring no alteration in currency values, which was achieved up to 1975 when the first adjustment in 25 years was made. Another of its policy aims was to keep nominal interest rates low in order to encourage investment and restrain inflation. Furthermore, the Bank favoured the growth in local money and capital markets, especially to compensate for constraints on external borrowing, e.g. from the

World Bank, the London money market and the eurodollar market. The bank also favoured a low debt-burden ratio.

Since independence, monetary policy in Zimbabwe has been conducted to minimise the monetary impact of the large public sector deficits and the cost of borrowing to Government. Monetary policy is aimed at the control of the money supply. Another way of putting it is to say that monetary policy aims at controlling money in circulation in the economy. Money comes into circulation when banks give loans to individuals and corporations in the economy, when the Reserve Bank give loans to Government and through changes in foreign assets.

Money supply in Zimbabwe includes money (M1) and near money (M2). M1 is defined as notes and coins in circulation, plus demand deposits with the monetary banking sector. The monetary banking sector includes the Reserve Bank, discount houses, commercial banks and accepting houses. M2 is defined as savings and fixed deposits with a maturity of less than 30 days held with commercial banks. Money supply figures are shown in Table 4.1.

Since money supply relates to funds readily available for spending, it is necessary to control the rate at which it grows because growth of money in excess of growth of the economy may be inflationary.

4.4.2 Instruments of monetary policy

The main weapons of monetary policy used in the early years of the Central Bank in Zimbabwe were the minimum cash reserve ratios, the liquid assets ratios and issuing of directives and recommendations to the commercial banks (moral suasion).

Table 4.1 Money supply

($ million)

	MONEY (M1)						NEAR MONEY (M2)			
		Demand Deposits with					Short term deposits with commercial banks			
	Notes and coin in circulation	Reserve Bank	Discount house	Commercial banks	Accepting houses	Total	Total M1	Savings	Fixed	Total	Total money and near money
1975	66.9	6.8	15.8	195.5	39.1	257.2	324.1	92.6	23.9	116.5	440.6
1976	79.2	3.6	21.9	202.1	45.2	272.8	352.0	120.5	45.5	166.0	518.0
1977	83.9	2.5	23.5	215.7	48.9	290.6	374.5	147.4	30.2	177.6	552.1
1978	95.2	3.0	21.3	249.1	46.4	319.8	415.0	169.7	41.1	210.8	625.9
1979	107.6	2.0	19.4	283.7	50.5	355.6	463.2	200.7	45.6	246.3	709.5
1980	157.2	2.8	26.9	394.8	51.1	475.6	632.8	260.5	58.6	319.1	951.9
1981	198.5	2.5	14.0	421.2	42.5	480.2	678.7	273.1	83.0	356.1	1034.8
1982	237.5	3.1	16.0	456.4	59.4	534.9	772.4	301.2	164.3	465.5	1237.9
1983	227.4	3.4	12.1	449.8	49.6	514.9	742.3	305.9	221.7	527.6	1269.9
1984	258.8	6.6	32.6	524.0	59.9	623.1	881.9	351.6	319.6	671.2	1553.1
1985	321.1	6.2	26.9	559.9	58.3	651.3	972.4	382.6	263.7	646.3	1618.7

Source: Reserve Bank of Zimbabwe, Quarterly Economic and Statistical Review, March 1987

The choice of monetary policy instruments was influenced mainly by the limitations imposed by the stage of development of the local money and capital markets on the ability of the Central Bank to exercise effective control via open market operations.

However, after the establishment of a Central Bank, the commercial banks became subject to minimum cash reserve requirements expressed as a percentage of the local deposit liabilities in the form of balances with Central Bank.

With the 1959 Banking Act, the commercial banks became subject to minimum holdings of specified liquid assets in relation to the liabilities to the public.

The Reserve Bank Amendment Act of 1959 gave the Central Bank the power to vary the minimum ratio of liquid assets which the banks and acceptance houses were to observe. However, it was not until July 1962 that commercial banks and acceptance houses became formally required to adhere to the minimum ratio.

Since independence, a variety of instruments have been used in the operation of monetary policy.

4.4.2.1 The bank rate

This relates to the minimum rate at which the Reserve Bank will discount first class bills. An increase in this rate leads to a higher interest rate since other rates move up and down with the Bank rate.

4.4.2.2 Reserve requirements and reserves

The banks are obliged to hold cash balances with the Reserve Bank as follows: 10 per cent of demand deposits (8 per cent before

1985) and 4 per cent of time deposits. They are also required to invest some of their funds in liquid assets depending on the amount of liabilities to the public. The current liquidity ratios requirements are: commercial banks 40 per cent (25 per cent in 1981), finance houses 20 per cent, accepting houses 40 per cent (20 per cent in 1981), building societies 15 per cent. Liquid assets held by monetary banks and other financial institutions are shown in Table 4.2. The liquidity ratios are shown in Table 4.3.

An increase in these ratios will reduce the bank's capacity to lend. However, effectiveness of the liquid asset ratio depends on whether the banks hold liquid assets in excess of the laid down minimum. If banks hold excess liquid assets then the control will be ineffective.

However, liquid assets do earn interest whilst the statutory reserves held by the Reserve Bank do not earn any interest.

4.4.2.3 Variable liquid asset ratios

An increase in the liquid assets that the banks must hold against their demand liabilities will reduce the banks' capacity to lend. This control also depends on whether the banks hold excess liquid assets than the laid down minimum.

4.4.2.4 Open market operations

This relates to the sale of securities by the Reserve Bank to the public. The public pay for these securities by writing cheques drawn on the commercial banks. The effect is to reduce the cash reserves of the banks, thereby reducing their capacity to lend.

Table 4.2 Analysis of liquid assets of monetary banks and other financial institutions

$ million

	Commercial banks			Accepting houses			Finance houses			Building societies		
	Liquid assets held	Pre-scribed liquid assets	Excess liquid assets	Liquid assets held	Pre-scribed liquid assets	Excess liquid assets	Liquid assets held	Pre-scribed liquid assets	Excess liquid assets	Liquid assets held	Pre-scribed liquid assets	Excess liquid assets
1975	207.5	130.8	76.7	68.8	22.5	46.3	25.3	16.7	8.6	61.2	50.5	10.7
1976	213.1	143.6	69.5	75.4	25.0	50.4	23.2	16.1	7.1	70.4	54.5	15.9
1977	219.2	157.4	61.8	66.6	27.1	39.5	22.0	14.9	7.1	79.8	59.3	20.5
1978	261.4	158.9	102.5	97.2	30.6	66.6	19.9	13.3	6.6	95.9	67.1	28.8
1979	351.3	231.6	119.7	99.8	46.8	53.0	19.3	13.2	6.1	125.2	101.3	23.9
1980	399.1	291.5	107.6	121.9	61.4	60.5	24.1	17.1	7.0	142.4	114.4	27.9
1981	452.7	381.5	71.2	98.3	57.0	41.3	41.9	32.8	9.1	131.0	114.1	16.9
1982	532.6	471.6	61.1	102.2	69.3	33.0	36.8	30.9	5.9	165.5	122.9	42.6
1983	511.6	409.3	102.3	89.3	61.4	27.9	43.9	34.6	9.3	142.7	122.6	20.1
1984	696.9	638.3	58.6	109.7	94.0	15.7	45.0	37.7	7.3	110.4	91.5	18.9
1985	786.7	680.6	106.1	118.0	97.6	20.4	52.2	41.4	10.8	143.8	99.6	44.2

Source: Reserve Bank of Zimbabwe Quarterly Economic and Statistical Review, March 1987

Table 4.3 Liquidity ratios of monetary banks and other financial institutions

$ million

	Commercial banks		Accepting houses		Finance houses		Building societies	
	Liabilities to the public	Liquid asset ratio	Liabilities to the public	Liquid asset ratio	Liabilities to the public	Liquid asset ratio	Liabilities to the public	Liquid asset ratio
1975	523.2	40	112.3	61	117.4	22	336.8	18
1976	574.5	37	125.2	60	115.2	20	363.1	19
1977	629.7	35	135.4	49	99.6	22	395.0	20
1978	635.7	41	153.2	63	88.9	22	447.5	21
1979	661.8	53	156.1	64	87.9	22	506.8	25
1980	832.9	48	204.8	60	114.0	21	572.1	25
1981	1089.9	42	190.0	52	164.2	26	570.6	23
1982	1347.4	40	230.9	44	154.5	24	614.6	27
1983	1338.1	37	198.0	44	173.8	25	612.9	23
1984	1595.9	44	235.0	47	188.4	24	609.8	18
1985	1701.4	46	243.9	48	206.8	25	664.1	22

Source: Reserve Bank of Zimbabwe Quarterly Economic and Statistical Review, March 1987

Further, this process pushes security prices down and interest rates up thus discouraging borrowers. This form of control has only been recently used in Zimbabwe.

4.4.2.5 Direct quantitative controls on lending

This form of control has not been used in Zimbabwe.

4.4.2.6 Moral suasion

The history of the monetary weapon of moral suasion in Zimbabwe goes back to the days even before a Central Bank was established. The weapon was especially suitable at that time and during the early days of the Central Bank, because of the nature of the financial structure. Also, the existence of a small number of banking institutions, whose local head offices are situated within walking distance from the main government departments and the Central Bank building, greatly facilitated the task of explaining the aims of official policy and securing the co-operation of the banking community in its implementation.

Even when the Central Bank was established, there was a preference for this form of control over the other monetary policy weapons. Various factors contributed to this situation. The immaturity of the money market imposed limitations on the use of other monetary policy instruments like open market operations. Also, during the early years of the establishment of the Central Bank, the commercial banks had ample reserves in the form of cash and head office balances which were sufficient to meet the maximum required reserves under the act. Because of this, the use of reserve ratios was ineffective since the banks could call on their

head offices for extra funds when necessary. Thus to attempt to fulfil their objectives of restricting the availability of credit they had to use moral suasion.

The Bank in the execution of its monetary policy tended to place most emphasis on securing the voluntary co-operation of the banks. This gave the Bank and the commercial banks a good relationship which exists even today.

4.4.3 Monetary policy changes since independence (1980)

The objectives of the colonial regime's monetary policies have already been outlined. Since independence (1980) the monetary policies have changed as shown by the increased number of instruments used and the changes in interest rates and guidelines to banks. This section reviews monetary policies from 1980 to 1985.

The objectives of monetary policy since independence have been the control of inflation, budget financing and balance of payments considerations.

The first years of independence were characterised by boom economic conditions. This created a high demand for credit in the economy. Also the public sector borrowed significantly to finance the central Government budget deficit. Total loans and advances by the monetary banking sector increased by 25 per cent. The result of these expansions is shown by the increase in money supply (Table 4.4). M1 increased by 11.6 per cent in 1979 and by 36.6 per cent in 1980. M2 increased by 13.4 per cent in 1979 and by 34.2 per cent in 1980.

Table 4.4 Change in money supply

per cent

	1979	1980	1981	1982	1983	1984	1985
Notes and coin in circulation	13.0	46.1	26.3	19.6	-4.3	13.8	24.1
Demand deposits	11.2	33.7	1.0	11.4	-3.7	21.0	4.5
Total money (M1)	11.6	36.6	7.3	13.8	-3.9	18.8	10.3
Total near money	16.8	29.6	11.6	30.7	13.3	27.2	-3.7
Total money and near money (M2)	13.4	34.2	8.7	19.6	2.6	22.3	4.2

As there was already high liquidity in the banking system, the monetary authorities felt it necessary to increase the liquid asset ratios for commercial banks (35 per cent) accepting houses (30 per cent) and building societies (20 per cent). In addition to this, the authorities introduced in 1980 a more stringent definition of acceptable liquid assets. The aim was to restrain liquidity and, therefore, the capacity of banks to create credit. The growth in money supply had to be restrained because of its implications for increasing inflation. The authorities reacted to the high monetary growth by increasing the bank rate (which had been stationary since the 1960s) in March 1981 from 4.5 per cent to 6 per cent. All other rates moved up in line with the bank rate.

In addition to increasing the bank rate, the authorities increased the statutory reserve balances from 6 per cent to 8 per cent for demand deposits and from 3 per cent to 4 per cent in respect of time deposits.

In September of the same year, 1981, the monetary authorities further increased the bank rate from 6 per cent to 9 per cent and the minimum lending rate to 13 per cent. The reason given for the increase was the deterioration of the balance of payments and the rising rate of inflation (Socioeconomic Review, 1980-85, p. 109).

In 1981 growth in the money supply was only 8.7 per cent as opposed to 34.2 per cent in 1980. This was despite high levels of borrowings from the banking sector by the Agricultural Marketing Authority to finance the bumper harvest, and the private sector borrowing to finance stockpiles of exports due to transport bottlenecks.

Because of the increase in interest rates there was an increase in time deposits, and thus long-term deposits with the monetary banking system increased by 39 per cent. This had an offsetting effect on credit expansion. Also, the increase in M2 was augmented by the increase in foreign assets ($38.8 million) and an increase in foreign borrowing to finance a drain on foreign reserves due to balance of payments problems.

In 1982 money supply increased again from 8.7 per cent in 1981 to 19.6 per cent in 1982. This was due to an increase in Government borrowing from the banking sector (which increased by 43 per cent from its 1981 level) to finance the increasing budget deficit. Also, the balance of payments continued to deteriorate due to poor export performance and inadequate inflows of development finance. Because of this there was heavy reliance on borrowing to finance balance of payments deficits and the running down of reserves.

In 1983 money supply decreased from 19.6 per cent in 1982 to 2.6 per cent in 1983. This was due to a reduction of Government borrowing from the banking sector. Because of concern about government borrowing from the banking sector, Government now resorted to borrowing from insurance companies and pension funds and other non-bank institutions. Total borrowing from the monetary banking sector fell by 9 per cent. Also, the decrease in money supply was due to the running down of reserves due to balance of payments problems and general withdrawals of deposits by private persons and sectors like agriculture because of the drought.

Monetary policy measures of 1984 stemmed mainly from exchange control measures of that year. Because of the deteriorating balance of payments and difficulty in meeting external payments, several measures were taken to curb outflows and increase external resources. Government purchased external securities held by residents and non-residents. Because of this it was now expected that money supply would increase due to the inflow of funds from external securities, and also through the increase in budget deficit which would make the Government increase borrowing from the banking sector. As a result, the Reserve Bank took several measures to restrict possible expansion in the money supply and to control inflationary pressures.

To this end the statutory liquid assets ratios for commercial and merchant banks were increased twice in May from 30 to 35 per cent and to 40 per cent in June. Also, the Reserve Bank issued non-rediscountable, non-liquid bills to curb any secondary credit creation.

Other monetary policy measures of that year included the increase in POSB savings and fixed deposit interest rates and increases in ceilings of deposit levels. This was done to attract more funds into the POSB and away from the monetary banks. In order not to disadvantage building societies because of high POSB savings interest rates, the Bank reduced the building societies statutory liquid assets ratio to 15 per cent and they allowed some flexibility on interest rates paid on short-term deposits with the societies.

However, in 1984 money supply increased from 2.6 per cent in 1983 to 22.3 per cent. This could be accounted for by the increase of Government borrowing from the banks in 1984 to finance its higher budget deficit. Also there was an increase in the private sector borrowing due to the start of the economic recovery and an improved agricultural harvest.

In 1985 money supply increased by only 4.2 per cent as compared to 22.5 per cent the previous year. This was despite the high financing needs of the Agricultural Marketing Authority. The slow growth in money supply could have been achieved through the Bank resorting to open market operations and discouraging non-essential and postponable expenditure. During the year, statutory reserve requirements were increased from 8 per cent to 10 per cent for both commercial and merchant banks.

4.4.4 Effects of monetary policies

4.4.4.1 General observations

The above analysis indicates that the Reserve Bank conducts monetary policy to achieve price stability through the regulation of money supply and bank credit. As in other LDCs, two sets of control

instruments are used in Zimbabwe: general credit controls and selective credit controls. The principal tool used is the variations in liquidity requirements as evidenced by the changes in liquidity ratios since independence. Before independence interest rates had been stagnant. Other major tools used are changes in reserve requirements, controls on some selected interest rates and moral suasion. The objective of monetary policy measures since independence has been to minimise the impact of the large public sector deficits (around 10 per cent of GDP) and the cost of borrowing to Government (as stated earlier).

In summary, monetary policy in Zimbabwe is conducted by the Reserve Bank by issuing and redeeming Reserve Bank bills to control liquidity, making loans and advances to Government and parastatals, establishing and varying liquidity and reserve requirements, directly setting interest rates including the bank rate (which has been changed twice since independence), and the minimum bank overdraft rate, deposit rates at building societies and certain deposit rates at finance houses.

The Reserve Bank tended to be in a reactive position with respect to Government and parastatal borrowing requirements because they had to ensure that the monetary banking sector was capable of absorbing the remaining Government debt and providing private sector credit. Because of these constraints the Bank had to make an effort to restrain overall credit expansion as shown by the increase from time to time of the liquidity and reserve requirements and issues of non-liquid Reserve Bank bills whenever it was thought that there was potential for excessive credit growth. For most of the review period, there has been substantial excess liquidity.

4.4.4.2. Effects on reserve requirements

It has been indicated that the principal tool used to conduct monetary policy has been variations in liquidity requirements for the various financial instruments. It has also been indicated that the Reserve Bank had been forced into a reactive position with respect to Government and parastatal borrowing requirements because the Bank must ensure that the monetary banking sector is capable of both absorbing the remaining Government debt and providing private sector credit. Subject to the constraints imposed by this situation, the monetary authorities have undertaken efforts to restrain overall credit expansion. During periods when the Bank has seen a potential for excessive credit growth, it has raised liquidity and reserve requirements, and has required banks to absorb issues of Reserve Bank bills, bills that are non-rediscountable, non-transferable and non-liquid.

Liquidity requirements can be satisfied by holdings of short and medium-term (up to six years) securities issued by government and parastatals such as the AMA, as well as some private paper made eligible by the Reserve Bank for rediscount - principally bankers acceptances, and call money with the discount houses. Approved asset requirements for liquidity purposes include government and parastatal stock (long-term bonds) and short-term bonds. Table 4.5 shows how various institutions can meet these requirements.

The cash reserve ratio is an instrument of credit control in the strict sense of the term since it affects the availability of reserves with the banking system and affects the total volume of credit. The liquidity ratio is more a means of allocating funds between the public and the private sector than an instrument of

credit control. Another rationale for using the liquidity ratio is to eliminate the possibility of banks offsetting the effect of increases in cash reserve requirements through the liquidation of government securities. Additionally, the liqudity ratio reduces the banks' discretionary power to provide credit to the private sector.

Table 4.5 Approved liquid assets

	1	2	3	4
Treasury bills	x			x
Reserve bank bils				
AMA bills	x			x
Bankers acceptances	x			
NCDs				
Government stock		x	x	x
ESC stock			x	x
Municipal stock		x	x	x
Government local registered bonds			x	x
AMA bonds			x	x
AFC bonds			x	x
Government development bonds			x	x
Corporate debentures				

Key:
1 Qualify as liquid assets in the hands of registered deposit receiving institutions
2 Qualify if they mature within six years as a liquid asset
3 Qualify as approved assets for life insurance companies and pension funds
4 Qualify as approved assets for short-term non-life insurance companies

The liquidity ratio is also used as an instrument for supporting the government market borrowing program and increasing resources for government expenditure purposes at a rate substantially lower than the rate charged by banks on advances to borrowers. The liquidity

ratio has increased parallel to the expansion of the public sector borrowing requirements. As indicated earlier the statutory liquidity ratio currently stands at 40 per cent and it affects credit creation by reducing the amount available for lending but does not have a deflationary impact on the money supply (unlike the cash reserve ratio).

Table 4.6 indicates that the bank holdings of government and other securities lie around the prescribed reserve requirements: that is, such investments are not in excess of the reserve requirements. This is due to the combined effect of better business opportunities for increased lending and the lower yield of government securities in comparison with the yield on loans. Besides the requirement for banks to invest in government securities during the slack period in business demand for advances, government securities provide the banks with an alternative asset to hold. The tendency is relatively high for banks' holdings of government securities to be lower than the prescribed statutory liquidity ratio limits; banks do not find it very profitable to invest a larger proportion of their resources in these assets. The difference between the commercial bank lending rates and yields on government securities is shown in Table 4.7.

The statutory liquidity requirements reallocate funds to the public sector at lower cost than the market rate of bank loans. The liquidity ratio requirement has several drawbacks. The liquidity and approved assets ratio requirement creates a preferential market for these instruments, allowing them to be sold at below market interest rates.

Table 4.6 Deployment of resources by commercial banks

	1980	1981	1982	1983	1984	1985	1986	1987
Loans/deposit ratios	45.4	58.7	60.1	63.4	55.3	54.9	60.8	54.1
Investment/deposit ratios	32.7	26.9	26.9	22.1	27.9	28.3	27.9	30.9

Source: Quarterly Economic and Statistical Review, September 1988

Note: * Investments include: government and numicipal securities, Agricultural Marketing Authority securities, Treasury securities, trade bills and net external liquid assts

Table 4.7 Comparison of government securities' yields and interest rates on bank loans

Year	Government securities yield (1)	Interest on bank loans (2)	Spread (2)-(1)
1980	4.05	7.50	3.45
1981	8.55	13.00	3.45
1982	8.55	13.00	4.45
1983	8.55	13.00	4.45
1984	8.90	13.00	4.1
1985	10.50	13.00	2.5
1986	10.50	13.00	2.5
1987	9.70	13.00	3.3

Source: Quarterly Economic and Statistical Review, September 1988

The large required holdings of these instruments 'crowd out' non-preferential instruments in the portfolio and raises interest rates on them. At the same time, deposit rates are depressed by the low returns on liquidity and reserve requirements. The statutory liquidity requirement reduces effectiveness and flexibility of the monetary authority in controlling credit expansion. This occurs because a high liquidity ratio requirement coupled with the need to meet credit requirements of the private sector limits the Reserve Bank's ability to use alternative instruments of credit control. Also, the statutory liquidity requirement, by creating a captive market for government securities yielding lower returns than alternative securities from the private sector, hinders the development of a truly competitive security market. Furthermore, it fails to give correct price signals to the government on the real cost of credit. Finally, since the returns to borrowers are lower than market rates, it is a kind of 'hidden tax'.

4.4.4.3 Effects of interest rate policy

Bank interest rates are not determined by competitive market forces, but are largely the result of Government policy decisions. Interest rates can perform three basic functions when allowed to find their equilibrium market levels through the interaction of the forces of supply and demand: contribute to mobilising an adequate level of savings by acting as a price which influences the choice between present and future consumption; act as efficient rationing devices for the allocation of scarce resources between alternative instruments; provide a social discount rate for saving and investment decisions. When most interest rates are administratively fixed by government, these basic functions are not fully performed. On the contrary, as in most LDCs, interest rate policy has been designed to achieve the following objectives: support activities of particular sectors through lending at preferential rates; finance the government's considerable borrowing requirements as cheaply as possible; provide a framework for macroeconomic stability; encourage the mobilisation of financial savings. Thus interest rates do not necessarily act as rationing devices for the allocation of scarce resources between alternative instruments. This role is performed by the government through other mechanisms such as priority sector lending and overall credit policy, which are generally less efficient for this purpose.

Interest rates are affected by government policy both directly and indirectly. As a major borrower, the government regulates the rate of interest on its securities, and as an important lender, determines the rate of interest on the loans and advances it gives directly and indirectly for a wide array of activities, institutions

and individuals, both in the public and private sectors. The government uses various policy instruments to control and regulate the structure of interest rates. The Reserve Bank of Zimbabwe regulates the rediscount rate (bank rate) and interest rates on bank deposits and bank credit and interest on government securities.

Table 4.8 indicates the structure of interest rates in Zimbabwe. The Bank prescribes lower and upper limits on the discount houses' interest rates except for the 3-months bankers acceptances and also the Treasury bill and Agricultural Marketing Authority bills. Interest rates in Zimbabwe are tied to the Bank rate.

The various features indicating interest rate behaviour can be visualised from the data in Table 4.8. First there is a trend towards increasing nominal interest rates. The upward trend reflects the scarcity of capital and higher inflation rates. On the contrary, real rates have shown wide fluctuations with negative deposit rates from 1980 to 1985 and negative lending rates from 1980 to 1983, and thereafter positive lending rates. In Zimbabwe, short-term deposit rates are lower than long-term rates, which is the expected pattern (Table 4.9). Higher interest has to be offered to savers in order to encourage them to lend at longer maturities. Furthermore, loan rates of interest are generally higher than rates on deposits. Also, deposit and lending rates are subjected to floors and ceilings. There is sometimes a significant spread between ceilings and minimum rates and between interest rates for preferred and non-preferred activities.

Table 4.8 Money market interest rates

	Bank rate	Treasury	Agricultural Marketing Authority	Call Money	3-month bankers acceptances	Negotiable certificates of deposit 3 months	6 months	12 months	24 months
1975	4.50	3.55	4.26	3.00-4.85	4.25	4.15-4.25	4.35-4.50	5.00-5.25	6.80-7.10
1976	4.50	3.60	4.26	3.00-4.00	4.25	4.10-4.35	4.25-4.60	4.65-5.15	5.50-5.75
1977	4.50	3.55	4.06	3.00-3.75	4.25	3.60-3.80	3.75-4.00	4.25-4.50	5.25-5.50
1978	4.50	3.61	3.95	3.00-3.75	4.25	3.60-3.90	4.00-4.25	4.40-4.60	5.00-5.25
1979	4.50	3.57	3.95	3.00-3.75	4.25	3.50-3.80	3.75-4.15	4.60-5.00	5.10-5.55
1980	4.50	3.30	3.75	2.80-3.50	4.00	3.80-4.50	4.05-4.70	4.60-5.20	5.20-6.10
1981	9.00	8.18	8.70	6.50-7.65	9.50	14.00-14.90	14.00-14.60	13.25-14.50	14.00-15.00
1982	9.00	8.29	8.75	7.75	8.90	9.50-11.00	9.75-10.50	10.00-10.75	10.50-11.25
1983	9.00	8.66	8.75	8.00-8.75	9.25	15.00	14.25-15.00	14.00-14.25	14.00-14.25
1984	9.00	8.40	8.75	8.10	8.75	9.50-9.75	9.60	-	-
1985	9.00	8.62	9.25	8.00	8.75	9.30-9.75	9.30-10.00	-	-

Source: Reserve Bank of Zimbabwe Quarterly Economic and Statistical Review, March 1987

Table 4.9 Commercial bank deposit rates

Year	3 months	12 months	24 months
1980	3.20 - 3.50	4.00 - 4.40	5.00 - 5.25
1981	8.25 - 14.50	8.25 - 12.00	9.25 - 12.50
1982	9.00 - 10.00	10.20 - 10.50	10.30 - 10.80
1983	10.00 - 14.75	10.85 - 14.20	10.50 - 14.20
1984	8.25 - 9.00	8.75 - 10.50	9.25 - 11.00
1985	8.25 - 9.00	8.75 - 10.50	9.25 - 10.75
1986	8.25 - 9.50	8.75 - 10.25	9.25 - 10.75
1987	8.25 - 9.30	8.75 - 10.25	9.25 - 10.25

Source: Quarterly Economic and Statistical Review, September 1988

Finally, government securities yield less than other rates due not only to their lower risk, but also to the existence of a captive market for government securities which constrains upward movement of interest rates on government approved securities.

The Reserve Bank of Zimbabwe also sets limits on lending rates (Table 4.10). For general lending purposes, banks operate within the confines of a minimum lending rate of 13 per cent.

There is general disagreement in the literature as to the influence of interest rates on the volume of savings and investment. However, evidence (see Fry, 1981) suggests that there is a positive relationship between savings and interest rates. However, the role of interest rates in the mobilisation of savings may be completely offset if nominal interest rates do not increase proportionately to inflation.

While commercial bank real lending rates became positive after 1983, deposits rates were consistently negative. Real deposit rates ranged from -4.97 per cent in 1980 to -2.38 per cent in 1985 (Table

Table 4.10 Lending rates

	Commercial banks	Accepting houses	Finance houses	Building societies	
	Minimum overdraft rate	Minimum rate on acceptance credits	Hire purchase rates	Mortgage advances Residential property	Commercial property
1975	7.50	6.00	10.00-17.54	7.25	8.00
1976	7.50	6.00	10.00-17.54	7.75	8.50
1977	7.50	6.25	10.00-17.54	7.75	8.50
1978	7.50	6.25	10.00-17.54	7.75	8.50
1979	7.50	6.25	10.00-17.54	7.75	8.50
1980	7.50	6.00	11.00-17.54	7.75	8.50
1981	13.00	11.25	17.00-23.00	13.25	14.25
1982	13.00	10.65	18.00-23.00	13.25	14.25
1983	13.00	11.00	20.00-23.00	13.25	14.25
1984	13.00	10.50	20.00-23.00	13.25	14.25
1985	13.00	10.75	20.00-23.00	13.25	14.25

Source: Reserve Bank of Zimbabwe Quarterly Economic and Statistical Review, March 1987

Table 4.11 Real deposit and lending rates

	1980		1981		1982		1983		1984		1985	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
Commercial banks												
Deposit	-5.65	-4.97	-9.85	-0.09	-8.58	-2.88	-6.38	-1.45	-3.75	-0.42	-4.16	-2.38
Lending	-1.53	-1.53	-6.20	-1.40	-4.57	-4.57	-2.95	-2.95	0.47	0.47	0.05	0.05
Merchant banks												
Deposit	-5.42	-4.74	-9.86	-0.31	-8.29	-3.09	-6.99	-1.02	-4.42	-0.86	-4.16	-3.14
Lending	-2.90	-2.68	-7.64	-2.27	-6.60	-5.84	-4.97	-4.54	-2.19	-1.53	-2.25	-2.16
Finance houses												
Deposit	-4.74	-3.59	-9.03	-4.77	-8.58	-7.84	-7.03	-6.27	-3.08	-2.97	-3.49	-0.39
Lending	0.76	7.67	-3.36	7.33	-0.35	3.87	3.06	6.50	6.70	9.36	6.25	8.90
POSB												
Deposit	-4.28	-4.28	-8.81	-5.32	-8.37	-8.37	-6.81	-6.81	-3.53	-2.19	-2.61	-2.61
Building societies												
Deposit	-4.05	-4.05	-8.60	-4.23	-7.32	-7.32	-5.74	-5.74	-2.42	-2.42	-2.83	-2.83
Mortgage advances												
Residential	-1.30	-1.30	-5.98	-1.18	-4.36	-4.36	-2.73	-2.73	0.69	0.69	0.27	0.27
Commercial	-0.61	-0.61	-5.32	0.13	3.51	-3.09	-1.88	-1.88	1.58	1.58	1.16	1.16

Source: Economics Division, Reserve Bank of Zimbabwe, Harare, 1986

4.11). This situation clearly does not encourage an increased mobilisation of savings. Table 4.12 shows resource mobilisation through the financial system. The data indicate mobilisation of financial resources through the financial system. The M1/GDP ratio stood at 18 per cent in 1980 but was 13 per cent by 1984.

Table 4.12 Ratios of monetary and financial aggregates to GDP

	1980	1981	1982	1983	1984
M1/GDP	0.18	0.15	0.15	0.12	0.13
M2/GDP	0.28	0.23	0.24	0.21	0.24
M3/GDP	0.59	0.57	0.57	0.50	0.50
Financial assets/GDP	1.08	0.98	0.95	0.95	1.01

Source: Quarterly Economic and Statistical Review (various issues)

Notes: 1 Includes fixed deposits with commercial banks with a maturity of less than 30 days
2 M3 = M2 plus deposit type liabilities of other financial intermediaries

Other indicators followed the same trend. The decline in the M1/GDP ratio was the most significant, reflecting the sharp rising opportunity cost of holding zero interest demand deposits during a period of rising nominal interest rates.

4.4.4.4 Effects on credit allocation

There are several methods by which Government influences credit allocation in Zimbabwe. The most important indirect influence that Government policies have over credit allocation is through the

foreign exchange control mechanism. Since scarcity of foreign exchange is a significant constraint on the investment plans of most firms, Government decisions regarding sectoral allocations of foreign exchange have important effects on the sectoral allocations of credit. Also, the high liquidity requirements at commercial banks and merchant banks can constrain their ability to make medium term loans, which could be used to finance productive equipment.

Other methods used to influence credit allocations include moral suasion to influence private sector credit allocation away from credit for the purchase of consumer goods and housing and towards credit for productive goods and communal agriculture. For example, interest rates on both deposits and mortgages are regulated, as are mortgage terms. As of mid-1985, the building societies were allowed to offer 9.75 per cent on twelve month fixed deposit compared to a tax free 10 per cent yield on POSB deposits.

As a result of low deposit rates at building societies, their deposits have fallen since 1980. Assets held by the building societies declined from 16 per cent of total financial assets in 1980 to 9.4 per cent by mid-1985. Thus building societies were deliberately made non-competitive with other financial institutions most notably the POSB because housing finance was not a top national priority.

The government and Reserve Bank also use moral suasion to satisfy various social and economic objectives. The government, for example, recently began to require that commercial banks service communal farmers in rural areas as part of an effort to promote commercial agriculture and rural development.

4.4.4.5 Market segmentation

Competitive pressures within the financial sector are limited, despite the sector's degree of development. The market for financial services is segmented on both the deposit taking and lending sides. At commercial banks, spreads between the private overdraft lending rate and the short term deposit rate average around five percentage points. Commercial banks through the Register of Co-operation meet on a regular basis to discuss appropriate overdraft rates, set fee schedules for off-balance sheet sources of income and establish guidelines regarding other bank practices. This takes place with the unofficial encouragement of the Reserve Bank.

Banks and insurance companies are prohibited from borrowing and lending outside their traditional areas without prior approval from the relevant Registrar. Private non-financial firms are not allowed to issue bonds to the public and must borrow from the financial institutions. All lending by insurance companies and pension funds is against collateral, generally up to 60 per cent of asset value.

4.4.4.6 Lending policies and practices

Almost all private sector lending by private financial institutions in Zimbabwe goes to well-established firms. Lending decisions are generally made on the basis of prior earnings, credit history and the strength of their balance sheet as a measure of creditworthiness. Banks, in particular, lend on a term basis for general expansion or against equipment purchases only to long standing clients. Private financial institutions undertake very little project-oriented financing. Competitive pressures

stimulating bankers to seek out new lending opportunities are not present. Also cartel-like arrangements which exist provide no incentive for firms to be aggressive lenders to new businesses. These lending policies and procedures tend to work against emergent businesses who have no connections with the financial community and offer little collateral.

Lending policies designed to promote a more competitive financial market could improve resource allocation and overall financial sector efficiency.

4.5 CONCLUDING OBSERVATIONS

The government policies, including tight exchange controls and expansionary fiscal policies, have had important effects on the structure, performance and direction of the financial sector. Strict foreign exchange controls place limits on the openness of the capital markets. Because of the large public debt, financial institutions through a growing number of monetary policies, have been called upon to buy public debt. All of these policies have resulted in a highly regulated financial system in which inter alia interest rates, though market-determined, are closely controlled; growth in government debt as a share of accumulated financial savings has been relatively high; and there have existed preferential interest rates for the public sector at the expense of higher interest rates for the private sector.

In all, there have been no indications of any relaxations in monetary policies enabling the increase in competition in the banking and financial system. Nevertheless, the continued deepening of the financial system and the government's growing

experience with financial sector regulation imply that it has advanced a long way along the learning curve towards a situation where more liberalising experiments may be feasible. The relatively advanced financial sector in Zimbabwe must increase this potential feasibility. The Banker (May 1990) has confirmed that Zimbabwe is due to undertake a structural adjustment and liberalisation programme.

CHAPTER 5

BANK SUPERVISION: A SURVEY OF PRACTICAL ISSUES AND SYSTEMS

5.1 INTRODUCTION

This chapter reviews the literature on the justification, rationale, instruments, forms and style of banking supervision. The aim is to draw attention to the main research issues of this study. The primary emphasis is on analysing the reasons why supervision of banks is desirable and the forms and style it may take. The present supervisory system in Zimbabwe is analysed within this context. In this regard, the chapter attempts to identify the important questions about the most appropriate supervisory instruments and forms which will be explored in the remaining part of the study.

Some writers use the words regulation and supervision interchangeably. Whilst it may not be necessary to argue against this convention when they both aim at the same objective, it may be wise for our purposes to distinguish them. Regulation can be defined as the formulation and issuance, either under banking law or administrative measures, of rules for the conduct of banking business. Supervision, on the other hand, is concerned specifically with ensuring the compliance by banks with prudential rules and assessing the prudential soundness of each individual bank. In assessing the soundness of each individual bank, supervision is concerned with areas like liquidity, capital adequacy, range of financial instruments available and operational efficiency.

Another distinction which needs to be made is between solvency regulation (for prudential purposes) and regulation for purposes of monetary policies. This study is concerned primarily with one

specific aspect of bank regulation, that for prudential purposes. Monetary policy is often aimed at the maintenance of an overall balance in the economy and facilitating the most appropriate allocation of resources to important economic sectors. In this context, monetary policy helps to ensure that the banking system makes its proper contribution towards the government's macroeconomic objectives.

Prudential controls, on the other hand, aim to ensure the financial health or safety of individual banks and the stability of the financial system as a whole. Some would refer to prudential controls as micro-economic controls because they are concerned with the individual bank. But these controls may also have macro implications since they are concerned with the risk in the system as a whole and, therefore, the overall stability of the system. Prudential controls are concerned with wider operational areas like the provision of more information, prevention of fraudulent dealings, encouragement of fair dealings and ensuring the safety and soundness of banks, although some of these may come under the generic heading of conduct of business rules.

5.2 CONCERN WITH SUPERVISION

Increased risks in banking, banking crises and failures are among the factors that have stimulated concern about the supervision of banks in both developed and some developing countries. Factors which have brought about increased risks include high inflation rates, more volatile capital flows, marked exchange rate movements, internationalisation of banks, structural changes and intense

competitive pressures associated with structural deregulation (liberalisation) policies. Evidence showing that these banking problems increased the need for supervision is found in countries like the United Kingdom. The UK banking problems include the secondary banking crisis of 1973/74 and the collapse of Johnson Matthey Bankers (JMB) in 1984. The UK Banking Act of 1979 (formalising supervision) was undoubtedly influenced by the events of the secondary crisis. The rescue of Johnson Matthey Bankers in 1984 'necessitated a rethink of the adequacy of regulation and supervision. The authorities responded to the event by providing amendments to the supervisory system' (Hall, 1985, p. 12). These banking problems and failures alerted Zimbabwe to the potential importance of banking supervision. In order not to be caught unawares, Zimbabwe implemented prudential supervision of banks in March 1985.

Some of the banking problems cited in the literature as stimulants to improved supervision include: bad banking practices, fraud, embezzlement and rising inflation. Among bad banking practices are reliance on short-term deposits from other financial institutions and investing such funds in either longer term loans or in speculative ventures. Lending concentrated to one industry, which may be linked to banks in common ownership, is risky if that industry encounters problems and fails to repay its loans. The secondary banking crisis in the United Kingdom was characterised by similar problems to these.

Structural changes can also increase risk in banking. The competition and credit control (CCC) measures in 1971 in the United Kingdom, designed to increase competition, are an example. Revell

(1979) has suggested that a high degree of competition may be associated with a high degree of risk in banking. As a result, in order to prevent institutions indulging in unsound banking practices, supervision becomes necessary to ensure the safety of these institutions.

It is apparent that concern with supervision arises in an important way from the many risks in banking. These risks have been of great concern to both bank management and regulators. Banking business itself involves taking risks. The problem becomes that of identifying and measuring risks. Thus, a first essential step in effective supervision is to identify the risks faced by banks. This is not always easy when rates of financial innovation are high. But identification is the first stage in effective risk analysis. The latter is an essential part of supervision because the authorities need to be able to identify potentially problem (high risk) banks.

5.3 DEBATE ON THE OPTIMAL QUANTITY OF REGULATION

At the same time that supervision is being increased worldwide, some are increasingly questioning the rationale for supervision. As Llewellyn (1986, p. 2) has pointed out, '... in many countries, and across the broad spectrum of economic activity, the role of regulation is being questioned'. Some feel that regulation may be inefficient (at least some forms) or even counterproductive and anticompetitive in nature. Regulation is sometimes said to impose costs which may be greater than the benefits.

Regulation can be redundant to the extent that it prescribes behaviour that the regulated would choose anyway, thus wasting supervisory resources. Supervision may sometimes increase risk. For

example, by requiring high capital, banks may take on more risky ventures in order to maintain their profitability. In this regard regulation can change the behaviour of bankers towards undesirable (less prudential) positions. Regulatory requirements may also increase the cost of providing intermediation services. This may be due to the increased costs of complying with regulatory requirements: for example, providing more information to the authorities.

Restrictions on branching (as in the United States) and on the range of allowable business reduce banks' ability to diversify. Also, some regulations which weaken the banks' competitive position can create inefficiency because this might divert business to institutions who may not be as efficient as the (unregulated) banks. It is not surprising that because of the costs and disadvantages of some regulations, the current campaign, especially in the United States, is concerned with the deregulation of banks. Deregulation is advocated because it creates a more competitive environment which is said to improve the allocation of savings and investment. However, fears of the apparent resultant instability are simultaneously strengthening supervisory re-regulation.

Some think that, because of the burden of regulations, bankers may be induced to innovate in such a way as to circumvent the regulations. The increase in off balance sheet (OBS) activities may be seen as a result of the increased supervisory requirements in this case. However, according to Onado (1982), '... some of these innovations improve the efficiency of the financial system'. For example, in the United States innovations induced by regulation contributed to the diffusion of new financial instruments, to the

efficiency of the money market, and in many respects reduced the segmentation of the credit market. In this case, regulation may not be an obstacle but instead may be a way to foster efficiency. Thus the main concern in the analysis of supervision in our case is to determine how supervision may foster efficiency. In the final analysis the question is, which grid of instruments and kinds of regulations can best meet supervisory objectives. In this regard, it is a question of balancing the costs and benefits of alternative approaches to objectives of regulation.

In the literature there are two schools of thought on the subject of regulation. Some advocate for less regulation while others propose different regulation which is said to adapt to changing circumstances and today's realities. Edwards (1979, p. 104), for example, advocates the dismantling of all controls except for balance sheet controls (especially the liquidity and equity capital requirements). Some economists who advocate less regulation feel that a solvency crisis is a kind of rare accident which should not cause concern because it will always pass. These economists feel that the primary effect of regulation is to weaken and distort competition.

The other school of thought believes that regulation is necessary. For example, Revell (1979) suggested that '... a competitive financial system requires close supervision by the authorities'. He explained this by giving an example of the CCC measures of 1971 in the United Kingdom which were designed to increase competition in the system. This was followed by bad banking practices which led to the failure of many banks.

Onado (1982), supporting the need for regulation stated that 'when trying to compete, banks can accept higher and higher risks and this would tend to weaken their screening of credit demands'. He goes on to say that such a situation is likely when the banks' objective function is not the maximisation of the growth rate. In this case banks might be willing to accept higher risk or to increase the overhead costs (e.g. for branches) creating rigidities in the profit and loss account and in the expected flow of funds. Thus, a non-regulated competitive financial system could lead to greater instability.

Thus there seems to be an agreement that at least some regulation is necessary. As Maisel (1981, p. 5) has stated, 'the need for some regulation is widely recognised. Without regulation an undue percentage of financial institutions are likely to take excessive risks'. The problem is the amount and kind of regulation that best matches particular supervisory objectives.

5.4 THEORIES, RATIONALES AND INSTRUMENTS OF REGULATION AND SUPERVISION

5.4.1 Theories and rationales of supervision

5.4.1.1 The public interest theory

The public interest theory of regulation relates to consumer interests. The theory states that regulation is supplied due to the consumers' demand for it in response to some inequitable or inefficient market practice. Examples of such market inefficiencies include natural monopoly or where externalities are present. According to this theory, government will intervene if the above market failure exists in order to correct them. Regulation in

this sense may become a corrective measure and thus may help reduce costs associated with the market failure.

Whilst the public interest hypothesis is one of the main justifications for regulation, some criticisms have been levelled at it. One criticism is that regulation is sometimes undertaken to meet some other objectives rather than the public interest. Another problem is that the theory seems to assume that regulation is costless. Also, the theory lacks a clear method by which it can be translated into legislative action.

5.4.1.2 The capture theory

The capture theory of regulation asserts that regulation is acquired by the industry and designed and operated primarily for its benefit. One criticism levelled at this theory is that it does not seem to recognise the fact that some customer groups benefit from regulation. The main thrust of the capture (sometimes labelled producer protection) theory is that the regulatees benefit from regulation in that the form of regulation will develop towards what the regulated demand.

5.4.1.3 The new economic theory

Although there is not yet a general, testable theory of regulation, there has been several attempts to formulate an economic theory of regulation. Distinguished contributors to this end include Stigler (1978), Posner (1974) and Peltzman (1976).

Stigler's (1978) formulation of the theory of regulation used economic analysis based on demand and supply reasoning. Stigler's theory is now known as the new economic theory of regulation.

According to this new economic theory of regulation: 'The central tasks of the theory of regulation are to explain who will receive the benefits or burdens of regulation, what form regulation will take, and the effects of regulation upon the allocation of resources' (Stigler, 1978, p. 3).

This new theory asserts that regulation is supplied by the government in order to gain more political support. Also, those who demand regulation are small groups seeking to increase their wealth. However, indirect benefits result from regulation such as, restricted entry, price legislation and subsidies. Thus it can be said that those who provide regulation aim to satisfy their self interest but in a rational way.

5.4.1.4 Rationale for supervision

The last section reviewed the theories of regulation, and it was suggested that such theories attempt to explain why the monetary authorities intervene in the banking markets. The theories of regulation also try to explain who benefits or losses from the resultant regulation. These theories suggested that the necessity of prudential regulation is assessed in terms of the requirements of consumer protection and financial stability.

The ultimate aim of the regulators is to avoid bank failures: that is, banks are guided so that they do not adopt financing structures which are very risky. Benefits seeming to justify prudential regulation include: the benefits of improved allocative efficiency, due to investor confidence and the improvement in market informational flows, and financial stability which is seen as a pre-requisite of economic growth (Hall, 1985, p. 2).

Regulators thus have the task of ensuring that institutions remain ultimately sound and solvent. In the execution of their task, however, the authorities should aim to strike a balance between soundness and competition. In this regard, regulators should be aware that sometimes regulations to ensure safety and soundness may conflict with those aimed at promoting competition.

Considering the importance of the banking system and that a threat to the system may disrupt the whole economy in the exchange of goods and services, the regulators' main operational objective is that of protecting depositors in order to avoid losses in confidence. The task of the regulators is thus to reduce the probability of financial crisis by ensuring that each institution is prudently run.

Various instruments are used by regulators in their assessment of the soundness of institutions. In order to understand why certain instruments are used, it is essential to analyse the nature of risks faced by these institutions, of which these instruments are designed to control or eliminate.

5.4.1.5 Nature of banking risks

In order to appreciate how risks in banking can occur, Figure 5.1 will be useful in analysing the characteristics of bank behaviour which can expose depositors' funds at risk.

Assets are divided into earning assets and reserves while the liabilities side of the balance sheet comprise deposits and shareholders' equity. Off the balance sheet are contingent liabilities which can also create risks.

Figure 5.1 A bank's balance sheet

Assets	Liabilities
Earning assets	Deposits
Reserves	Shareholder equity

Contingent liabilities	

Our concern is thus to analyse whether bankers can structure their balance sheets in such a way that the probability of them not being able to repay their depositors is low. The above balance sheet will help indicate how risks can occur. Two forms of risks arise due to the type of earning assets chosen by the bank. One type of risk is credit risk, that is, the inability of the borrower to pay the bank; another type of risk is the variability in the market price of those assets at some expected selling date.

Another type of risk can arise as a result of the composition of the asset portfolio between reserves and earning assets. If the bank holds a low proportion of reserves to earning assets and there is a large withdrawal of funds by depositors, this might lead to liquidation costs if the bank has to sell assets unexpectedly.

A third type of risk arises due to the banks 'gearing', the proportion of deposits to equity. The lower the ratio the more the likelihood that depositors' obligations will be met. The fourth kind of risk arises from the holdings of off-balance sheet assets. However the measure of this type of risk is still in its infancy.

Finally, the increase in operating costs can lead to a drain in the bank's resources and thus can affect the bank's ability to honour deposit obligations.

Thus the above discussion indicates that banks can generate risk if they give loans to high risk customers, mismatch the currency denominations of their assets and liabilities, undertake extensive maturity mismatching (holding a low volume of liquid reserves) and if their capital structure is such that risks are passed on to depositors rather than them being borne by equity holders.

Given the potential for banks to adopt risky portfolios and having capital structures which would involve risk of insolvency and depositor loss, the question is whether banks acting without regulation can act prudently.

In princple, any tendency for bankers adopting a balance sheet structure which increases risk should be met by depositors demanding higher interest rates to compensate for the higher risks. In this case, deposit interest rate is seen as an increasing function of deposit riskiness. If we denote the deposit interest rate by i_D and deposit riskiness by σd^2, the situation is as follows:

$$i_D = f(\sigma D^2), \quad f_1 > 0 \tag{5.1}$$

Deposit riskiness in turn depends on the overall riskiness of the bank's business and the deposit to equity ratio (D/E). Thus our equation (5.1) becomes:

$$i_D = f(\sigma B^2, \ D/E), \ f_1 > 0, \ f_2 > 0 \tag{5.2}$$

Thus, if there is no regulation, banks can be expected to issue deposits of differing risk depending on what the equity holders consider as the most desirable balance sheet structure.

In such a situation, banks who engage in risky business would pay higher interest rates than their competitors but maintain a low deposit/equity ratio so as to reduce the risk falling on depositors. For example, two banks with the same risk, may adopt different deposit/equity ratios and pay different deposit interest rates. However, in practice, and partly because of regulation, banks do not have much flexibility in adopting balance sheet structures and activities. This generates a range of deposit risks.

Also, such arguments are based on the notion that depositors are able to distinguish, say, a higher interest rate due to high risk and a higher interest rate due to greater efficiency. But depositors do not have sufficient information to make such judgements. As Lewis and Davis (1987, p. 135) have stated, 'part of the rationale for bank intermediation lies in the existence of imperfect information. Banks have a special role as inside lenders based on specialised information about borrowers, so that it is difficult if not impossible, for outsiders to assess accurately the riskiness of a bank's portfolio'. The nature of banking, with its role of intermediation, involves risk. Even prudent bankers who structure their activities in such a way as to ensure risk-free deposits may not be able to guard against the consequences of bank runs.

Banking systems are vulnerable to runs due to the following: instability in the macroeconomy due to wars, technological change, and swings in investment expenditures. Such instability can be

exaggerated as a result of overtrading, underpricing of risks by financial institutions (Lewis and Davis, 1987, p. 135). Such situations can induce bank runs. A run on a bank can spread like a contagion to other banks due to incomplete information and the nature of bank deposit contracts. With banks highly geared, if they are forced to liquidate assets or call in loans before they mature, the value they realise by this action is likely to be lower than the total deposits. Should depositors fear that they would not get the par value for their deposits they will withdraw. This is so because deposit contracts entail a fixed price: that is, a deposit cannot earn more than the contracted price but can make a loss if there are problems at that bank, such as when the bank is forced to honour all obligations quickly.

Because of imperfect knowledge, the withdrawals of funds by some depositors might prompt others to doubt the safety of financial institutions and this might inspire runs elsewhere. Observing difficulties at one bank, depositors may not be able to assess whether the problems are specific to that bank or common to all institutions.

Thus the 'susceptibility of an unregulated banking system to swings in depositor confidence provides a major rationale for government intervention' (Lewis and Davis, 1987, p. 136). Government intervention becomes essential to avoid the costs of bank failures: for example, losses to depositors and reductions in their expenditure plans. Businesses engaged in illiquid production activities might be forced to repay loans earlier than expected. This might force these businesses to take out replacement loans in an unfavourable climate. Clients of a failed bank might have to

incur costs in establishing a reputation to obtain loans at other banks. Besides the social costs arguments, there are efficiency arguments in favour of government intervention to ensure bank safety. One argument is that only government agencies are able to gain access to confidential information about borrowers in order to assess banks. It would be more costly for each depositor to assess the condition of a bank than for one agency to undertake the risk rating (Mayer, 1986). Also, the principle of 'caveat emptor' cannot be applied to the many bank customers who are simply unable to assess the condition of banks. Such depositors would benefit from government guaranteeing the safety of their deposits.

5.4.2 Instruments of supervision

Given acceptance of the need for prudential regulation, the supervisory authorities' task is to decide on the most appropriate instruments that satisfy prudential objectives. Onado (1982) divides supervisory instruments into three main areas namely: structural, prudential and fair play regulations. The aim of structural regulation is to modify the structure of banking so as to influence its performance. Examples of structural regulations are barriers to entry, controls on assets and liabilities (reserve requirements, liquidity and capital adequacy requirements, assets and liabilities restrictions) and foreign exchange controls. Also included in this category of regulations is the power to nominate directors of the banks.

The instrument of entry requirements involves certain criteria which applicants have to meet before they can operate as bankers. Some of these requirements include: that directors, controllers and

managers are fit and proper persons; that banks should provide an adequate level of service in areas such as the provision of current and deposit accounts, overdraft and loan facilities, foreign exchange services etc. Another provision would be that banks should maintain adequate liquidity, capital and provisions for bad and doubtful debts. Usually these requirements are stated in the respective bank statutes. The entry requirements for banks in Zimbabwe were outlined in Chapter 4.

Central to the supervisory process is the assessment and measurement of capital and liquidity adequacy. For the purposes of assessing capital adequacy, ratios like the gearing ratio and risk assets ratio are applied to banks. A detailed analysis of the ratios used in capital adequacy analysis will be undertaken in Chapter 7.

Liquidity adequacy is assessed in order to ensure that banks are able to meet legitimate obligations on due dates. Individual banks' liquidity requirements must generally be capable of dealing with any net shortfall in cash flows, anticipated or otherwise. In this regard supervisory authorities should ensure that banks hold a prudent mix of liquidity forms.

Another instrument of supervision widely used in many countries is deposit insurance. This instrument is not yet used in Zimbabwe. Deposit insurance involves explicit payments made by participants in the form of insurance premia. The aim of deposit insurance is to reduce the probability of runs by ensuring confidence in the depositing public. Depositors would have confidence because in the event of failure they are assured that their deposits will be reimbursed.

One criticism of the deposit insurance scheme is that the contributions do not reflect bank riskiness. Both low risk and high risk operators pay the same flat rate premia. The main problem is of moral hazard risks. Realising that deposits are insured and also the existence of the lender-of-last-resort, bankers are capable of pushing their risk leveraging beyond prudent levels. Thus solvency regulations are desirable (in the absence of risk-related premiums) to prevent excessive risk.

Prudential regulation is necessary to control risks for particular operations and for the banks as a whole: that is, to ensure that banks do not follow policies which would threaten their operational viability. Such regulations include: limits to fixed assets, to loans to a single customer, and to medium-term and longer term loans. The supervisory authorities have the power to obtain information on bank operations and to inspect banks on site.

The aim of fair play regulations is to ensure diffusion of bank information so that customers are on an equal basis. This area of regulation relates to disclosure requirements and consumer protection, and the measures taken include limits to insider trading, controls on loans to directors and members of the staff, and truth-in-lending measures.

Onado (1982) suggests that 'more important from a practical point of view for the actual functioning of the regulatory mechanism is the kind of power system through which the authorities activate the tools they possess. For each area and each instrument there are five alternatives, each one identifying a different relationship between the regulators and the bank'. Suggested power systems include:

- Total freedom of banks (i.e. no control)
- Rules prohibiting or imposing limits to specific bank devices: these rules are issued and enforced on an equal basis for all institutions or at least for homogeneous categories. Banking ratios are a typical example in this category
- Authorisations issued on the basis of banking objectives and intended spheres of operation
- Authorisations issued on the basis of a discretionary appraisal of the bank application
- Complete discretion of the central bank which, lacking specific powers, uses moral suasion or other instruments to pursue efficiency or stability objectives of regulation. This situation is frequent in cases of bank crises.

Thus, to meet the objectives which regulation and supervision are intended to achieve depends on the instruments and the powers by which the regulators activate the instruments. As Onado (1982) puts it, 'it is this institutional element which determines the relationship between the regulators and the individual bank and actual influences the behaviour of the latter'.

5.5 ECONOMIC ARGUMENTS FOR SUPERVISION

Although the need for regulation and supervision is widely accepted, specific conditions should be identified that call for government intervention of a prudential nature. Economists refer to

these as 'market failures' and the following are usually cited (single or in combination).

5.5.1 Natural monopoly

Economists refer to an industry with a natural monopoly as a decreasing cost industry or one subject to continuing economies of scale. In such a situation the costs of the product per unit of output decreases as the volume of output increases. When an industry has economies of scale it is difficult to rely on competition to police prices, and thus the monopolist left on its own would charge very high prices. Regulation is therefore necessary in order for the industry to charge fair prices. In this regard, the existence of natural monopoly would be a justification for supervision.

5.5.2 Externalities

In economic terms, externalities are characterised by the case of the public good. A public good is a product which anyone could consume, but it is difficult to compel them to pay the price of their consumption. Thus it is difficult to exclude from the consumption of such a good someone who has not paid for the right to use it. This is the classic 'free rider' problem.

In the financial sector, the failure of one bank may throw doubt on the viability of others and a contagion of bank withdrawals may result. The externality lies in the fact that the need to realise assets in order to raise funds to honour deposit withdrawals would drive down asset prices below equilibrium values and raise real interest rates. Another problem is the fixed nature of capital

and other inputs. It is impossible to call in all loans from borrowers as they would be forced to repay by selling their existing businesses. The only option is for the borrower to look for funds from other sources which might be an expensive search effort. Also, the adverse economic conditions which will have caused concern on the value of the bank's portfolio will not make it easy for the borrowers to find funds from elsewhere.

Once the withdrawal of deposits begins, the stability of all the institutions is threatened, and the incentive to withdraw funds increases as there is now doubt about the financial health of all the institutions. Thus an isolated run can lead to system-wide liquidity problems through confidence and contagion effects: trouble in one bank raises doubts about the soundness of other banks.

In this situation the costs of financial crises on economic activity can be reflected in unexpected fluctuations in the stock of money and increases in the cost of credit intermediation.

Financial instability can affect aggregate real activity through direct credit flow disruptions. Thus bank failures decrease the effective supply of bank credit intermediation services and thus increase real marginal cost of credit intermediation. Merrick and Saunders (1985) go on to explain that these effects stem not only from the increase in bank failures but also from the actions taken by surviving banks during a crisis to increase the share of liquid assets or rediscountable securities in their portfolios at the expense of commercial and consumer loans. Another explanation is that there is a tendency for risk premiums faced by borrowers during peiods of crisis to rise to unnatural levels. This phenomenon,

coupled with the rise in the cost of funds, tends to depress real investment and the credit-financed portion of current consumption. In turn this precipitates unexpected solvency and liquidity problems for firms and households. Therefore, disruptions in financial intermediation reduce the efficiency of resource allocation.

An example of the costs of bank failures can be illustrated by the events following the collapse of the West German Bankhause Herstatt in 1974. There was a run on the deposits of smaller eurobanks so that many sound banks found it difficult to renew deposits at any price, thereby pushing them to near insolvency. Large banks like the Japanese and Italians had to pay substantial interest rate premiums to renew their short term deposits. Bankers only agreed to deal with the strongest banks and this caused disruptions.

Realisation of these disastrous effects stimulates the desire to ensure the soundness of banks, since solvency and soundness of banks may reduce or even eliminate these costs. When the banking system is threatened, the viability of the entire system for exchanging goods and services is threatened. An important rationale for supervision is to reduce the likelihood of financial crises and to discourage bank use of the central bank lender-of-last-resort (LLR) as a lender-of-first-resort (LFR).

5.5.3 Information asymmetries/costs

Another (and related) main reason for regulation and supervision is the existence of asymmetries in information and the high costs of information. Financial intermediaries are specialists in collecting and processing information for the parties who want to

borrow and lend. This means that the intermediary possesses information which is not available to all parties with which it deals. This situation presents a great potential for failure. This can be explained by the following example. The sellers of products will have knowledge of the quality of the products they are selling while the buyers might not have this information. Market failure occurs if the sellers only sell when the price they are selling at yields them a profit and buyers are only buying when they believe that they are paying a fair price. Some sellers might be telling the truth about the quality of their products while others are not. In this situation, the price the buyers are willing to pay will reflect the quality of the average product available in this market. It might be the case that this price is low and those with high quality products will not be willing to sell their products. If this happens, only low quality products will be sold in the market. Regulation may be necessary in this situation to correct the differences in information and provide ways for buyers to discriminate among high quality and low quality products.

Campbell (1982, pp. 375-80) explains the problem of expropriation resulting from the differences in information. The problem of expropriation can occur if the shareholders demand excess dividends making the financial institution unable to honour its debt obligations. Also, the managers may expropriate by outright embezzlement of funds, that is, stealing or excess consumption.

Another example given by Campbell is what he calls the agency problem. In this case the agent is the manager who makes the decisions. Campbell asserts that 'in an ideal world, agents would act in the best interests of those who hire them without having to

be induced to do so. But the world is often not ideal and the interests of agents often diverge from those of their employers. As a result, it is necessary for those who hire agents to devise mechanisms to induce them to behave as they should. The problem is to make the agents interests coincide with the interests of their employers. Thus regulatory measures can help in bringing the interests of both parties along the same line'.

Another consideration with regard to the asymmetric information problem is that the ordinary consumer cannot judge the quality of a bank or bank service because of the skilled nature of banking financial analysis. Unsophisticated depositors cannot interpret fully banking data because they lack the skills to do so. Also, if each depositor were to try to evaluate fully the soundness of banks when deciding where to deposit their funds, they would incur very high costs. Even big depositors like companies, who have the skills to evaluate banking data, might feel that the costs of analysing each bank are higher than the benefits. Regulation would reduce these costs to depositors.

The argument for bank supervision to combat information deficiencies and search costs is based on the notion that there are significant economies of scale in acquiring information and processing it, and that the information cannot be sold or bought in private markets because of its public good characteristics. It is more efficient for the supervisory authorities, rather than each depositor, to collect information regarding bank soundness and use it to protect depositors. The lack of information regarding bank safety and soundness may be more acute in developing countries where

many people lack a proper understanding of the operations of the banking system.

5.5.4 The payments system rationale

It is often said that without regulation the payments system would be underutilised. The argument is based on the idea that regulation lowers the risk of holding demand deposits. 'By increasing the quality or safety of deposits, prudential measures may increase utilisation of the facility' (Sharpe and Hogan, 1982). In developing countries like Zimbabwe, this would mean an increase in the mobilisation of financial resources, which is one of the targets of the growing economy. If more people were assured that deposits bear no risk, they would have more confidence in banks and this would attract new depositors.

5.5.5 The savings asset rationale

The other rationale for regulating banks is 'to make available at low social cost an attractive, riskless, investment vehicle for savings' (Edwards, 1979, p. 82). Savings yield a return to the depositor. The existence of savings permits households to better allocate their consumption over time, enabling them to achieve greater utility than would otherwise be possible. The argument rests on the proposition that an unregulated market will be unable to provide an equally attractive savings asset: that is, an asset with low risk.

There is also the view that, 'governments have a responsibilty to ensure an adequate range of 'safe' outlets for savings' (Sharpe and Hogan, 1982). For a developing country like Zimbabwe which has

a need for a greater mobilisation of financial resources, the 'safety of savings' might encourage households to save their surplus funds with financial institutions.

5.6 FORMS AND STYLE OF REGULATION

5.6.1 General considerations

This section analyses the form and operational style that regulation might take. Form and style characterise the supervisory 'policy mix', together with the volume (amount) of supervision and the supervisory instruments implemented. Thus relevant questions in this regard are: should there be a tight regulatory system where all the rules of the game are explicitly outlined and mandatory ratios applied to all banks, or, alternatively, a more relaxed system? Have the best methods been chosen? Has sufficient reliance been placed, for example, on the provision of incentives to achieve desirable results or have less efficient methods of achieving regulatory goals been chosen? Having due regard to its enforcement costs, has an optimal amount of regulation been implemented?

Questions of the style and form of regulation are crucial because the objectives and instruments might be clearly stated, but it is how they are implemented ultimately determines the effectiveness and efficiency of supervision.

5.6.2 Supervisory style

At one extreme there is a tight system of control. Here, statutory rules outline the conditions of entry into the banking market, conditions for mergers and the type of business. Where controls are tight, minimum capital and liquidity ratios are applied

to all banks irrespective of size and type of institution. Most EEC countries administer such rules. The Banking Act in Zimbabwe sets out the same kind of rules in respect of structural regulation. The Registrar of Banks in Zimbabwe is responsible for establishing and enforcing these structural rules.

The Reserve Bank of Zimbabwe is responsible for prudential regulation, essentially balance sheet controls to ensure liquidity and solvency. The Reserve Bank has set a minimum gearing ratio of 5 per cent as a guideline which all commercial banks should observe. Also, all large exposures that are 10 per cent of a bank's capital base must be referred to the Reserve Bank. Any lending to one borrower or to a group of closely related borrowers which is 15 per cent and above of shareholders' funds, should be referred to the bank supervision department before the loan can be extended. Prudential supervision in Zimbabwe, however, is not yet under statute although, 'the department is developing a system of banking supervision on the basis of which, hopefully, legislation will be defined later' (Reserve Bank of Zimbabwe, Thirty Years of Central Banking, 1987).

At the other extreme is a supervisory system which is more relaxed. An example is the UK system which 'does not lay down acceptable levels for ratios, stating that each bank is different and must be treated differently' (Revell, 1979; Gardener, 1978). Nevertheless, even the UK system is now losing much of its traditional flexibility in supervision.

5.6.3 Disadvantages of tight rules

As already said, a tight system may be based on an elaborate breakdown of the asset and liability structure or the same minimum ratios are applied to all banks. As Gardener (1983) suggests, 'equality between unequals cannot be secured by requiring them to conform to the same ratio rules. Similarly, a good balance-sheet ratio result does not necessarily imply that a bank is in a corresponding stronger prudential position. For example, a lower capital ratio may be judged acceptable for a bank with a high calibre management, first class name in the market and sound liquidity policies'. Some evidence shows that many failing banks had good capital ratios. This reminds us that we need to consider other factors regarding the quality of a bank besides ratios in order to judge the soundness of a bank.

The Reserve Bank of Zimbabwe, 1987, indicated that, 'in cases where our directives are in the form of minimum ratios, they are mainly intended to serve as an early warning system'. Revell (1979) observed that 'the numbers applied to the ratios or to the capital coefficients are arbitrary, and they are usually drawn from the practice of institutions at the time when the regulations were formulated, often many years in the past'. He goes on to say that, 'one of the experiences of accelerating inflation in recent years is that the 'rules of thumb' that have served the managements of financial institutions in place of a more theoretical approach have begun to break down. Regulatory systems based on such rules of thumb are also liable to break down'.

One other adverse effect of these mandatory ratios is that banks may be forced to raise loan rates so as to meet the capital requirements. Another adverse effect is that this might lead to excessive banking competition so as to maintain banking profit returns. Revell (1979) warned of the dangers of excessive competition. Thus we are reminded that 'inappropriate regulations may be even more dangerous than no regulations at all' (Gardener, 1986, p. 25).

Onado (1982) observed that 'where monetary policy is often restrictive and bank conditions change very quickly, a rigid 'director' model of central banking is difficult to implement'. The 'director' model referred to by Onado is a system where rules are tight (as explained above). Gardener (1978) has referred to such a system as 'government by law' (where the supervisory process entails detailed mandatory prescriptions. This is opposed to a system of 'government by men', a regulatory process which is more relaxed in that there are no mandatory rules and guidelines.

With the 'director' model, Onado explained that the burden on banks might be too heavy to leave enough room for entrepreneurial activity. Another problem is that banks might not be able to respond to changes and innovations. This means that regulation could be inefficient in these circumstances. However, Onado (1982) points out that such a director model of supervision maintained stability in the financial system in Italy. He explained that in Italy there was hard monetary policy, direct controls used very strictly, enforced credit ceilings and mandatory holdings of securities. Such a system is very similar to what we find in developing countries, where all banking rules are generally tight.

As to the scope of regulation, the results of such a system in Italy were that innnovations in new financial sectors created an area which was completely free from controls of any kind. Thus a situation where there are strict controls in banking markets and total freedom on the parallel markets distorted competition. In this case the regulated sector would tend to feel that fairness in regulation has been lost. However, in the Italian case the authorities succeeded in maintaining the stability of the banking system.

Another aspect of the regulatory process in the Italian case is related to the kind of regulation that the supervisory authorities in Italy were critcised for - that is, relying too much on discretionary measures. For example in one year alone, the authorities would authorise on a case by case analysis, 20,000 applications of which 12,000 are loans (limits to a single customer). Other authorisations included opening of new branches, changes in by laws, issues of securities by special credit institutions. Complaints levelled at this kind of regulation are usually that bankers are limited in entrepreneurial freedom if the authorities tend to authorise almost everything. Also too much discretion may be criticised because it may result in unfair treatment of individual cases.

In this regard, one point of interest which Onado observed in the Italian case was the delicate cases concerning loans to big private and public firms. He felt that 'the authorisation for the loan always risked becoming a sort of political guarantee by the Central Bank thereby diminishing its nature as a technical measure of prudential regulation. This state of affairs resembles the

Zimbabwean situation when the government, through the Reserve Bank, requests banks to extend large loans to big companies (usually mining companies) and the Agricultural Marketing Authority because they are considered to be of economic importance to the country. Because of the nature and level of such loans, a guarantee is automatically implied. There is a danger of moral hazard here since banks are aware that such loans would be guaranteed. Since in such cases if there are problems with the loans the LLR would need to step in, there is a concomitant case for the lender of last resort to impose regulations. The objective is to reduce the likelihood of the LLR being used as LFR.

Most of the discussion has been about the adverse effects of tight controls. It should not be taken to mean that a relaxed system has no disadvantages. A more relaxed supervisory system might end up being redundant and ineffective. Thus in choosing a supervisory system there is need to strike a balance between 'the need for a deeper and more effective regulation with the relaxation of the burden imposed on banks so as to leave them enough freedom for their own management decisions' (Onado, 1982). He went on to suggest regulation broader in scope and less based on discretion.

Generally many writers agree that regulation should not be too rigid. Lewellyn (1986) suggested that, 'regulation should not be based upon detailed, fixed and universally applied balance sheet structures. It should not establish rigid ratios and should not be prescriptive over the types of acceptable business'.

5.7 SUMMARY AND CONCLUDING REMARKS

This chapter analysed the objectives of supervision, the justification of supervision, and methods and style supervision should take.

The main objectives were identified as: ensuring confidence in the banking system, controlling excessive riskiness by monitoring solvency and liquidity of banks. Regulation was accepted as justified due to the costs of bank crises and failures and also due to the disadvantages of using other methods like self-regulation and deposit insurance schemes. In order to achieve the stated objectives, instruments like balance sheet constraints, entry restrictions, limits on loans, and limits on insider trading were justified. Finally, it was suggested that in order to have an effective system of regulation, what is important is the power system with which the tools of regulation are activated. This relates to the form and style of regulation. It was noticed that both very strict and too relaxed regulatory systems have their disadvantages. In this regard, Onado (1982) suggests, 'a set of regulatory powers, the core of which should apply to all financial intermediaries based on a limited number of controls, enforced in a participative and discretionary approach by the central bank'. Against this background, we are now ready to explore in greater detail from a practitioner perspective the supervisory system in Zimbabwe.

CHAPTER 6

BANK SUPERVISION IN ZIMBABWE: FIELD SURVEY RESULTS

6.1 INTRODUCTION AND METHODOLOGICAL BACKGROUND

Earlier chapters analysed the structure and development of the Zimbabwean economic, financial and banking systems, the role of banks in Zimbabwe and the evolution of all general regulations pertaining to banks. This was necessary to set in context the banking system and the economic, financial and regulatory environment in which supervision has evolved in Zimbabwe. The previous chapter examined in more detail some of the relevant literature on the justification, rationale, methods, instruments and style of supervision. The next stage of the research is more specific and it involves more focused empirical research.

This thesis embodies an empirical study on the effects of supervision on the developing banking system in Zimbabwe. One preliminary method of empirical investigation used is a field survey carried out by interviewing regulators (i.e. supervisors) and regulatees (those regulated) in Zimbabwe. A data collection survey is an interaction between the researcher and respondents. In a self-administered, focus interview survey the researcher speaks directly to the respondents through the medium of a previously distributed written questionnaire, which forms a kind of 'agenda' for each interview. Thus the questionnaire is a particularly important instrument in this kind of survey.

One purpose of the field survey was to appraise the bankers' opinions, to tap their subjective feelings, regarding supervision. The other aim was to focus on factual material. The field survey

covered the objectives, rationale and approach to supervision in Zimbabwe. The bankers were asked to give views on the costs and benefits of implementing supervision and its likely effectiveness.

A field survey on Zimbabwean bank supervision was important because supervision is new and not yet well documented. In order to obtain information it was necessary to interview the operators in the field. As Fowler (1984, p. 12) has stated: 'a main reason for surveys is to collect information that is available from no other source.' This is certainly the case for supervision in Zimbabwe, and, indeed, in all developing countries.

Most surveys are conducted by interviewing. This was the methodology adopted by the researcher in Zimbabwe, where respondents answered self-administered questions. Some researchers, however, are of the opinion that such interviews tend to influence the answers given by the respondents. This is a problem, but the researcher felt that the newness of this bank regulatory area in a developing country, coupled with the fact that bankers are busy and used to responding to structured questions, supported the case for the interview technique used. This is also an established research method that generally yields good results. In addition, interviewees were allowed (and encouraged) to comment freely, express their own views and move outside the 'interview agendum'.

Question design is an important aspect in surveys since bias in the answers given may result from ambiguous questions. Besides bias, some badly designed questions can lead to incomplete answers. Studies have been conducted with the aim of improving the quality of answers given by respondents. Hyman (1954), for example, documented strategies in which interviewers might probe further when incomplete

answers are given. Other aspects considered in improving interviewing are the preparation of the first introduction, encouragement given to the respondents and limiting unstructured questions (Cannell, 1977).

There are often practical problems encountered in the collection of survey data, including lack of funding and time. It is important to have knowledge of good quality procedures in sampling, question design and interviewing. Designing a survey has to take into consideration funding, time available to the researcher and other resources needed in the execution of the survey. Thus, when choosing the size of the sample, say, the researcher needs to consider the amount of time needed to complete the survey and the cost involved.

Some of the qualities of good questionnaires include: adequate wording, consistent meaning to all respondents and avoiding poorly defined terms. Questionnaires should not be too long. Good questionnaire design improves the quality of data. With respect to questionnaire design, the validity of the questions is important. The researcher tested her survey and question design by consulting with experts and pre-testing the questions before the interview (see the following section). Thus the design of the survey used by the researcher was influenced strongly by a detailed consideration and incorporation of all the main features of successful survey design.

6.2 THE SAMPLE AND DATA GATHERING PROCEDURE

The sample comprised the Reserve Bank of Zimbabwe, five commercial banks and four merchant banks. Since there are only a small number of banks in Zimbabwe, they were all requested to

participate in the survey. Structured questionnaires were used for gathering the data. For each question possible, alternative answers were given, and the respondents asked to rank answers on an ordinal scale of 1 to 3. The questionnaires were divided into two sections: section A contained open questions whilst section B consisted of the same questions but with possible answers given (closed questions). Appendices 6.1 and 6.2 show the questionnaires used.

The closed questions were given for two reasons. First, supervision is new in Zimbabwe, and it was feared that some respondents may not be very familiar with the subject matter. As a result, the possible answers might help inform them as to the kind of general responses expected. Secondly, the researcher required ordinal data and thus respondents were required to rank the alternative answers provided. Thus, in section B of the questionnaires the respondents were asked to rank the answers on an ordinal scale of 1, 2 and 3, where 1 indicates 'very important', 2 is 'important', and 3 denotes 'moderately important'. This 'scaling' enabled the researcher to form a more reliable view of the respondents' general opinions. Thus, the advantages of closed questions are that the answers given by respondents are more reliable, and it facilitates a more detailed (or focused) interpretation of the answers by the researcher.

The open questions were used so as to enable respondents a free expression of their views without the restrictions imposed in the case of closed questions. In practice, the open questions were found to be very useful as they permitted the researcher to obtain answers that were unanticipated. The open questions also seemed to elicit the 'real' views of respondents: respondents had the

opportunity to answer the questions in their own words. As Fowler (1984, p. 87) stated: 'to answer only by choosing a provided response and never to have an opportunity to say what is on one's mind can be a frustrating experience'.

A letter of request for an interview (Appendix 6.3) and a covering letter from my PhD supervisor (Appendix 6.4), were sent together with the questionnaires to the Reserve Bank and to all the nine banks' head offices. Eight out of the ten banks (including the Reserve Bank) responded to the request for the interview. Seven out of the eight banks that responded agreed to participate in the survey.

All the banks agreeing to participate in the survey indicated when the interviews could take place, and all the interviews took place over a period of 3 months between September and December 1987. In each case the researcher interviewed an executive of the bank who gave a very warm welcome and always indicated a willingness to help in the survey and in any other way to make the research successful. Considering that bank executives are very busy people, the researcher was extremely pleased at their willingness to spend as much time as was necessary without having to rush through the questionnaire.

The bank supervision department at the Reserve Bank requested an interview with the researcher before discussing the questionnaire in order to clarify certain points. This was understandable since supervision is new; the regulatory authorities are still learning the system and they were anxious that the researcher obtained as much useful information as possible from the survey. After this initial interview, an appointment was made to discuss the

questionnaire. Three members of the supervision team attended the interview and kindly assisted me by answering the questions as much and as fully as they could. However, they suggested that the researcher consult a higher authority in the Bank on some matters of policy. In this regard another letter was sent to request an interview with the Governor of the Bank (Appendix 6.5) who kindly agreed to participate in the survey. Thus, the researcher was placed in a good position to complete the survey with a high quality response rate and a good survey sample.

6.3 RESERVE BANK'S RESPONSES

The Reserve Bank respondents provided answers to questions in Section A only. On the closed questions (Section B), the respondents did not feel that they were in a position to give any rankings. Their opinion was that the answers given were equally important and thus preferred not to give them any rankings.

The Reserve Bank questionnaire (Appendix 6.1) covered the pressures leading to supervision, objectives of supervision, instruments and areas of supervision and the ultimate goals of supervision in Zimbabwe. Although the bank supervision department of the Reserve Bank was willing to assist the researcher's study by participating in the survey, they expressed reservations about whether much would be gained in the survey. They pointed out that supervision was not yet fully operational in Zimbabwe, and they were still devising the practical system of supervision.

6.3.1 Pressures leading to supervision in Zimbabwe

The previous chapter reviewed the reasons why supervision of banks worldwide has increased since the past decade. Factors which have been found to have influenced significantly the increase in supervision were bank failures, crises, internationalisation and increased risks in banking. At the same time as supervision is being increased, there is a general air of discontent with it. Many bankers and academics, especially in the United States, feel there is too much regulation. In this respect Llewellyn (1986) suggests: 'It would appear that specific forms of regulation have not achieved their alleged ends'. It is with these general considerations in mind that a need was felt to establish why supervision was found to be necessary in Zimbabwe. Thus, the first question directed at the Reserve Bank was about the pressures leading to supervision.

Q1 What were the main pressures which led to the introduction of bank supervision in Zimbabwe?

Four main reasons were given to support the need for bank supervision. One was that banks were failing internationally and Zimbabwe did not want to be caught unawares. The second reason given was that Zimbabwe is a member of the Bank for International Settlements (BIS), who have been pushing international supervision in order to harmonise banks' approaches to supervision. The third consideration was that in Zimbabwe major companies in mining and agriculture are subject to fluctuations in their profitability because of drought and other problems. Thus, any problems with these companies can wipe out a bank, because banks are heavily exposed in lending to these same companies. The fourth reason given

was that by supervising banks, the authorities would get to know more about the functioning of these institutions.

The second survey question was aimed at finding out why banks are considered important in Zimbabwe.

Q2 Why do banks seemingly require more regulation than other financial institutions?

The response of the Reserve Bank was that the banking sector occupies a central place in the economy through its role in allocating credit and as the core of the payments system. Also, the banks are in a unique position of trust in handling funds belonging to the general public. Thus, savings can only be generated on an increasing scale if there is confidence in the banking system. 'Confidence maintenance' in banks is clearly a primary supervisory objective in Zimbabwe.

After obtaining this essential background knowledge of why the authorities decided to supervise banks in Zimbabwe, the next logical question was to find out what are the objectives. The objectives need to be stated clearly in order for the supervisory process to serve a useful purpose. As Crampton (1964) stated: 'unless the objectives of regulation to be achieved are clear, precise and consistent, the results of regulation are likely to be limited to the protection of established interests or to the wholly unpredictable'. For present purposes, we need to be as clear as possible on the objectives of supervision otherwise we cannot appraise its efficiency and possible evolutionary path in the future. Thus the next question to the Bank was about objectives.

6.3.2 Objectives of supervision

Q3 What are the objectives of bank supervision in Zimbabwe?

The first reaction to this question was that at the early stages of developing a supervisory system for Zimbabwe, the authorities were still looking at all the respective objectives specified in other countries. The survey respondents stated the objectives as: the protection of depositors' funds and the promotion of an orderly growth of the banking system.

Having clear objectives is crucial when operating a supervisory system. One needs to be able to test whether the regulation is achieving the stated objectives. This is one attribute of efficiency in supervision. Another is achieving it in an efficient (in a portfolio theory sense) 'risk and return manner'.

The next five questions covered the instruments, methods and style of supervision adopted in Zimbabwe. As Onado (1982) said: 'What really matters is the kind of instrument and the powers by which the regulators activate it. It is this 'institutional element' which determines the relationship between the regulators and the individual bank, and actually influences the behaviour of the latter'. As a result, questions on how the Bank appraised the soundness of banks were found to be essential.

6.3.3 Methods, instruments and style of supervision

The first question under this section was aimed at finding out the type of instruments used to assess bank soundness in Zimbabwe.

Q4 What are the most important factors you take into consideration when appraising a bank's prudential soundness?

The authorities' reaction to this question was that the system in Zimbabwe is still being developed. At the moment they are still examining factors considered by other countries. Zimbabwe adopts an approach similar to that of the Bank of England by using a rating system CAMEL - which takes into account: the adequacy of a bank's Capital, the structure and quality of its Assets, the quality of its Management, its Earnings and its Liquidity - to determine the overall soundness of a bank. Capital adequacy rules appear to be the core quantitative control mechanism favoured by the authorities. This is essentially the same kind of philosophy as that adopted by the Bank of England and many other countries.

Capital adequacy is a central part of most supervisory systems, and the next question sought information about the approach Zimbabwe had taken in this area. Many students of bank regulation have criticised the maintenance of mandatory minimum capital ratios. For example, Revell (1975) preferred prudential authorities 'who do not lay down inflexible mandatory prescriptions unequivocally to all banks'. The next question focused on this kind of issue.

Q5 What are the uses of capital adequacy ratios in bank supervision?

The bank supervision department indicated that they use capital adequacy ratios to compare banks. They set a minimum gearing ratio of 5 per cent which all banks are required to observe. Lackman (1986), however, has demonstrated theoretically that a capital to deposits ratio may produce perverse supervisory effects (this will be shown in Chapter 7). According to the supervisors, this ratio is

mainly used as a kind of early warning system. If a bank's ratio falls below this level, it is indicative of a need for more supervision. However, the Bank considered other qualities of the bank before judging its soundness.

Besides analysing statistical returns, Zimbabwe's other practical and data-orientated method of supervision is on-site examinations. The next question relates, therefore, to on-site examinations.

Q6 What kind of information would you look for when conducting a bank inspection?

The Reserve Bank stated that the examinations involve all banking operations, including loan and credit administration, foreign exchange operations, internal controls, and security and audit systems. The capabilities of bank management are assessed in the process. Zimbabwe rates each bank using a scale of one to five. The ratings range from sound banks in every respect to those with weaknesses requiring closer supervisory attention and possible enforcement action to those experiencing imminent collapse. To date, the researcher was told by one official that 'full inspections have not yet been introduced because of staff constraints'.

The next question was meant to determine whether the approach to supervision in Zimbabwe was flexible or rigid. As we have explained, one strong view in the literature is that effective supervision should never be based upon rigid regulatory requirements.

Q7 How would you describe (briefly) the style of supervision adopted in Zimbabwe on the following?

- **range of allowable business**
- **restrictions on banks' operations**
- **entry of new banks**

The bank supervision department indicated that the areas mentioned were mainly a concern for the Registrar of Banks and Financial Institutions.

In Zimbabwe, there are barriers to entry into the banking market and there are also restrictions on the range of allowable business and on banks' operations. For example, banks are prohibited from borrowing and lending outside their traditional areas without prior approval from the Registrar. Banks are not allowed to engage in or hold shares in a company which engages in any business or activity other than approved banking business. Banks are not allowed to acquire or hold immovable property except for the purpose of conducting their business. Only commercial banks and accepting houses accept deposits withdrawable by cheque, drafts or orders payable on demand.

6.3.4 Areas of supervision

In an effort to judge the appropriateness of the supervisory instruments in relation to the stated objectives in Zimbabwe, the following question was asked:

Q8 What is/are the most important area/areas of prudential regulation you concentrate on in Zimbabwe?

The three areas on which the authorities focus particularly in Zimbabwe are capital adequacy, liquidity and large exposures.

Banks are required to submit a return (the Form B5) from which capital adequacy ratios (and other ratios) are computed (Appendix 6.6). This return collects information on shareholders' funds, off-balance sheet positions, large and connected deposits, profit and loss accounts, etc. Bank supervision uses two principal measures of capital adequacy: namely the gearing ratio and risk assets ratio. They concentrate on the gearing ratio because it is easy to calculate. Although they feel that the risk assets ratio is more meaningful, they are still looking into ways of arriving at realistic capital coefficients (risk weights) to different categories of assets.

In order to analyse liquidity, banks are required to submit a return (Form B1) analysing their assets and liabilities by residual maturity (Appendix 6.7). The supervisory authorities then perform a cash flow analysis by plotting assets and liabilities in a maturity ladder to determine the net mismatch positions.

In order to analyse large exposures, banks are required to submit a return called the Form B6 (Appendix 6.8). All exposures in excess of 15 per cent of capital base have to be referred to the bank supervision department before loans can be granted. The aim is to prevent concentration of loans to particular sectors in case those sectors might have difficulties and be unable to repay the loan. This would affect the solvency of the bank.

6.3.5 Ultimate goal of supervision

The next question relates to structural deregulation: that is, liberalising the banking system. It relates to how the type of regulations change and how the scope and intensity of each form is

operationalised. For example, deregulation might be in the form of easing credit restraints imposed for monetary policy reasons, abandoning self-imposed constraints and changes in the philosophy of the Central Bank with regard to its surveillance of the financial system. It is possible to see some regulations becoming tighter while others are being eased or even abolished. The last question referred to the ultimate goal of bank supervision: that is, what the authorities hope to achieve by supervising the banking system.

Since the researcher wished to know whether supervision is ultimately targetted in Zimbabwe to enable the banking system to make freer resource allocation decisions - that is giving more of a role to the market - the next question was on deregulation.

Q9 What is the Bank's view on structural deregulation, that is, liberalising the banking system, for example, relaxing certain restrictions?

At the time of the interview (1987) the Bank indicated that they were not yet at the point of deregulating. They were still learning how the banking system operated. However, Zimbabwe is due to embark on a structural adjustment and liberalisation programme.

The final question was meant to determine what they hope to see as the result of supervision in Zimbabwe.

Q10 What is the ultimate goal of bank supervision? How does it fit in with other macro-economic and central bank policy objectives (e.g. economic development)?

The ultimate aim of supervision is to have a sound financial system, and to safeguard the position of the banks' shareholders, borrowers and lenders. It is in the State's interest to promote sound management in the banks. Even later on 'when we want to

expand monetary policy we will understand the system better, we will know the stance of the institutions we are dealing with'.

6.4 COMMERCIAL BANKS' AND MERCHANT BANKS' RESPONSES

Due to the promise of confidentiality, banks are noted as bank A to C for commercial banks, and bank D to F for merchant banks. The questionnaire for the commercial banks and the merchant banks focused initially on the type of banking in Zimbabwe compared to banks in other developing and developed countries, their reaction to the introduction of supervision, and the likely effects and effectiveness of supervision in Zimbabwe. The respondents were able to give answers to both Section A and B of the questionnaire. Where a question in Section A (open questions) was similar to a question in Section B (closed questions), the respondents preferred to answer the two questions together.

6.4.1 Comparison of banks in Zimbabwe and banks in other developing and developed countries

It was found necessary to ask bankers in Zimbabwe to indicate in what way Zimbabwean banking operations are different from those in other countries, both developed and developing. This is necessary because this study will later compare Zimbabwe's supervisory experiences to those of other countries (Chapter 8). The first question to the bankers was thus as follows:

Q1 What are the main operational differences between banking in Zimbabwe and banking:

- in other developing countries?

Various views were expressed; most of the bankers felt there were more similarities than differences. One difference between Zimbabwe and other developing countries' banking was that Zimbabwe had very tight exchange controls: the example cited by one banker was the difference between Zimbabwe and South Africa. The latter has a more liberalised exchange control system that is facilitated by its more abundant resources. This has an advantage of attracting foreign capital.

Another example given of differences by survey respondents was between Zimbabwe and Latin America. The Latin American countries were said to lack adequate controls - that is why they had debt problems. In this respect it was noted that in Zimbabwe there is tight control, each and every loan is monitored. One banker said that the Zimbabwe banking system is similar to countries whose economies are also similar to its own. Examples given were Kenya and Malawi. As one banker said: 'the stability of the economy dictates effectiveness of the financial system'. The next part of question 1 referred to the differences between the Zimbabwe banking system and systems in other African countries.

- in other African countries?

The main difference noted by almost all the bankers was that Zimbabwe had a more sophisticated financial system than other African states like Zambia, Mozambique, etc. All the financial institutions found in the United Kingdom, for example, are found in

Zimbabwe. Such institutions include insurance companies, finance houses, accepting houses, discount houses, the money market and a stock exchange. One banker pointed out that: 'the financial system is highly developed for an economy of its size. There is a good money market, and finance of trade is carried out through the market. In Africa, Zimbabwe can be said to trail behind Nigeria and Cameroon'.

Other differences noted were that, at independence, Zimbabwe was able to retain its financial expertise, in contrast to other countries like Mozambique. In these latter cases, expertise left the country when independence was gained. Even before independence in Zimbabwe there were trained local people in banking so the country had a sophisticated workforce at independence.

However, it was noted that there are more similarities than there are differences between the Zimbabwean banking system and other African banking systems. There are similarities because most African countries were former colonies of the United Kingdom so that their banking systems are modelled on the British system. As one banker put it, 'the banking systems in Africa (or perhaps most LDCs) are an extension of developed countries' structures'.

- **in other developed countries?**

The main operational differences noted between banks in Zimbabwe and the ones in developed countries are: the intensity of the infrastructure, global links and the role of technology in developed countries. One other major difference cited by most bankers was deregulation and the comparative openness of developed economies. Another factor mentioned was that the Zimbabwean banking

system was not as competitive as the developed countries' banking systems. Also, new products like futures and swaps found in developed countries are not yet available in developing countries.

One banker mentioned that an important difference between Zimbabwe and other developed countries is the balance of payments problem, which creates a need for greater control of resources. It was also noted that although the developing countries' financial systems are not yet as developed as the developing countries' systems, their regulatory systems are comparably developed.

6.4.2 Structural changes in the banking system

Banking systems elsewhere have undergone various structural changes during the past decade in the form of increases in technology, innovations and deregulation; these have resulted in increases in competition, increase in the variety of products, and a greater integration of markets. Most of these changes have been found to necessitate an increase in supervision because of new risks developing and banking becoming more complex, and hence risk analysis becoming more difficult.

It is with these considerations in mind that Question 2 (section A, open questions), 12 and 15 (section B, closed questions) are based. Respondents preferred to answer these questions simultaneously.

Q2 What factors would you say have significantly shaped the structure of the banking system in Zimbabwe?

Generally, bankers felt that there were only minor changes in Zimbabwe compared to structural changes which have occurred in

developed nations. However, bankers indicated several general changes including: innovations, new technology and new regulations.

One type of innovation mentioned by most bankers was term finance - whereby banks are able to arrange facilities offshore rather than companies having to wait for foreign exchange allocations. Another innovation mentioned was the greater corporate advice given to clients.

The type of technology which most banks mentioned was the introduction of computers in banking: this facilitated information processing and improved management information services. Also, some commercial banks have recently set up corporate banking facilities. One banker mentioned that there has been an increase in the volume of business. Other bankers mentioned that there is greater consciousness about giving more help to small businessmen from the commercial banking sector.

The kind of changes which the bankers thought had significantly altered the structure of banking were the conditions brought about by UDI and new regulations under the Banking Act. Before UDI all banks were branches of overseas banks and depended on the UK money market; they were also able to remit money to London. With the onset of sanctions at UDI, there was a complete break from London. Zimbabwe had to do new things like establishing letters of credit. UDI presented a state of affairs which was a special case where people had to act in accordance with new circumstances.

Another banker mentioned that the regulatory system has shaped the structure of banking, notably the need for financial institutions to operate within the laws of Zimbabwe, e.g. the Banking Act, Exchange Control Act, etc. Other bankers noted that

the UK banking system influenced the development of the banking structure in Zimbabwe.

The next question that bankers tackled was question 12.

Q12 Which of the following structural changes have you experienced, over the past 5 years and over the past 10 years

The respondents' answers to question 12 are shown in Table 6.1. The table indicates that there has been an increase in the variety of products, volume of business, financial innovation, technology, advertising, marketing and new product development. On this question the researcher aimed to find out whether the structural changes which had occurred in the Zimbabwean banking system were recent (over the past 5 years) or they had occurred over a longer period. Four of the six banks which responded to this question indicated that these structural changes had occurred over the past ten years.

The bankers then gave answers to question 15 which aimed at finding out the stimuli to the structural changes which had occurred in Zimbabwe.

Q15 Please indicate how you rank the following as stimuli to changes which have occurred in the banking system

Table 6.2 indicates the responses to qusetion 15. As shown in Table 6.2 only two banks thought that the structural changes mentioned had an influence on banking in Zimbabwe, and the comparative influence was not as great, as shown by their rankings. The response to question 15 (Table 6.2) indicates that Zimbabwe did not experience the same structural changes which occurred in developed systems (like increased competition, deregulation,

Table 6.1 Recent structural changes in the banking system

(Over the past number of years)

Years	Commercial banks						Merchant banks					
	Bank A		Bank B		Bank C		Bank D		Bank E		Bank F	
	5	10	5	10	5	10	5	10	5	10	5	10
Increased variety of products	X	-	-	X	X	X	X	-	-	X	-	-
More capital devoted to business	X	-	X	X	X	X	X	-	-	-	X	-
Increased volume of business	X	-	X	X	X	X	X	-	X	X	-	-
Increase in financial innovation	X	-	-	-	X	X	X	-	-	-	X	X
Increase in technology	X	-	X	-	X	X	X	-	X	-	X	X
Increased expenditure on:												
advertising	X	-	X	X	X	X	X	-	-	-	X	X
marketing	X	-	X	X	X	X	X	-	-	-	X	X
new product development	X	-	X	X	X	X	X	-	-	-	-	-

Table 6.2 Stimuli to changes occurring in the banking system

	Commercial banks			Merchant banks		
	Bank A	Bank B	Bank C	Bank D	Bank E	Bank F
Integration of markets	3	3	na	na	na	na
Competition between other financial institutions	1	3	na	na	na	na
Relaxation of monetary policies	3	2	na	na	na	na
More government involvement	3	3	na	na	na	na

integration of markets etc). It has been indicated in Chapter 5 that such structural changes contributed to the increased risks in banking, a phenomenon which necessitated an increase in supervision. The absence of such structural changes in Zimbabwe confirms that other reasons influenced the perceived need by the authorities to implement supervision (see also question 1).

6.4.3 Bankers' reactions to the introduction of bank supervision

The next four questions related to the bankers' reactions to the introduction of supervision: that is, the benefits and costs, the objectives of supervision in Zimbabwe, the appropriateness of the instruments and the likely effectiveness of supervision. Again, bankers preferred to answer related questions from sections A and B similtaneously.

Q3 Would you say bank supervision is a good thing for banks? Why?

All the bankers agreed that bank supervision was necessary and they gave several reasons. One banker said banks have over-extended themselves elsewhere because of inadequate supervision and this has resulted in failures. In this case supervision is necessary because there is a third party (the supervisors) looking at both the banks' and depositors' interests. This banker felt that if banks were left on their own they would look primarily at their own interests.

Another banker said supervision was necessary because of global needs, the breakdown of certain barriers, and developing off-balance sheet activities in banking. Another banker said that supervision was good in that banks would 'know where they stood'.

However, other banks mentioned that although supervision was necessary, the authorities should not over-regulate. They suggested that supervision should be by consultation with the banks and not be imposed upon them. Although the bankers generally agreed that it was necessary to supervise, one banker emphasised that banks are responsible and exercise their own self-regulation.

The next logical question was to ask bankers what they thought about the objectives of supervision in Zimbabwe.

Q4 In your opinion, what are the objectives of bank supervision in Zimbabwe?

Several objectives of supervision were given and these are listed below:

- to ensure that risk is related to capital, thus ensuring that banks are not taking excessive risks
- prudence
- to make sure that banks are conservative
- government seems to think that the banking sector is not on their side
- protection of depositors' funds against bank failures
- promote more professional bank management
- to ensure that exchange controls are observed and that the flow of capital out of the country is monitored
- to ensure that banks do not over-extend themselves by overlending
- that banks 'do not put all their eggs in one basket'
- to make sure that banks are operating within the rules

After answering this question bankers preferred to answer question 13 which also related to objectives of supervision in Zimbabwe.

Q13 Please indicate how you rank the importance of the following objectives of bank supervision?

Table 6.3 indicates how the bankers ranked the possible answers given by the researcher in respect of the perceived objectives of supervision. All the banks were unanimous in that the most important objectives of supervision were preservation of the stability of the banking system and the protection of depositors.

It has been said that all financial institutions should be brought under the same supervision because leaving other sectors unregulated might distort competition. It may also be that the unregulated sector could provide services which the regulated sector might have provided more efficiently. The next question was asked with these considerations in mind.

Table 6.3 Objectives of bank supervision

	Bankers' Rankings					
	Bank A	Bank B	Bank C	Bank D	Bank E	Bank F
Protect depositors	3	1	3	1	1	1
Protect individual banks	3	2	2	1	3	3
Stability of the banking system	1	1	1	1	1	1
Competitive banking system	3	2	3	3	3	3
Confidence to the public	3	2	3	3	3	3
Lessen probability of bank failures	2	2	2	3	3	3

Q5 Do you think that other financial institutions should be brought under the same supervision as banks? Why?

There was a mixed reaction as to whether other financial institutions should be brought under the same supervision as banks. Some bankers thought all financial institutions should be supervised equally, while others believed the other financial institutions had adequate supervision under their own acts (building societies are regulated under a Building Societies Act, finance houses are regulated under the Banking Act and insurance companies are regulated under an Insurance Companies Act), and therefore it was not necessary to bring them under the same supervision as the banks.

One reason given for wanting other financial institutions to be brought under the same supervision as banks was that it was unfair to regulate only one section of the banking industry because the unregulated might be at a competitive advantage. The implication (or fear) seemed to be that the banks might be comparatively, more heavily regulated.

One banker noted that although finance houses, building societies and insurance companies are adequately controlled by their acts, there were other deposit-taking institutions which had escaped the supervisory net. He felt that these institutoins should be brought under the same supervision as banks because they accept deposits and offer banking services just like banks.

The next question related to the appropriateness of supervisory instruments used in Zimbabwe.

Q6 In your opinion how suitable are the present supervisory instruments in Zimbabwe?

The bankers' views on this issue were again varied with some saying the instruments were appropriate while others said they were time-wasting and were copied directly from the United Kingdom although the two economies are very different. However, one banker mentioned that although the supervisory instruments originated from the United Kingdom, they were being adopted to suit the Zimbabwean situation and would be suitable after a period of evolution.

Some of the points mentioned by bankers who said the supervisory instruments used were not suitable for Zimbabwe were that they were too strict, there is no leeway. They affect the industry and the banks' decision-making. Banks are no longer able to make decisions quickly because it takes time to conclude any contract with a client because of bureaucracy. They pointed mainly to the need to refer loans exceeding 10 per cent of shareholders funds to the Reserve Bank. Bankers felt that this reduced their quality of service and resulted in inefficiency.

One merchant banker pointed out that, from a merchant bank point of view there was no need to monitor liquidity because they could get the money through interbank borrowing and also from the discount market by discounting bills at any time. They are at the moment holding a lot of bills in their portfolios as investments because there is no need to discount all of them as they do not need the money, the economy is too small and there is nowhere to lend. This banker also thought that there was no need to monitor capital because they have enough retentions internally. In this regard he

thought most of the supervision was time wasting and that Zimbabwe should concentrate on exchange controls.

6.4.4 Effects of supervision

Generally, some people (especially in the United States) feel that regulation may stifle competition and innovation. For example, some of the US research on regulation has shown that regulation can lead to inefficiencies and can increase costs substantially. It is with these issues in mind that questions with regard to the effects of regulation were asked.

Q7 What are your views on structural deregulation (liberalisation of the banking system, for example, relaxing certain controls)?

On this issue, some bankers were for liberalisation while others were more conservative. Two bankers who 'strongly' felt that liberalisation was essential thought that this would attract foreign capital which was crucial for development in Zimbabwe. They said that Zimbabwe cannot grow without outside assistance. In this respect it was mentioned that: 'it might be necessary to do away with exchange controls so that investors of new capital can come in'. All the export surplus was going to servicing debt rather than on economic development. Thus if there was relaxation of exchange controls, new foreign investment might be forthcoming, thereby providing the country with the much-needed capital.

Two other bankers (who were on the conservative side) thought that it may not be viable to deregulate considering the state of the economy, but they also said that if it was to come and be done properly it would be beneficial to the country.

The other two bankers thought that there was no need for deregulation at all.

The next question related to the expected effects of capital adequacy measures introduced in Zimbabwe.

Q8 What would you say are the effects of capital adequacy requirements on banks?

There was again a varied response on this issue. One banker mentioned that capital adequacy restrictions do not enable a bank to distribute as much dividend as they want: 'you tend to retain more in the business'. On the other hand the same banker noted that capital adequacy requirements stabilise the banking system and promoted public confidence in the system.

Another banker said that capital adequacy requirements in Zimbabwe do not have any effects at all since what the authorities have prescribed so far was already being observed by the banks anyway.

One banker said that capital adequacy requirements have far-reaching implications for off-balance sheet finance since contingent liabilities are not considered for capital adequacy ratios. Thus, banks might be influenced to concentrate on off-balance sheet business: the present risk assets ratio system does not take into account contingent liabilities. This banker said that capital adequacy requirements also had a serious effect on competition. Those banks with smaller capital will not be able to attract business. Another effect of these requirements was that banks would need to restructure their balance sheets.

The positive effects mentioned included good monetary standards, better decision making and improved management standards. There will also be a re-evaluation of marketing strategies, and banks will tend to be selective on what they do. One consequence might be to concentrate on short term lending. The effect of capital adequacy requirements on competition were stressed by one banker who said, 'there is no open licence to lend'.

The bankers then went on to answer question 16.

Q16 Please indicate how you rank the following effects of capital adequacy requirements

Table 6.4 shows how the bankers ranked the effects of capital adequacy requirements. When asked to rank effects of capital adequacy in order of importance, the indication was that financial innovation is likely to increase. On lower return on capital as an effect of capital adequacy requirements, most bankers thought that because of high requirements banks will seek to be more aggressive in their operations and think of new avenues to increase their profits.

The next question was aimed at finding out if Zimbabwean banks' operations had any outside influences.

Q9 How are you influenced (if any) by the capital adequacy criteria used by banks outside this country?

Banks in Zimbabwe are greatly influenced by criteria used by overseas banks. For example, for banks with overseas headquarters, the criteria are set overseas for subsidiaries to follow. One banker noted that the benefit is that their capital is always in

order and might reduce the amount of supervision locally: thus in the end, supervision might be dictated by the banks.

Table 6.4 Effects of capital adequacy

	Bankers' Rankings					
	Commercial banks			Merchant banks		
	Bank A	Bank B	Bank C	Bank D	Bank E	Bank F
Lower return on capital	2	3	3	1	N	1
Excessive risk taking	3	2	3	3	O	1
Reduces diversification of assets	3	2	3	1	E	N/E
Reduces incentive to compete	3	3	3	1	F F	N/E
Increases financial innovation	1	2	1	1	E C T	1

Another banker mentioned that they are influenced by the capital adequacy criteria used by overseas banks as they are part of the international community. Another banker said that they are not directly influenced by overseas banks but they tend to observe overseas ratios as prudent management since they feel that they have to learn from other people's experiences.

Q10 In what way do you think the structure and operation of banking in Zimbabwe are going to be changed more by bank supervision?

Here bankers put forward quite a few points. As far as the change in structure of banking is concerned, they did not think

there would be any significant change. However, the operations of banks were going to change, according to bankers.

Banks would be more accountable by way of providing more information to the Reserve Bank. Another banker mentioned that supervision forces you to consider your asset and liability strategies.

Another point made was that there is a need to become innovative, and this forces you to keep in touch with banks overseas in order to learn from them. He also noted that by increasing bank supervision the government was assuming its 'responsible role'.

Another banker thought that greater bank supervision makes life more difficult. Staff time is taken in filling in returns; time for the bank's own decisions is taken up in complying with regulatory instructions. These 'compliance costs' adversely affect the operations of banks and the industry in that service is reduced from banks, thereby resulting in inefficiency.

Another banker said that supervision will not alter the present operations, especially as far as large loans are concerned. This is because Government require banks to lend large amounts to companies which are considered to be the backbone of the economy, and supervisors can do nothing about these exposures.

Another banker hoped that in future there would not be more but less supervision as he hoped that management of banks would dictate supervision rather than vice versa.

One question which the researcher asked the Reserve Bank was the importance of banks in the economy. It was felt necessary to find out the opinions of the bankers on the same question since one

of the reasons why banks are regulated more than other financial institutions is their unique role in the economy.

Q11 Please indicate how you would rank the following roles of banks in Zimbabwe

This question was aimed at determining the importance bankers placed on banks in the Zimbabwean economy. Table 6.5 indicates that source of liquidity to the economy, international trade financing, and the payments system were felt to be the major roles of banks in the Zimbabwean economy.

Table 6.5 Roles of banks

	Bankers' Rankings					
	Commercial banks			Merchant banks		
	Bank A	Bank B	Bank C	Bank D	Bank E	Bank F
Mobilise savings	2	1	2	1	3	2
Payments mechamism	1	1	3	1	1	1
International trade	1	1	2	1	1	1
Monetary policy	1	2	1	3	3	3
Source of liquidity	1	1	1	2	2	1

In order to discover what type of supervision bankers would prefer in Zimbabwe, question 14 was posed to them.

Q14 Which of the following styles of supervision would you prefer?

Table 6.6 indicates the bankers' responses to this question. According to Table 6.6 banks in Zimbabwe prefer a style of regulation where the regulations relate to the general liquidity and

Table 6.6 Preferred supervisory style by each bank in Zimbabwe

	Commercial banks			Merchant banks		
	Bank A	Bank B	Bank C	Bank D	Bank E	Bank F
Where explicit regulations relate to the detailed business operations and allowable range of activities of banks				X		
			Blend of both			
Where regulations relate to the general liquidity and capital adequacy requirements of banks	X	X			Neither	X

capital adequacy of banks. The bankers were not keen on a style where explicit regulations relate to the detailed business operations and allowable range of activities of banks. This response indicates that bankers in Zimbabwe would not entertain (or co-operate with) a rigid style (tight regulation) of supervision.

The final question which the bankers were required to respond to related to the general effects supervision was going to have in Zimbabwe. Llewellyn (1986, p. 12) points out, 'It is possible that regulation in one area, while serving a specific purpose, may impair efficiency in other dimensions. The effect of regulation needs to be considered not only in the particular area of its application but in terms of its effect in the financial system generally because seldom, if ever, are the effects of regulation restricted in one area'.

Q17 Please indicate how you rank the following effects of prudential regulation in general

Table 6.7 indicates how bankers view the likely effects of regulation in Zimbabwe. According to Table 6.7 all the bankers (except one) strongly felt that supervision was going to help ensure the stability of the banking system. Only one banker (a merchant banker) thought that in Zimbabwe supervision was not going to have any effect at all. This banker was also of the opinion that the supervisory instruments adopted in Zimbabwe were more suitable for a developed country. On the whole bankers thought that supervision had positive effects in Zimbabwe.

6.5 SUMMARY AND CONCLUSIONS

Some crucial issues to this study are raised in the preceding survey of bank supervision in Zimbabwe. Although supervision is new and has only just started, it can already be discerned what the objectives, approach and style are likely to be. However, the regulators have clearly stated that they are still establishing a viable system which is Zimbabwean, although to get started they had to borrow ideas from other central banks, mainly the Bank of England. The following chapter will focus more specifically on the costs and benefits of supervision, and explore the key role of capital adequacy (solvency) ratios in modern supervision. This is a necessary prelude to later (in Chapters 8-9) comparative analyses.

Table 6.7 Effects of regulation in general

	Bankers' rankings					
	Commercial banks			Merchant banks		
	Bank A	Bank B	Bank C	Bank D	Bank E	Bank F
Reduces competition with other financial institutions	3	3	3	1	N/E	3
Prevents diversification with new areas	3	3	3	1	N/E	1
Reduces competition among banks	2	3	3	1	N/E	3
Stability of the banking system	1	2	1	1	N/E	1

Note: N/E - no effect

CHAPTER 7

COSTS AND BENEFITS OF SUPERVISION: AN EMPIRICAL VIEW

7.1 INTRODUCTION

This chapter examines the costs and benefits of imposing different capital-adequacy ratios on banks. The objective is to use theory and practical policy considerations (from Chapter 6) to draw out, or hypothesise, the possible and potential empirical effects of different capital adequate regulations. As we have seen in earlier chapters, capital adequacy is a central component, the main prudential constraint system, in bank supervision. Zimbabwe is no exception to this pattern. The preceding survey evidence (in Chapter 6) confirmed the central role of capital adequacy in the Zimbabwe supervisory system. The comparatively developed nature of Zimbabwe's banking system and the international banking aspirations of the authorities all confirm that (like more developed countries) capital adequacy will be a central issue as the system develops in the 1990s.

At the broad level, the benefits of imposing capital adequacy regulation are realised if there is an improvement in the performance and condition of banks, while the respective costs will be indicated by a corresponding deterioration in banking condition and performance ceteris paribus. This reduces the appraisal problem to a basic risk and return trade-off, a kind of Markowitzian portfolio space. This empirical view poses three basic problems:

1 defining performance and condition statistics

2 linking these statistics to capital adequacy rules and changes in these rules

3 separating capital adequacy effects on these statistics from all other possible determining factors.

We will explore these issues in this chapter as a prelude to our comparative analysis in Chapter 8.

Bank performance and condition will be defined (for our purposes) in terms of the efficiency with which banks select their portfolios. Bank portfolio choice will be based on a micro-level, portfolio theoretic view of the world in which the decisions of banks when selecting their portfolios depend on the return and risk of the alternative available portfolios, or business (balance sheet) mixes. Efficiency in this case is obtained when the banks can maximise their return for a given level of risk, or minimise risk for any level of given return. Thus, maximisation of return and minimisation of risk under this 'dominance principle' are useful proxies for improvement in performance and condition, respectively. We will seek to translate these into operational proxies.

Since the concepts of risk and return of the banking firm are important aspects of banking behaviour, section 2 will analyse the risk and return decisions of banks based on portfolio theory. Also, this section has a second aim in that it will help in defining bank efficiency in terms of the required risk and return measures.

We have already indicated that we intend testing the effects of capital adequacy measures. As we have explained, capital adequacy is singled out because of its central role in supervision. However, despite the widespread use of capital adequacy measures by bank examiners, little empirical work has been undertaken to examine the impact of these measures on developed banking systems, and no such work exists to the researcher's knowledge in developing countries.

Before examining the likely impact of various capital-adequacy measures on bank portfolio performance and condition in section 4, section 3 is devoted to capital adequacy analysis. In particular, section 3 will analyse the important role of capital, the definition of capital and the measurement of capital adequacy.

Section 4 analyses the hypothesised effects of capital adequacy by looking at evidence from theory. This analysis will also help in indicating research methodologies that can be used to test effects of different capital-adequacy ratios on banks. The hypothesised effects of capital adequacy identified in section 4 will be translated (operationalised) into measurable statistics that can be tested using Zimbabwean aggregate and individual bank data. These quantifiable measures are summarised within what we have called a Basic Performance and Condition Matrix (BPCM) in section 5. An exploratory data analysis will be performed using these measures in the next chapter. The results will be used to help indicate the likely effects of the measures used in Zimbabwe: that is, whether the current supervisory system is a viable one in the portfolio theoretic sense we have outlined, its respective costs and benefits and whether it should be improved and how.

7.2 CONDITION AND PERFORMANCE OF BANKS: RISK/RETURN OF THE BANKING FIRM

7.2.1 Efficiency of the banking firm in terms of risk and return

The hypothesis to be explored is that an appropriate system(s) of supervision will improve the performance and/or condition of the banking system. Our immediate task is to identify performance and condition measures which we can test in order to identify the

effects of supervision. This brings us directly to the question of the operational objectives of supervision. For our purposes (based on our preceding analysis and survey results) an implicit objective of supervision is to promote the efficiency (improving the risk/return locus) of the banking system. A related question can be posed: what characterises an efficient banking firm?

Our definition of efficiency will be based on Markowitzian portfolio theory's risk and return analysis: that is, criteria by which risk-averse firms choose their particular investments. Portfolio theory is a collection of rules by which a selection of portfolios can be made. Because of uncertainty surrounding investments, returns are expressed in the form of probability distributions of expected returns. The actual amount of expected return realised is uncertain because it depends on factors beyond the firm's control. Such factors include movements in the economy like interest rates, exchange rates, taxation, prices of commodities, government spending, and changes in the money supply. Risk, then, can be defined as the dispersion or spread of likely returns around the expected return. Risk in this sense is the foundation of banking.

The concepts of risk and return on investments (any decision that generates a cash flow stream in the future) are important in order for investors to make decisions regarding the amount of risk they are prepared to take. Investors generally expect a certain amount of return for a given amount of risk. The higher the risk, the higher the amount of return they expect from the investment ceteris paribus. For example, an investor who borrows from the bank to invest in securities, might earn a higher return than if his

funds had remained in the bank, but there is a greater risk if security prices fall. An investor who leaves his funds in a commercial bank usually has a much lower risk but has to be content with a corresponding given and lower expected return. Investors generally do not like risk; thus the greater the riskiness of returns, the higher the corresponding returns they expect. This risk-avoidance characteristic is formalised in the diminishing marginal utility of money. This indicates the fundamental trade off between risk and return, a standard result and hypothesis in modern financial economics.

Portfolio theory suggests that for any given level of risk the rational (risk averse) investor would select the maximum expected return, and for any level of expected return, the rational investor selects the minimum risk. Thus, portfolio theory is concerned with efficient combinations of assets. The expected return of a portfolio is defined as:

$$E(R) = \sum_{i=1}^{n} x_{i}\mu i \qquad (7.1)$$

where $E(R)$ = expected return on the portfolio

x_i = amount invested in security i

μi = expected return on security i

Risk in a portfolio is measured by the variance of its return. The variance of return on a portfolio is determined by the variance of each security and also by the covariance of returns between each pair of securities.

$$V(R) = \sum_{i=1}^{n} Xi^2\sigma i^2 + 2 \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} XiXj\sigma ij \qquad (7.2)$$

where

$V(R)$ = variance of return of the portfolio

σi^2 = variance of return of security i

σij = covariance of returns between securities i and j

The covariance measures the extent to which returns move together and it depends on the correlation of returns between two securities and variances of their returns.

$$\sigma ij = \rho ij\sigma i\sigma j \qquad (7.3)$$

where ρij is the correlation coefficient between the returns of securities i and j.

Equation (7.3) becomes:

$$V(R) = \sum_{i=1}^{n} X\, i\sigma i^2 + 2 \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} XiXj\rho ij\sigma i\sigma j \qquad (7.4)$$

The correlation coefficient varies between +1 and -1, and the smaller the value of the correlation coefficient, the smaller the variance of the portfolio. Ideally, if you can combine negatively correlated or uncorrelated shares in a portfolio you can reduce risk completely. However, combining shares with a positive correlation can also reduce risk under certain conditions. This statistical property is generally used to explain formally how risk can be reduced through diversification.

The importance of the risk (variance of return) and expected return of portfolios is to enable investors to select the most efficient portfolios without knowing the exact shape (except the general risk aversion property) of investors' utility functions. Figure 7.1 illustrates how the risk and return considerations can be used to help select efficient portfolios. Efficient portfolios offer the maximum expected return for any given level of risk and/or the minimum level of risk for any given level of return: these selection, or decision, criteria are formalised as the so-called 'dominance principle'. For any given level of expected return, a rational investor would select a portfolio with minimum risk.

In Figure 7.1 the attainable set (XYZK) includes all possible portfolios of securities as envisioned by the investor. The line (XY) depicts efficient combinations (the efficient frontier) using the 'dominance principle'. It depicts the trade-off between risk and expected value of return. According to the Markowitz mean-variance maxim, an investor should seek a portfolio of securities that lies on the efficient frontier. A portfolio is not efficient if there is another portfolio with a higher expected return and a lower standard deviation, a higher expected value and the same standard deviation, or the same expected value but a lower standard deviation. If an investor's portfolio is not efficient, he can increase the expected value of return without increasing the risk, decrease the risk without decreasing the expected value of return, or obtain some combination of increased expected value and decreased risk by switching to a portfolio on the efficient frontier.

Figure 7.1 The efficiency frontier

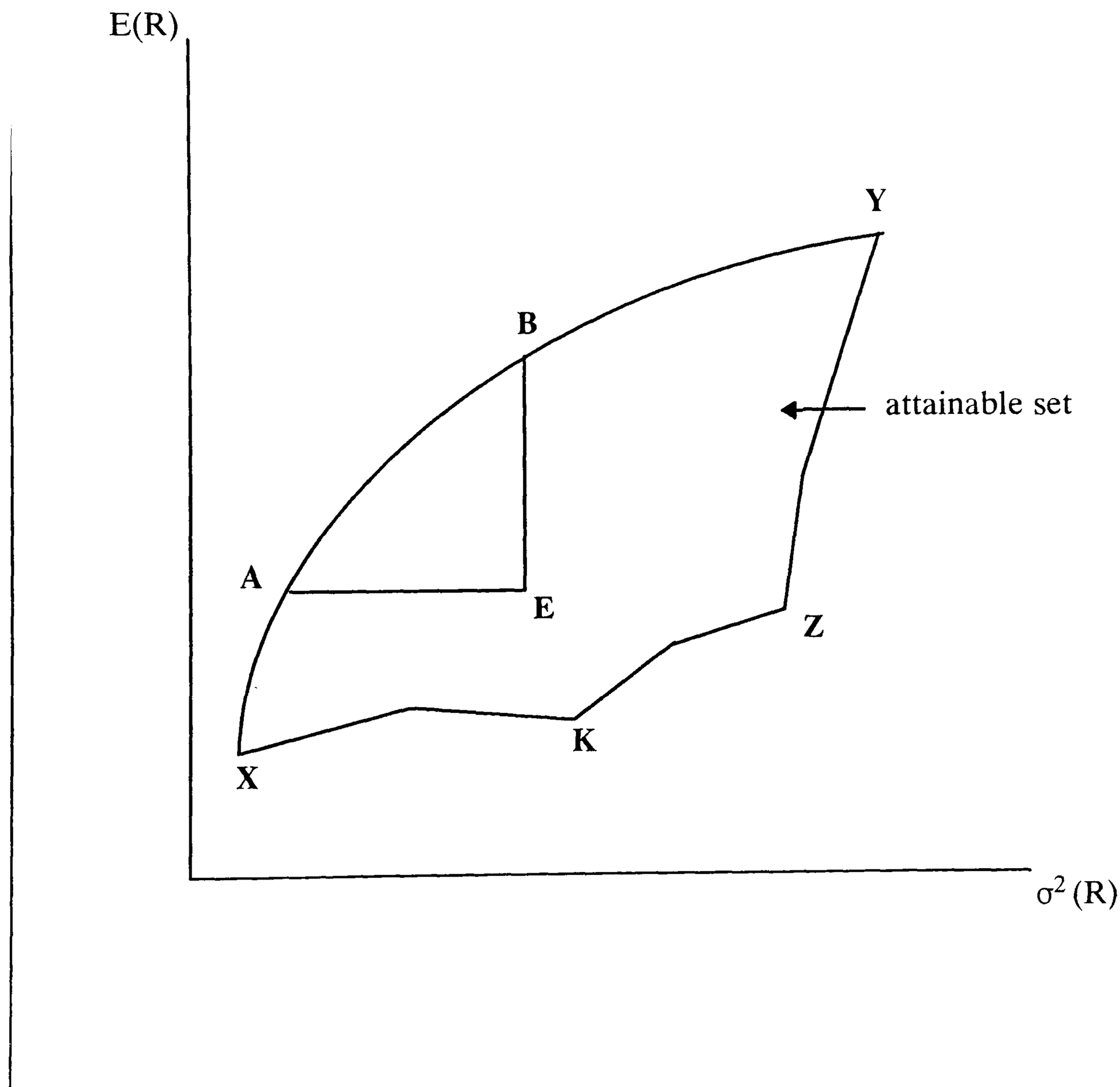
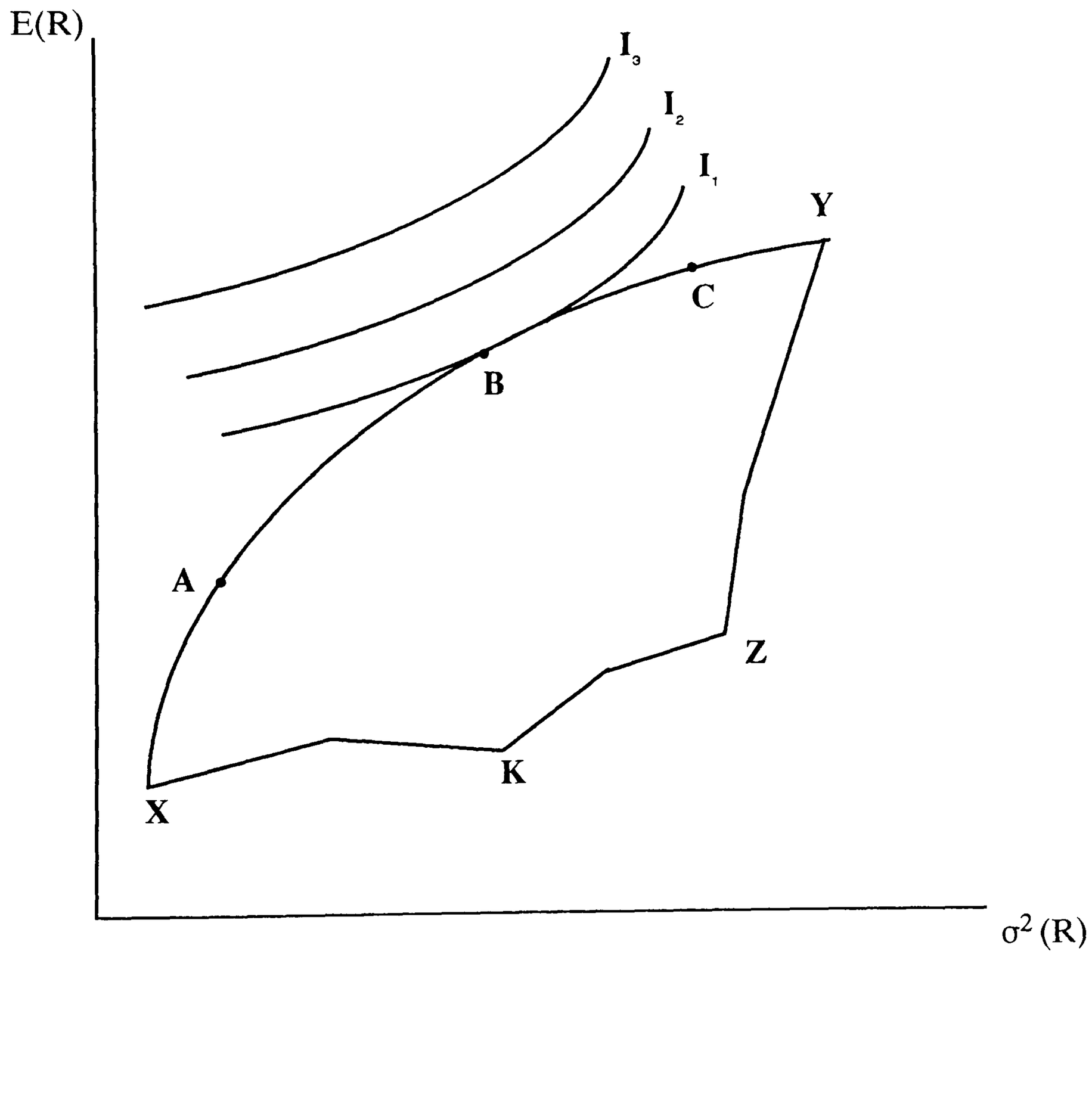


Figure 7.1 illustrates these fundamental principles. If we compare A and E, the expected returns are the same but the variance for E is higher and so A is preferable. Comparing B and E, they have the same amount of risk, but B has higher expected return, so B is preferable to E. Clearly B is better than E, and A and B are said to dominate E. Thus all points on the line (efficient frontier) XY dominate the others.

However, the question is, where exactly on the efficient frontier should we be? The choice of a particular portfolio among the efficient set depends on the individual investor's particular risk/return preference. For example, in Figure 7.1, the choice between, say, A and B depends on whether the additional return expected from investment B is sufficient compensation for the extra risk involved. Since the choice of portfolios depends ultimately on the investor's own preference (utility) function, the final position on XY is set by the tangency with the investor's utility function. Thus, in order to choose the optimum portfolio among the efficient set, we introduce indifference curves as indicated in Figure 7.2.

Along an indifference curve, the individual is indifferent between any combination of expected return and risk: that is, his utility is constant along the curve. Higher indifference curves represent higher utility, since for a given risk level, expected return increases. The investor, therefore, wishes to be on the highest possible indifference curve in order to obtain the maximum possible level of utility, and this is given by the point of tangency between an indifference curve and the efficient frontier: that is, point B in our diagram.

Figure 7.2 Selection of the optimal portfolio



The point represents the optimal portfolio which maximises expected utility of the investor's uncertain return (profits). The utility maximisation is given in the form of:

$$\text{Max } U = E(R) - \propto\sigma(R) \qquad (7.5)$$

depicting a direct relationship between risk and return.

The above analysis indicates that bank efficiency is achieved when the bank's portfolio decisions enable it to reach the efficient frontier. That is, when the bank selects the maximum expected return for a given level of risk and for any level of expected return the investor would select portfolios with minimum risk.

These are the basic principles of Markowitzian portfolio theory, and this risk and return trade-off problem is fundamental to financial decision-making. Taking on more risky positions (or business) generally requires a higher return. Banks are not exempt in any way from this fundamental law, except to the extent that their risk-taking may be underwritten to varying degrees by the central bank. The survey evidence in Chapter 6 and the preceding analysis appears to confirm that one important objective of supervision is inter alia to foster explicit awareness of this risk/return trade-off. Portfolio theory of this kind is particularly relevant to the financial decisions of banks (see Santomero, 1984 and Sinkey, 1986). Unlike companies (and corporate finance theory), Markowitzian portfolio theory remains particularly important to banks as a practical finance tool and theory. We now need to consider in more detail how these principles apply to banking in general.

7.2.2 Portfolio theory and banking

This section reviews the related micro theory of the banking firm. The objective is to enhance our understanding of the banking firm's optimal behaviour and to substantiate further the practical relevance of portfolio theory and other micro-finance insights for present purposes. This can be done by first analysing the reasons why banks exist, and then modelling the objective of the banking decision process.

There are three important views of the banking firm: namely the asset transformation function, role of the bank's liabilities and the two-sided nature of the financial firm (see Santomero, 1984).

7.2.2.1 Asset transformation function

A fundamental role played by banks is as asset transformers. In this role the institutions' ability to diversify assets and the asset evaluation function are important attributes. Banks are able to transform large denomination assets into smaller units. One explanation given in this case (see Santomero, 1984) is that the portfolio choice of the depositor is sub-optimal because depositors are faced with unit constraints which the intermediary is able to exploit. Thus the intermediary offers a risk/return opportunity set that dominates the depositors' set. An argument offered to support this view concerns transactions cost-minimisation ability of the institution.

Another explanation of the asset transformation role is that the bank acts as an evaluator of credit risk. Santomero (1984) states that: 'banks function as a filter to evaluate signals in a financial environment with limited information'. This argument can

be reinforced by noting that due to imperfect information concerning the value of the underlying project, investors can glean some information about the project's quality by observing the willingness of the insider to invest equity capital in the endeavour. Accordingly, the financial structure of the firm adds information to the market (Santomero, 1984).

7.2.2.2 Role of the banks' liabilities

Another reason advanced to explain the existence of banks is the central role played by the demand deposit liability as a medium of exchange. In this regard, the central feature of a monetary unit is its ability to minimise the cost of transactions in converting income into the optimal consumption bundle. Money holdings are part of the household's attempt to maximise a utility function in terms of consumption (Santomero, 1984). Money allows the economic agent to search across the distribution of prices.

Also, money balances attract a profit potential for the banks. The profits depend upon the characteristics of the money-type liability issued and the explicit pricing structure of the institution. According to the 'demand for money' theory, positive money holdings are a function of transactions costs, uncertainty, and relative rates of return. The monetary mechanism, along with bank pricing decisions, offers the financial firm the opportunity to attract deposits which may be reinvested at a positive spread. The spread will depend on competition and the nature of transactions; the ease of transfer between accounts and the development of cash dispensing options are all central to the evolution of the banking system's monopoly position.

7.2.2.3 The two-sided nature of the financial firm

The third argument explaining the existence of the banking system centres upon the conditions necessary for banks to exist as internal financial firms. The model used is that of the maximising firm in a financial market with uncertain rates of return (see Santomero, 1984). The model's conclusion is that the covariance between the return on loans and deposits fosters intermediation by encouraging the risk-averse maximiser to transform deposits into loans. The correlation between profits and the level of rates is also considered important in explaining financial intermediation. 'The covariance reduces the uncertainty around expected profits, and due to concavity, encourages intermediation activity' (Santomero, 1984). Because of the different interest rates, the banking firm can engage in risky arbitrage. The value of the firm is achieved by the expectation of a positive expected spread and a small variance.

7.2.2.4 Banks optimal behaviour

Having examined the different roles (explanations) of banks in the financial system, the next step is to analyse how a bank sets out to achieve its objectives in an optimal way. For present purposes an important question that can be asked is: 'What influences the bank's behaviour in its decision making process?' The banking firm's problem becomes that of attempting to maximise an objective function, subject to a set of constraints.

The banking firm is viewed as a microeconomic firm with the objective of maximising terminal wealth. The banking firm does this by either controlling prices or quantity of assets. However,

banking choice depends on the environment or regulation. Regulation, for example, can restrict the banking opportunity set or can increase the monopoly position of the banking industry. Within this environment, the banking firm seeks a solution to its optimisation problem. The banking firm's objective function can be stated formally as:

$$\max E \left[V(\tilde{W}_{t+T}) \right] \tag{7.6}$$

where:

$$W_{t+T} = W_t(1+\tilde{\Pi}_{t+1})(1+\tilde{\Pi}_{t+2})\ldots(1+\tilde{\Pi}_{t+T}) \tag{7.7}$$

$$\tilde{\Pi}_{t+k} = \frac{\Sigma i \tilde{r}_{Ai} A_i - \Sigma j \tilde{r} k_{Dj} D_j - C(A_i D_j)}{W_{t+k-1}} = \frac{\tilde{\Pi}_{t+k}}{W_{t+k-1}} \tag{7.8}$$

where:

$V(.)$ = objective function, where $dV/dW_{t+T} > 0$, $d^2V/dW^2_{t+T} \leq 0$

$(\tilde{W}_{t+T})$ = the value of terminal wealth at the horizon time T

$\tilde{\Pi}_{t+k}$ = the stochastic profit per unit of capital during period t+k, where $0 \leq k \leq T$

$\tilde{r}_{Ai}$ = the stochastic return from asset i

A_i = the asset category i, where $1 \leq i \leq n$

$\tilde{r}_{Dj}$ = the stochastic cost for deposit j

D_j = the deposit category j, where $1 \leq j \leq m$

$C(.)$ = the operations cost function, where $dC/dA_i \geq 0$ for all i, and $dC/dD_j \geq 0$ for all j

Equation (7.6) is the objective function to be maximised. Equation (7.7) is cast as a multi-period valuation model. However, independence between periods is assumed to enable a single period analysis to be effected (a common approach with portfolio models). Equation (7.7) is a definition of profit per unit of capital invested; equation (7.8) indicates that the optimisation procedure involves the dual choice of leverage and portfolio components. Equation (7.8) also indicates operating or real resource costs, an issue which has attracted increased attention recently as the industry views it as important. The first derivative indicates that more wealth is preferred to less. However, the second derivative determines the extent of the utility maximisation. There are two types of behaviour a banking firm may follow namely:

1 the firm may be an expected profit maximiser, or

2 a risk averse investor (selecting a mean variance efficient portfolio).

In the second case (risk averse investor), some form of wealth concavity is assumed (see Hart and Jaffee, 1974; Koehn and Santomero, 1980). The first case (profit or expected value maximiser) is consistent with a linear objective function in terminal wealth, that is $d^2V/dW^2_{t+T} = 0$ (Santomero, 1984).

In order to understand the motivation of the banking firm, a choice between the two types of behaviour mentioned above is important. As Santomero (1984) has said: 'such choice is at the heart of how one views the behaviour of the financial firm. Specifically, when modelling the optimisation problem, one implicitly defines the motivating force behind bank decisions by specifying the agent and his objectives for the firm'.

Two motivating forces are apparent, namely equity holders and bank management. For equity holders, the argument offered is in favour of a linear objective function. This can be true in a perfect capital market where financial intermediaries need not exist and the equity investor's choice is superior to the bank management's choice. In this regard any efficient portfolio can be perfectly duplicated or hedged by the equity investor. If the investor's objective function is the choice taken, then banks' portfolio decisions are determined by the utility maximisation of the owners and there is no benefit in separating the portfolio choice problem.

However, earlier sections (which discussed the role of the financial intermediary) indicated the bank's ability to exploit financial market opportunities that are not available to the non-depository institution. Thus, as Santomero (1984) argues: 'credible arguments have been offered in favour of the assumption of utility function concavity. The traditional corporate finance explanation rests upon the assumption that management is responsible for decision-making and its inability to diversify its human capital'. A factor which has been put forward to enforce the argument in favour of insufficient owner diversification is the fact that in the banking industry, equity is not widely traded. The agency problem argument can be used to support the utility function concavity. Based on this view, Santomero (1984) states that '... investors with linear utility functions establish reward schedules for management that lead to risk-averse behaviour'. Other factors advanced to support the risk averse behaviour are the information arguments and the presence of bankruptcy costs. Thus, a considerable body of the

standard literature seems to apply the risk aversion assumption to explain the behaviour of the banking firm.

If risk aversion behaviour in this sense is explainable within developed financial systems, the arguments supporting risk-aversion are even stronger in developing countries. By definition, financial markets are less developed and bank stocks much more thinly traded, thereby restricting opportunities for arbitrage, 'homemade leverage' operations and the operation of the value additivity principle. A counter argument might be advanced, however, that scope exists for considerable risk-seeking behaviour by banks to the extent that some of their activities might be underwritten effectively by the central bank: for example, lending to underdeveloped and high risk sectors. The survey evidence in Chapter 6, however, suggests that one objective of capital adequacy supervision in Zimbabwe (and elsewhere) is to encourage risk aversion (in a Markowitzian sense) in the banking firm. Another objective (albeit implicit) is to make explicit the risk and return trade-offs involved. We have seen that Zimbabwe appears to practice (or assume) these normative objectives, but it is still at an early stage with the latter: risk asset ratios are still in their infancy. It is against this background that we need to look much more closely at the capital decision of banks.

7.2.2.5 The capital decision

The first thing to note when trying to determine the optimal capital structure of the bank is that, 'the capital decision is more complicated than it may first appear because the optimal choice of scale and leverage is determined by the assumed financial environment and the raison d'etre of the firm' (Santomero, 1984).

Orgler and Taggart's (1983) view is that optimal bank capital structure depends upon the bank's efficiency in producing its services together with the interplay of taxes on profits. The theory is that banks can exploit excess loan revenues and transaction service profits. Such theories help explain the variations in bank capital in different financial firms due to the differences in scale and operational efficiency.

Kahane (1977) and Koehn and Santomero (1980) used portfolio theory to explain the capital decision of the firm. According to their theory, a bank optimises its rate of return on capital by selecting a portfolio of assets and leverage positions that optimise shareholders' welfare. As will be shown in section 7.4 their framework was also used to analyse the effects of an increase in capital adequacy requirements. The results indicated that although capital increases as a fraction of assets, the resultant portfolio is riskier than before the change in the regulation. This result warns us that when imposing a regulation, the likely behaviour of the firm should be well understood in order for the regulation to be effective.

Talmor (1980) used the gambler's ruin technique to the capital decision problem. He concluded that appropriate capital involves the determination of an acceptable probability of bankruptcy and derives an optimal structure to achieve this ex ante acceptable level. The management determines the appropriate ex ante probability of failure by portfolio choice.

Regulation - for example, capital adequacy constraints - affects the banking firm's decisions regarding portfolio choice and scale of operations and leverage. Because of the important role of

capital the next section is devoted to the examination of the role of capital in regulation, the definition of capital for prudential purposes and the measurement of capital adequacy. We have already emphasised the central role of capital adequacy in modern banking supervision.

7.3 CAPITAL ADEQUACY ANALYSIS

7.3.1 The important role of capital

Capital adequacy has become the main supervisory tool used to assess prudential soundness of banks both in the developed and developing world because of the important role it plays in the banking firm. As Pecchioli (1987, p. 105) suggested: '... there is greater need to emphasise capital as a means for strengthening supervisory safeguards and for instilling greater discipline in risk assessment and control'.

The primary role of capital in a supervisory sense is to act as a cushion against unanticipated losses that cannot be absorbed by current earnings. This is so because many dangers to banks arise from unanticipated changes in the economy, like movements in interest rates, reserves, output and international events which cause large and unforseeable swings around expected returns. The main issue here is the uncertainty surrounding returns from portfolios. When a bank selects its portfolio, it can determine the expected return and risk (the chances of losses), but it cannot be certain about the actual results. This is where capital becomes crucial, because adequate capital can help minimise the probability of failure. Other internal prudential resources and good diversifi-

cation policies are also important and relevant here as the preceding analysis has emphasised.

Some economists have argued that if a bank earns good profits and can increase its asset value because of successful investments, there is no need for capital; and that if a bank is performing badly, a high level of capital will not solve its problems. In this case, instead of increasing capital, it is argued there is need for serious improvement in bank management, by changing investment policy, more efficient operations and re-organisation of financial structure. Talmor (1980, p. 789) argues, however, that: 'capital is required because management inadequacies in the real world cannot be observed and corrected instantaneously. Capital thus acts as a short-term buffer until bad performance is recognised and better management policies are implemented and become fruitful'.

Capital, in its role as buffer against unexpected losses, is important as a protection to depositors and creditors. Thus, there is a link between capital adequacy and the public policy concern of maintenance of confidence. In this regard, Pecchioli (1987, p. 106) notes that: 'it is generally recognised that the availability of capital is neither a perfect indicator of the state of health of a bank nor a sufficient condition to ensure the maintenance of confidence by depositors and creditors, but no doubt it represents a major element in shaping their perception of the solidity of an institution'. Pecchioli also notes that the market uses capital as a yardstick when measuring the strength of a bank.

Capital adequacy also has a related role in ensuring bank safety by instilling discipline on bank management. In this respect, supervisors have authority to impose standards on the level

and composition of capital and its relationships to risk factors. By acting on the required level of capital adequacy, supervisors are in a position to impose constraints by setting definite boundaries on the potential for expansion of the bank's business.

Although capital adequacy assumes greater importance, this is not to say, however, that other prudential resources like available profit, liquidity, are not important. As Gardener (1978) has observed: 'in prudential appraisal and regulation, one has to recognise that capital adequacy does play an important role. However, it is not a role that realistically can be viewed in isolation from a bank's other internal prudential resources. Therefore, a bank's prudential resources are best appraised as part of the overall process of risk management in banks'.

7.3.2 Definition of capital

Different functions of capital lead to different opinions among supervisors, bankers and accountants on what constitutes capital for supervisory purposes. Definitions of capital also vary across countries due to institutional differences, different accounting practices and sometimes lack of availability of financial instruments possessing the characteristics of capital. In spite of all this, there is a certain consensus among supervisors on what constitutes capital for supervisory purposes.

The previous section suggested that the core function of capital in supervision is to cover uncertainties. Thus, the main definition of capital should be that part of capital which is freely available to meet any future losses. There is general agreement on what constitutes core capital in supervision. Pecchioli (1987, p.

107) suggests conditions under which certain balance sheet items can be considered as core capital. The conditions are as follows:

- they must be permanently available to absorb losses
- they must not impose contractual charges against earnings
- they must not be redeemable at holders' request

Balance sheet items which meet the above conditions include:

- paid-up ordinary shares
- irredeemable and mandatorily convertible preference shares
- share premia
- disclosed reserves
- retained profits

Besides core capital, there are other items which supervisors can agree to include because of several circumstances irrespective of whether they possess the characteristics of core capital. Countries differ with respect to what other elements of capital to include besides core capital. However, all OECD countries do include core capital for supervisory purposes (see Table 7.1 for components of capital). Zimbabwe does fit into this category with respect to core capital, as shown in Table 7.1. Besides core capital elements, Zimbabwe includes other items in its capital adequacy calculations as shown in Table 7.2. Although loan capital is shown in Table 7.2, Zimbabwean banks do not yet hold this kind of capital.

Other elements which some countries include as components of capital (besides core capital) are revaluation of fixed assets, un-disclosed reserves, general provisions, and subordinated debt.

Factors which are advanced against the inclusion of revaluation of fixed assets are that they do not represent actually realised profits but changes in valuation accounting.

Table 7.1 **Basic components of capital for solvency purposes**

Country	Core capital 1	Capital-like instruments 2	Asset revaluation reserves 3	Undisclosed reserves 4	General provisions	Subordinated debt 5
Australia	Yes		Yes	No	Yes	Yes
Austria	Yes*	Yes	NP	No	Yes	6
Belgium	Yes		Yes	Yes	Yes	Yes
Canada	Yes*		NP	NP	Yes	Yes
Denmark	Yes*		Yes	NP	No	Yes
Finland	Yes		No	No	Yes	Yes
France	Yes	Yes	Yes	NP	Yes	Yes
Germany	Yes*	Yes	NP	No	No	No
Greece	Yes		Yes	No	No	No
Ireland	Yes		Yes	No	No	Yes
Italy	Yes	Yes	Yes	NP	Yes	No
Japan	Yes*		NP	No	Yes	No
Luxembourg	Yes		Yes	No	Yes	Yes
New Zealand	Yes		NP	No		
Netherlands	Yes		Yes	Yes	Yes	Yes
Norway	Yes		Yes	No	No	Yes
Portugal	Yes	Yes	Yes	NP	No	No
Spain	Yes	No	Yes	No	Yes	Yes
Sweden	Yes*		No	NP	Yes	Yes
Switzerland	Yes		No	Yes	Yes	Yes
Turkey	Yes	No	Yes	Yes	No	No
United Kingdom	Yes		Yes	Yes	Yes	Yes
United States	Yes*		NP	NP	Yes	Yes
Zimbabwe	Yes		No	Yes	Yes	Yes**

Table 7.1 (cont.)

Sources: Adapted from Pecchioli (1987), p. 108
Reserve Bank of Zimbabwe - Bank Supervision Department, 1989

Notes:
NP Legal or accounting rules do not permit the formation of such reserves
1 Paid-up capital including irredeemable preference shares and preference shares mandatorily convertible into ordinary shares, share premium, statutory and legal reserves and retained profits. In some countries indicated with *, the inclusion of some of these elements is made subject to certain conditions or other minor elements are also allowed.
2 Mainly participation certificates, and long-term redeemable preference shares.
3 To the extent that they are disclosed in balance sheet.
4 Provided that they are quantified and accepted by the supervisor.
5 The inclusion of subordinated debt may be subject to specific limits.
6 A stricter form of subordinated capital has replaced the former subordinated debt.
** In Zimbabwe there is no subordinated debt yet

Another reason is that there may be difficulties in assessing the value of revaluation because of lack of an actual or underlying transaction. Because of these factors, there is no universal agreement on the inclusion of revaluation of fixed assets.

There is also different treatment with regard to undisclosed reserves. Some countries do not allow these reserves to be included as capital at all. Others include them as capital provided supervisors have identified and accepted them as capital. In Zimbabwe these reserves are part of the total reserves figure and are not identified separately.

Table 7.2 Zimbabwean components of capital for the measurement of capital adequacy ratios

1	**Capital base (for gearing ratio)**
	Issued share capital
	Reserves
	General bad debt provisions
	Current year's profit
	Loan capital
	Minority interest
	Deductions from capital base
	Premises
	Plant and equipment
	Investments in subsidiaries
	Association and trade companies
2	**Capital base (for risk assets ratio)**
	Capital base (gearing)
	Add: bank premises

Source: Bank Supervision Department (1989), Reserve Bank of Zimbabwe

The main reason for considering the inclusion of undisclosed reserves is that they are available to meet unexpected losses and so they are considered as a source of financial strength. General provisions which are included by quite a number of countries (Table 7.1) are also a source of financial strength in that they are available to meet future losses which cannot be currently specified. Specific provisions are not included since they do not have the characteristics of capital. These provisions are not available to meet unexpected losses.

There are also differing views as to the inclusion of subordinated debt. The issue with regard to subordinated debt is that it does not have the characteristics of capital because, firstly, it is not permanently available as it usually carries contractual servicing obligations. Secondly, subordinated debt cannot be used to meet current losses of an on-going concern although it is available to meet losses in the event of a liquidation and thus can help retain confidence in the event of temporary losses. Because of the above considerations, the inclusion of subordinated debt is made subject to eligibility conditions in terms of maturity, redemption schedules and payment trigger clauses. Pecchioli (1987, p. 109) observed that: 'to the extent that subordinated debt is viewed as a complement to, rather than a substitute for, equity capital, definite limits have been introduced to the amount eligible for inclusion'. The primary characteristics of subordinated debt is that the claims of the lender on the borrowing institution are subordinated to those of other creditors. However, the extent to which subordinated debt is assimilable to equity depends crucially on the specific clauses of the loan contract (e.g. early repayments, convertibility into equity).

Other additions to capital which are sometimes made include minority interests in affiliates. There are also a number of balance sheet items which are deducted from the capital base and these include: goodwill, non-consolidated participations, own shares held by the bank. In Zimbabwe, deductions from the capital base include: premises, plant and equipment, investment in subsidiaries, associated and trade companies.

7.3.3 Measurement of capital adequacy

A crucial issue in capital adequacy analysis is how to determine or measure adequacy. Maisel (1981, p. 20) states that: 'capital is adequate either when it reduces the chances of future insolvency of an institution to some predetermined minimum level or alternatively, when the premium paid by the bank to an insurer is 'fair', that is, when it fully covers the risks borne by the insurer'. Risks in this regard, depend upon the risk in the portfolio selected by the bank, on capital, and on terms of the insurance with respect to when insolvency will be determined and what losses will be paid. This indicates that, fundamentally, capital should be adequate to cover the risks inherent in the chosen portfolio. Capital adequacy relates the amount of capital held within a bank to its corresponding portfolio of risks.

7.3.3.1 Ratios and other schemes

Supervisory capital adequacy requirements are generally applied in the form of ratios. From around 1914 in the United States capital adequacy was measured in terms of capital to deposits ratio (gearing ratio). During that period the greatest risk facing banks was deposit withdrawals so that the greatest concern was to cover the deposits. Around the 1930s, the capital to asset ratio was the most popular ratio due to the fact that defaults on loans were now the greatest risk facing banks. With the expansion of government debt, the capital to asset ratio ceased to be very useful because most of the treasury securities were default free. A new measure, the capital to risk assets (total assets less cash less securities), was developed and this was the main measure until the 1950s when

other new measures of capital adequacy (like the risk assets ratio) were developed by supervisors.

However, there are practical problems faced by supervisors in trying to assess the adequacy of capital. As Pecchioli (1987, p. 109) has said: 'even though the concept of capital adequacy is easily definable in terms of the primary function of bank capital - namely, to perform as a cushion for the absorption of unanticipated losses - its translation into practical supervisory terms is surrounded with difficulties due to an inevitable lack of precision in the assessment of the quality and size of the risks to be protected by the capital base'.

An important issue in applying capital ratios is whether a single ratio should be applied to all institutions or that each individual institution requires a different ratio depending on its circumstances. Points in favour of individual ratios have been put forward in the literature (see Revell, 1975, p. 120). Such factors include the change in the nature of financial institutions and of the environment in which the institutions operate. Such changes include increasing competition (leading to greater diversity in the structure of balance sheets and hence to the type of risks), and the acceleration of inflation and the growth of innovations (like wholesale markets and rollover credits). The fact is there are always new risks emerging which do not affect institutions equally.

There are suggested methods with which supervisory capital ratios can be applied:

- the range of institutions may be split into categories, each with a separate solvency ratio

- beyond the minimum level of capital, solvency ratios may be based on a sliding scale, under which the larger institutions are permitted lower solvency ratios
- solvency ratios may be closely related to balance sheet structure by setting a specific capital requirement for different classes.

The final method appears to give a greater degree of differentiation between institutions than the first two; it also gives a means of allowing for changes in the balance sheet structure over time.

Revell (1975, p. 121) confirms that: 'there is no system of prudential regulation that is yet based on an explicit measurement of risk; all systems use some balance sheet magnitude as a proxy for risk'. The first two methods outlined above are related to balance sheet magnitudes like total deposits, total assets or total risk assets. However, the last method does recognise explicitly the benefit of controlling risk. This method comes closest to the desired treatment of institutions. Another scheme used, on the spot examinations, ensures that risky loans are provided for separately and thus the capital requirement is based on the actual structure of business undertaken.

It should be mentioned, however, that because these schemes are only cast as proxies for risk, they do not take into consideration other risks (like managerial competence) which can affect the level of risk in the same kind of business as between two different institutions.

Although the schemes analysed do not provide for the direct assessment of risk, capital ratios are useful for comparing one institution with another, acting as trigger mechanisms or screening

devices for alerting the supervisory authorities of institutions which need closer attention. Two basic capital-adequacy schemes have been used widely in recent years: the gearing ratio and various risk assets ratios.

7.3.3.2 The gearing ratio scheme

The gearing ratio normally relates capital to an aggregate of bank liabilities (sometimes capital is related to just deposits). Relating capital to liabilities has been used in countries like Japan, United Kingdom, Switzerland and also in Zimbabwe. Although it is not the main ratio in these developed countries, it is still given primary emphasis in Zimbabwe. Other countries like Canada and the United States have also used a gearing ratio based on capital to assets. The gearing ratio can determine the ability of the bank to expand its overall operations depending on the amount of capital. The gearing ratio has been used worldwide, and it has the advantage of being simple to compute. Besides being used widely to assess a bank's potential to expand, the gearing ratio has been used for interbank comparisons; the data (from published accounts) are readily available to compute the gearing ratio.

One advantage for banks is that the gearing ratio does not impose any constraints on banks' business mixes (asset and liability structures), thus permitting operational flexibility. The gearing ratio is easy to compute in the case of supervisors because they do not need to assess the riskiness of the bank's operations.

However, the gearing ratio is very inflexible in the treatment of the items to be considered: for example, there is no possibility of including off-balance sheet items. More fundamentally, the

gearing ratio does not permit the differentiation between two banks with different risk exposures. As a result, it may produce perverse effects, i.e. requiring more capital may encourage banks to become more risky. Such disadvantages have led to the adoption of more sophisticated capital-adequacy ratios based on weighted risk assets.

7.3.3.3 The risk asset ratio approach

The Basle Committee on banking regulations and supervisory practices, who are working towards the international convergence of capital measurement and capital standards, mentioned, in their recent convergence statement (1988, p. 9) that: 'the Committee considers that a weighted risk ratio in which capital is related to different categories of asset or off-balance sheet exposure, weighted according to broad categories of relative riskiness, is the preferred method for assessing the capital adequacy of banks'. Other methods of capital measurement, according to the Committee, are supplementary to the risk weight approach. In particular the Committee gives three reasons why the risk weight approach is more advantageous to other methods:

- it provides a fairer basis for making international comparisons between banking systems whose structures may differ
- it allows off-balance sheet exposures to be incorporated more easily into the measure
- it does not deter banks from holding liquid or other assets which carry low risk.

The risk assets ratio is measured by the proportion of capital to total weighted risk assets.

The key to the risk assets system is the reconstitution of the assets side of the balance sheet. Assets are divided into categories, say a_i, and each category given a different weight, r_i. Each such category is hypothesised to have equivalent risk: it is a kind of 'equivalent risk class'. The risk weights are designed to reflect the relative riskiness of the categories. If we denote weighted assets by W, then W is calculated as follows:

$$W = \quad a_i r_i \tag{7.9}$$

The bank's capital, C, is then compared with W to give a risk assets ratio (RAR), C/W. In supervision the calculated RAR should be equal or greater than the specified minimum, or 'trigger ratio'. If the calculated RAR falls below this minimum, supervisors will scrutinise the banks' operations more closely since this indicates a priori that the bank has inadequate capital (excessive risk exposure).

The new convergence measures recommend the inclusion of off-balance sheet assets in the calculation of the risk assets ratio. These off-balance sheet assets are also weighted and the capital of the bank compared to the sum of the risk-adjusted balance sheet and the risk-adjusted off-balance sheet assets of the bank.

Lomax (1987) gives four reasons for adopting the risk asset ratio system:

- desire to catch up with the innovations in banking technique and in the securities market so as to ensure that the capital of the banks is in an appropriate relationship to the type of risks which banks face
- general perception that the banks might have low capital in relation to their risks, and that perhaps some of their assets are overvalued
- the risk asset ratio system has been discussed internationally among supervisors, notably the Basle Committee, and has become the norm in relation to the international thinking
- the risk asset ratio system is being used as the spearhead of the effort to achieve a level playing field of supervisory practice worldwide.

The calculation of the risk adjustment of any component of a balance sheet implies an assessment of the relative riskiness of that asset. Weighting loans at 1.0 and treasury bills at 0.1 implies that loans are 10 times riskier and thus should have correspondingly 10 times the amount of capital held against them. Hence the total capital requirement of the bank is built up additively from the individual components of the balance sheet.

Lomax (1987) identified three kinds of risks in a banking portfolio namely: expected or average loss on a given portfolio; unexpected loss, that is, when the loss in a particular part of a portfolio is much greater than usual especially if there is concentration in assets; loss which occurs when there is correlation between different parts of a portfolio. Thus, the eventualities

which the banker needs to defend himself against are, the expected or average level of loss, peak losses especially if there are concentrations in the portfolio and high covariance of loss.

In this general regard, the risk asset ratio approach has many apparent limitations. Once again, portfolio theory concepts can provide some insight. Using a RAR approach, the capital requirement of a bank is calculated as a linear average of individual components of the balance sheet, the risk adjusted ratio for each slice of the assets. On the other hand, we have seen that Lomax (1987) emphasises that the risk which capital has to guard against is not necessarily based on the average balance sheet but on peak losses, concentrations and on a high covariance of loss. Thus risk for capital adequacy purposes should be based more on the portfolio characteristics of a bank's assets. Problems of the RAR model can be illustrated more formally (see Gardener, 1989).

The weighted risk assets in the RAR formula has been defined earlier as:

$$W = \quad a_i r_i \tag{7.9}$$

Using portfolio theory concepts, the risk of the bank asset portfolios can be defined as the standard deviation of the change in value of total bank assets as follows:

$$\sigma \quad = \quad (\Sigma\Sigma\, x_i x_j C_{ij})^{1/2} \tag{7.10}$$

where

$x_i x_j$ = the proportion of the portfolio held in asset i, j

C_{ij} = covariance between changes in value per unit of asset i and changes in value per asset j

In the new formula, the capital measure can be defined by Cmv, the difference between the market value of assets and the riskless (default free) value of liabilities. The new ratio is thus:

$$\frac{Cmv}{(\Sigma\Sigma_{ij}\ x_i x_j\ C_{ij})^{1/2}} \qquad (7.11)$$

The new ratio may be compared with the RAR model as follows:

$$\frac{Cmv}{W} \qquad (7.12)$$

where

$W = \sum_{i=1}^{n} C_i a_i$ is the same as in equation (7.9)

There are similarities between equation (7.12) and equation (7.11). The RAR (C/W) is a proxy of equation (7.11) where W (in the RAR formula) is a good proxy of the standard deviation of the changes in the value of risk assets portfolio (equation (7.11)). The differences are:

- RAR is linear whereas expression (7.11) is a non-linear function
- equation (7.10) is stochastic but RAR is deterministic.

The important difference (which illustrates the problem of the RAR) is that, whilst the RAR is dependent on the a_i, the quantities invested in equivalent risk classes, equation (7.10) also emphasises the respective covariance terms C_{ij} (covariance between changes in value per unit of asset i and change in value per asset j).

Lomax (1987) suggests that, the authorities can get round this by deciding on the precise RAR to apply to any individual bank. For example, it might be that two banks have a risk asset ratio of, say, 10 per cent. The authorities should consider the portfolio structure of these banks and set different minimum risk asset ratios. The authorities then have the opportunity of translating these specific risk asset calculations into a ratio which reflects the quality of an individual bank, and by implication the portfolio structure of that bank. In this regard, the risk-asset system could be regarded as a step towards a more formal portfolio assessment of banks. The purpose of capital is not to cover expected or average loss which is by implication what the weightings are meant to indicate, but peak losses, concentrations and a high covariance of losses.

Also, the weight allocated to a category of assets cannot reflect individual risks in the category, thus obviating a proper risk and return analysis by each bank. The evidence, however, is that large banks (in London, at least) appear to rely heavily on such supervisory schemes in their internal capital allocation (see Hislop, 1987).

The Basle Committee proposals include only five categories of risk weights - viz 0, 0.1, 0.2, 0.5 and 1.0. This is in contrast to the Zimbabwean system which has 6 categories of weights viz: 0, 0.1,

0.2 1.0, 1.5, 2.0. However, the Zimbabwean system of risk weights is being revised and the signs are that the Basle Committee's risk-weight proposals will be adopted. The Committee suggests that, 'the weightings (they have proposed) should not be regarded as a substitute for commercial judgement for purposes of market pricing of the different instruments'. The Committee also notes that although there are many risks which management need to guard against, 'for most banks the major risk is credit risk', which is the central focus of their framework. Other risks which countries are advised to guard against include: investment risk, interest rate risk, exchange rate risk, concentration risk.

7.4 EFFECTS OF CAPITAL ADEQUACY REGULATION

7.4.1 General problems in measuring the effects of regulation

In our endeavour to measure the effects of supervision, practical difficulties are encountered especially in trying to measure specific effects of particular regulatory requirements. One problem encountered in trying to measure a specific effect of a particular regulatory requirement is that the objectives of the requirement may be several, and also other policies (other than for prudential purposes) may have the same or related objectives. In this regard, Dietrich and James (1983) noted that, when trying to analyse regulatory effects the problem is to disentangle the effect of regulators' requirements and other monetary requirements. They suggested, for example, that changes in capital standards at commercial banks could be caused by prudential regulators' requirements or by monetary policy measures.

A regulation may have a stated aim, but actually result in the opposite. This is a problem of an incorrect matching of targets and instruments. For example, although capital ratios are set to limit excessive risk exposure, under some circumstances they may increase risks in banking (see Gardener, 1989).

Another dynamic problem encountered is that banking markets are changing so rapidly that trying to measure specific regulatory effects becomes a complicated issue. Also, regulatory policies themselves are still in the process of change which makes an appraisal of the specific impact of regulations a more difficult task. In this general regard we require a theory which makes testable predictions, which we can use and develop later.

7.4.2 Bank regulation and bank behaviour: setting out the problem

The previous sections emphasised that capital adequacy was at the heart of supervision and identified the core capital adequacy systems used by supervisors. The first section indicated the importance of the risk/return trade-offs in banking and concluded that efficiency of banks depended on the appropriate trade-offs with regard to risk and return on bank portfolios. Good performance is attained when banks reached their efficient frontier: that is, if they choose portfolios which have the highest return for a given risk level and/or minimum risk at a given level of return. Our task is now to assess how capital adequacy regulation affects the risk/return trade-off of banks. This will be done in the next section by assessing evidence from theoretical studies. The hypothesis to be explored is that bank regulation and supervision

will improve bank condition and performance in terms of the risk and return positions of banks.

Bank supervision affects the risk/return trade-offs of banks. As Mitchell (1984) suggested: 'bankers as agents of shareholders choose capital ratios that maximise shareholders' welfare. Expected welfare is maximised by choosing capital ratios representing the optimal trade-off between expected risk and return. For a given level of risk, shareholders are made better off by decisions that increase expected return. For a given level of expected return, shareholders are made better off by decisions that reduce risk'. The suggestion is that bankers' capital decisions affect shareholders' welfare by affecting both risk and return. The assertion is that increases in capital ratios tend to reduce expected return since expected profits must be divided among a larger number of shares (Mitchell, 1984). At the same time an increase in capital ratios tends to reduce riskiness since capital increases the bank's ability to absorb losses and reduces the likelihood that the bank will fail. The effect on shareholders' welfare depends on the relative strengths of the return-reducing and risk-reducing effects which bankers weigh when adjusting capital ratios.

The aim of our analysis in this section is to evaluate how capital adequacy systems affect bank portfolio behaviour. The analysis of bank portfolio behaviour based on portfolio theory was studied earlier. However, in their portfolio selection, banks are subject to constraints imposed on them by regulatory authorities such as capital adequacy requirements (our focus in this chapter), liquidity requirements and reserve requirements.

The main objective of regulation (as identified in Chapter 5) is to help improve the soundness of the financial system. One important practical aim is to protect depositors' savings. Another is to reduce the possibility of systemic and contagion risk in the system: see Lewis & Davis (1987, p. 153). The rationale of imposing these regulations therefore is ultimately to reduce the probability of banks failing (and to contain the evident effects of any failures that do occur). However, this could lead to moral hazard problems in that protected depositors would no longer worry about the riskiness of banks. This might lead banks to take on greater risks. In this regard the purpose of regulation is to reduce the excessive riskiness of banks' portfolios. Therefore, if due to regulation banks shift their portfolio composition from higher risk to less risky assets, regulators will have achieved their desired results. It is from this point that we seek a more formal transmission mechanism on the impact of capital adequacy supervision.

The problem for regulators, then, is to try and constrain the probability of bank failures. According to Kahane (1977) the probability of failure occurs when the firm's earnings fall below a certain level. Failure is defined as the case where equity capital is completely eliminated. In this case, the probability of failure depends on the probability distribution of the firm's net income.

The regulator's task is to set a standard by which banks should operate. To do this, there is a need to estimate the probability of failure. As Koehn and Santomero (1980) suggested: 'an explicit relationship between the risk of the bank portfolio, the amount of bank capital held and the chance of bankruptcy must be obtained'. To do this there is need to define the characteristics of the

distribution of the returns from bank operations (this has been done using the expected value and variance of returns). The aim is to set a solvency standard by which banks should operate. An upper bound on the probability of failure is estimated using a capital asset ratio, the expected return on the portfolio and the variance of the return. In this regard Blair and Heggestad (1978) follow the Chebychev inequality which states:

$$\Pr\ ((\tilde{\Pi} - \Pi) > K\sigma) \leq 1/k^2 \tag{7.13}$$

$$\Pr\ ((\tilde{\Pi} c(\Pi - k\sigma)) \leq 1/k^2 \tag{7.14}$$

$$\text{if } \alpha = \Pi - k\sigma,\ k = ((\Pi - \alpha)/\sigma) \tag{7.15}$$

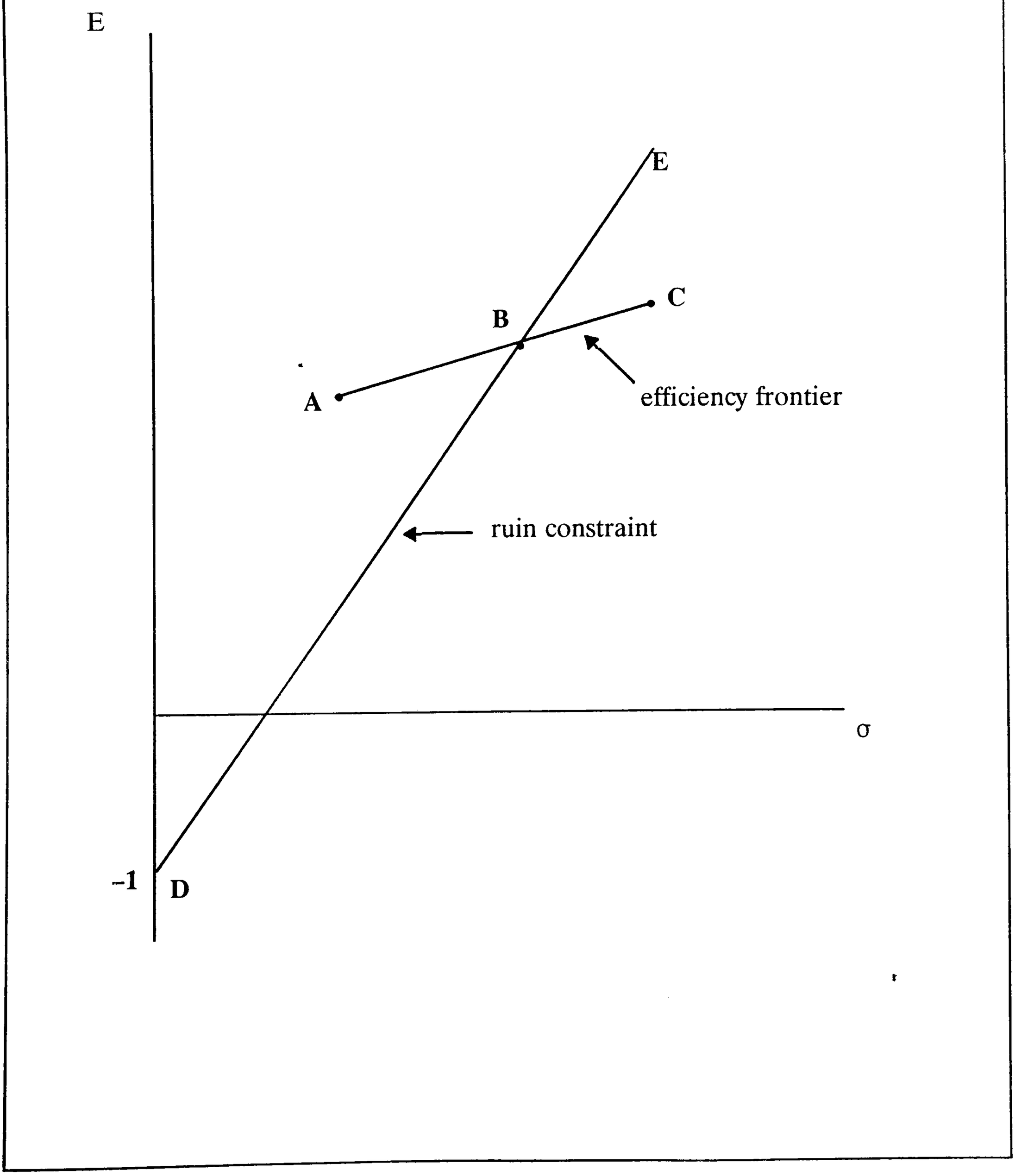
substituting for k yields

$$\Pr(\tilde{\Pi} < \alpha) \leq \sigma^2/(\Pi - \alpha)^2 \tag{7.16}$$

This is the least upper bound on the probabilities of failure, which is the square of the reciprocal of the slope of the ray from D to E in Figure 7.3. According to this formulation, an increase in variance increases the probability of failure while an increase in returns decreases failure risk. These will be two of the basic measures we will test in the next chapter. The bank has to select its portfolio which generates returns and standard deviations sufficient to comply with this upper bound on its leverage (or ruin constraint).

Graphically, the ruin constraint and the efficiency frontier are shown in Figure 7.3. The upper bound is described as the square of the reciprocal of the slope of a ray in mean-variance space. The ray has an intercept of -1 and is denoted by DE.

Figure 7.3 The efficiency frontier and the ruin constraint



The efficiency frontier is denoted by ABC. The ruin constraint DE intersects the efficiency frontier at point B where the optimal allocation is indicated by the tangency of the objective function. According to this formulation, the intermediary should operate on section AB of its efficiency frontier. A portfolio like C, for example, which is below the ruin constraint is considered to have a high probability of ruin. This formulation can be used to analyse the effects of an increase in capital adequacy ratios. The analysis can also be used as a yardstick of strength for the banks.

7.4.3 Effects of different capital adequacy constraints

Some of the capital adequacy constraints affect the equilibrium through the opportunity locus (efficient frontier) and the others may affect the indifference curve shapes. Regulation of banks may lead to growth in costs for the bank. For example, the introduction of interest ceilings on deposits, by eliminating the bank's option to raise its interest rate to attract more deposits, affects the costs that banks pay for deposits. Also, restricting banks from holding any quantity of certain securities and limiting the role that any single asset can play in banks' portfolios affect the cost of banking activity. Capital requirements may imply the increase of the interest rate paid on deposits in order to maintain constant the quantity of loans provided by the bank. Banks could adjust their loan composition in order to offset some of the impact of increased deposit cost (Silverberg, 1973). The institutions can raise expected profits by adjusting their loan and investment portfolios. A change in bank cost affects the opportunity locus of the banks -

an increase in costs resulting in a downward shift in the bank's opportunity locus as shown in Figure 7.4.

The difference between L1 and L2 is accounted for by the deposit cost. Figure 7.4 above indicates that expected profits are lower at any level of risk on the new frontier L2. For example, the bank will choose portfolio A2 (tangency of indifference curve U2 on efficiency frontier L2) such that the expected profits decline to P2 and at this level of profits the risk level σ_2 is higher than σ_1. If the bank had chosen to maintain the same level of risk, σ_1, the expected profit would have fallen to P3 and the bank would have been on an inferior indifference curve U3. The optimal position on the new frontier L2 implies a lower expected return and higher risk. Thus, some of the impact of the shift in the opportunity locus thus has been borne by increased risk. Often constraints on bank activity may affect their portfolio allocation, thereby changing their attitude towards risk. This might imply moral hazard problems.

Koehn and Santomero (1980) examined bank portfolio reactions to capital requirements and concluded that: 'when regulators impose a higher capital ratio, the efficient frontier moves down and to the left'. This is shown in Figure 7.5 below.

Blair and Heggestad (1978) firmly stated that: 'the new frontier obviously cannot lie above the unregulated frontier because of the bias against high-risk, high return assets'. The original frontier in Figure 7.5 is EoEo and the new frontier is E_1E_1. In this situation if the bank settles for the same risk-return trade-off in its portfolio as initially, the portfolio set will shift to Z_1 (as Koehn and Santomero, 1980 found out).

Figure 7.4 Impact of regulation on the efficiency frontier

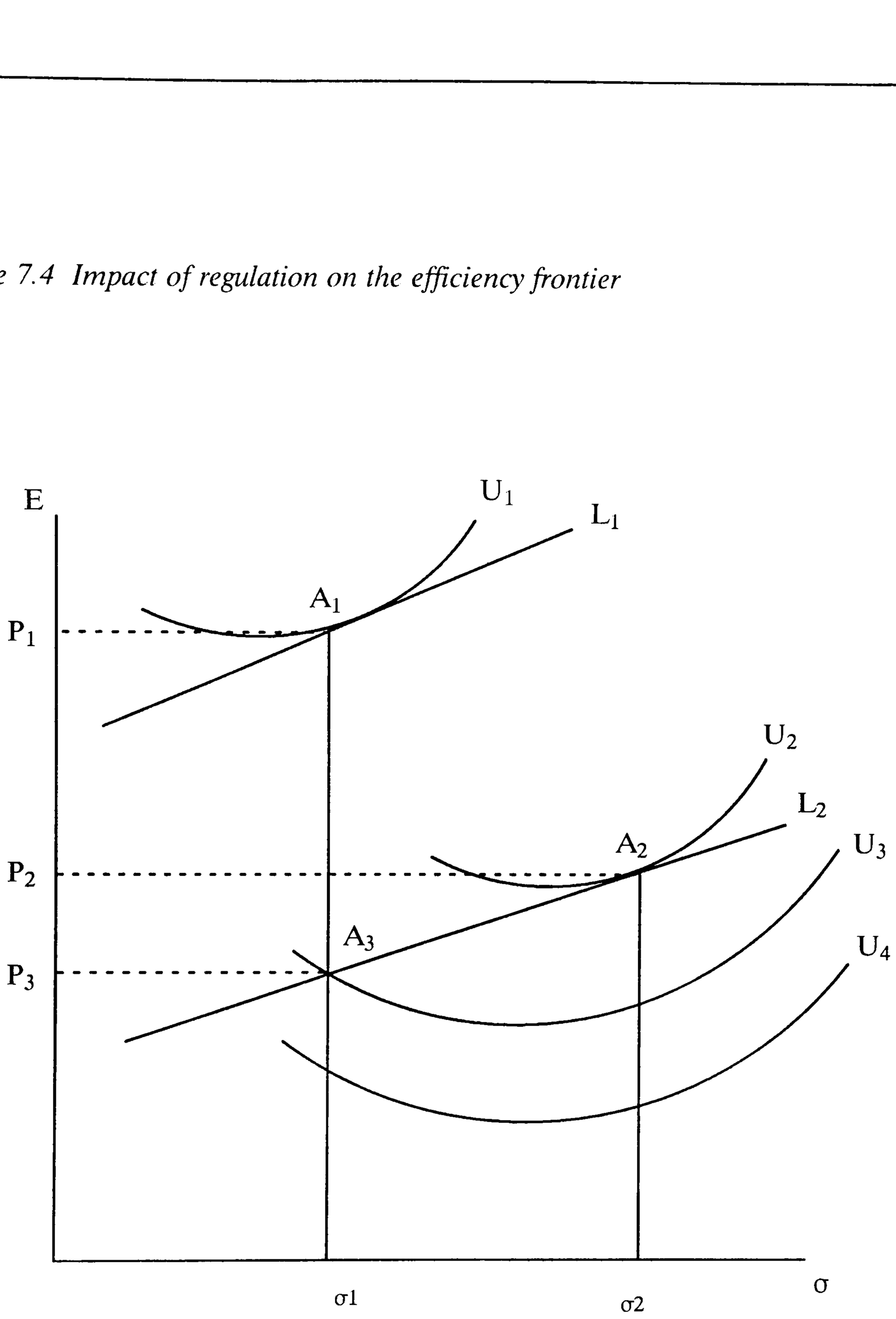
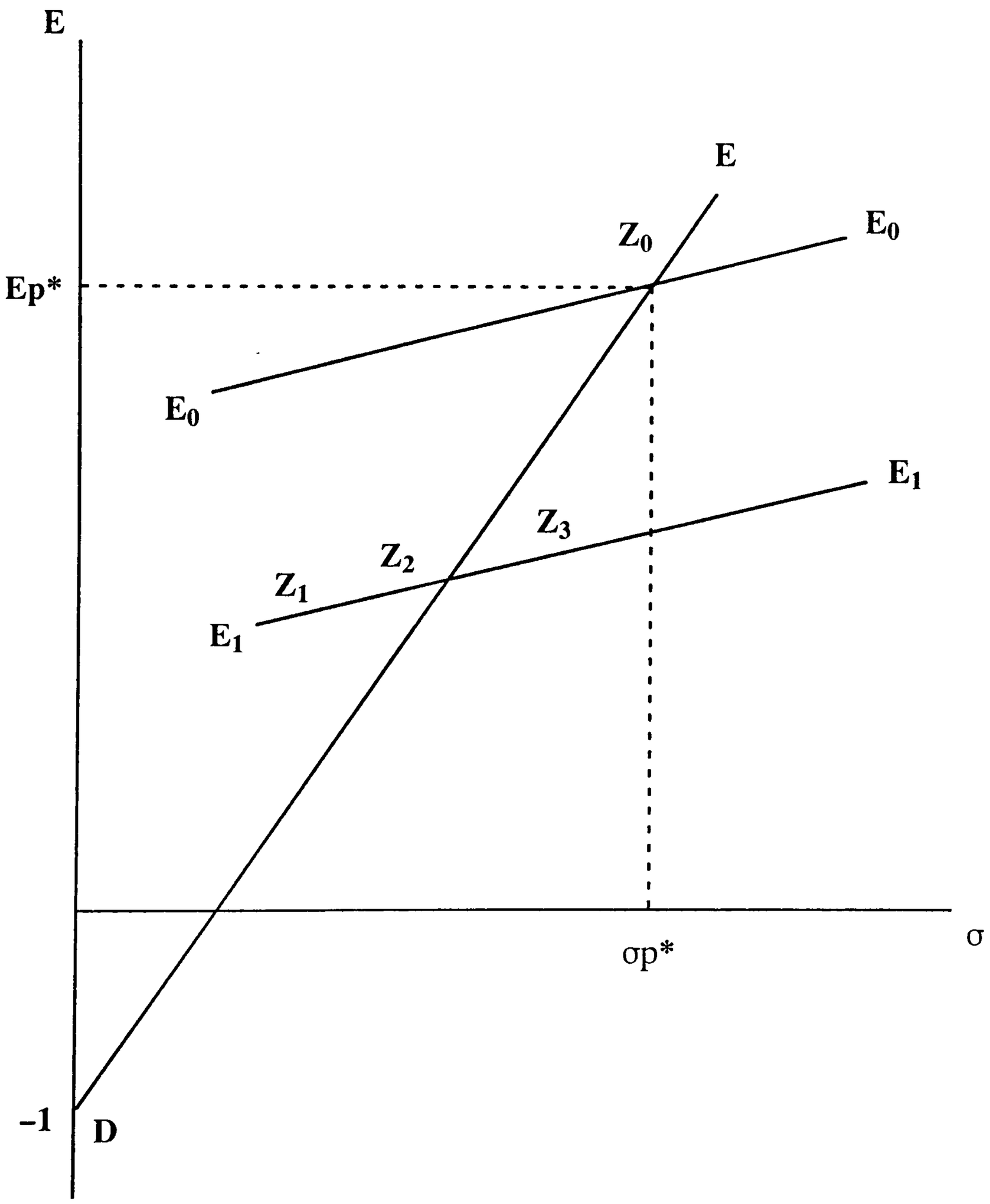


Figure 7.5 The effect of an increase in capital ratios



The initial portfolio with the same risk and return trade off is Z_o. Since the slope through Z_1 is greater than the slope of DE, the upper bound of the probability of failure decreases and the regulators achieve their desired result. This determines the reshuffling of bank's portfolio from relatively more risky assets to less risky assets or vice versa. The direction of this reshuffling will be dependent basically upon the risk aversion factor of the institution's preference function. As seen in the figure the institution can either be on Z_1, Z_2 or Z_3.

However, once the initial optimal portfolio of the bank has been determined, it is possible to work out the effect of different regulations (portfolio constraints, reserve requirements and interest rate ceilings). Specifically, in our case the basic aim is to test if the implementation of different capital adequacy ratios changes the allocation of optimal portfolio from less risky to more risky assets (and thereby increases the probability of their bankruptcy ceteris paribus) or vice versa. For this purpose we can build on all the preceding analysis and draw more explicitly on a recent theoretical study by Lackman (1986). Lackman's explicit concern was with different capital adequacy ratios.

Lackman's study tested the impact of the capital/deposits ratio, the capital/risky assets ratio and the risk assets ratio on the bank portfolio model. Lackman used a two-asset and one-liability model of a commercial bank. In his model, the objective of the bank is to maximise a utility function which is a linear relationship between the expected return and the variance of return on capital. The utility function is defined in mathematical form as:

$$U = E(rk - \propto\sigma(rk)) \tag{7.17}$$

where:

r(k) = return on equity capital

$\propto$ = a constant within a given financial industry

The two assets are A1 and A2 with returns r1 and r2 respectively. The returns are random variables with expected values $\bar{r}1$ and $\bar{r}2$ and variances $\sigma 1$ and $\sigma 2$ respectively. The liability A3 is assumed to be deposits. The assets are non-negative while deposits are non-positive. The return on deposits (costs for the bank) is denoted by r3 with expected value and variance of $\bar{r}3$ and $\sigma 3$ respectively. The banks' capital is denoted by AK where rk is the return on capital. The return on capital can be defined as:

$$Akrk = A1r1 + A2r2 + A3r3 \tag{7.18}$$

The expected values become

$$E(rk) = \frac{A1\bar{r}1}{Ak} - \frac{A2\bar{r}2}{Ak} - \frac{A3\bar{r}3}{Ak} \tag{7.19}$$

The variance of the return on capital (assuming zero covariances) becomes:

$$\sigma(rk) = \frac{(A1)^2\sigma 1}{Ak} + \frac{(A2)^2\sigma 2}{Ak} + \frac{(A3)^2\sigma^3}{Ak} \tag{7.20}$$

The problem for the bank is to maximise

$$E(rk) - \propto\sigma(rk) \tag{7.21}$$

subject to the budget constraint

$$A1 + A2 + A3 - Ak = 0 \tag{7.22}$$

In order to maximise the expected return subject to the budget constraint, the Lagrangian method of undetermined multipliers was used to solve the equations in order to obtain the most effective portfolio and capital structure. The optimal solution for the two-asset and one-liability model follows from the following equations:

$$\frac{A_1}{A_k} = \frac{\sigma_2(\bar{r}_1 - \bar{r}_3) + \sigma_3(\bar{r}_1 - \bar{r}_2) + 2\propto\sigma_2\sigma_3}{2\propto(\sigma_1\sigma_2 + \sigma_2\sigma_3 + \sigma_1\sigma_3)} \tag{7.23}$$

$$\frac{A_2}{A_k} = \frac{\sigma_1(\bar{r}_2 - \bar{r}_3) + \sigma_3(\bar{r}_2 - \bar{r}_1) + 2\propto\sigma_1\sigma_3}{2\propto(\sigma_1\sigma_2 + \sigma_2\sigma_3 + \sigma_1\sigma_3)} \tag{7.24}$$

$$\frac{A_3}{A_k} = \frac{\sigma_1(\bar{r}_3 - \bar{r}_2) + 1/2(\bar{r}_3 - \bar{r}_1) + 2\propto\sigma_1\sigma_2}{2\propto(\sigma_1\sigma_2 + \sigma_2\sigma_3 + \sigma_1\sigma_3)} \tag{7.25}$$

The unconstrained optimal position can be obtained from the above solutions.

Lackman then used differential calculus to find the rate of change in portfolios if capital adequacy constraints are imposed. All three ratios indicated a shift in the bank's portfolio although the direction of the shift was different. The use of the partial derivative indicated the direction of the shift in each case. The following results were obtained:

For the capital/deposits ratio, the partial derivative was:

$$\frac{\partial A_1/A_2}{\partial k} = \frac{2\alpha(\bar{r}_1 - \bar{r}_2)\ (\sigma_1 + \sigma_2)}{(\bar{r}_2 - \bar{r}_1 + 2\alpha\sigma_1(1-k)^2} \qquad (7.26)$$

If asset A2 is riskier than A1 and its return and variance is also higher, then the partial derivative is less than zero $\frac{\partial A1/A2}{\partial Ak} < 0$

This indicates that the imposition of the capital/deposits ratio will cause a shift of the bank portfolio from less risky assets. The impact of the ratio on the variance of return on capital yielded the following results:

$$\frac{\partial\sigma(rk)}{\partial k} = 2\left[\frac{A_1}{Ak} - \frac{\partial A_1/Ak\sigma_1}{\partial k} + \frac{A_2}{Ak}\frac{\partial A_2/Ak\sigma_2}{\partial k} + \frac{\partial A_3}{Ak}\frac{Ak}{\partial k}\right] \qquad (7.27)$$

The partial derivative is less than zero, since both the partial of A1/Ak and A2/Ak are less than zero while the partial of A3/Ak with

respect to k is greater than zero and since A1/Ak and A2/Ak are non-negative while A3/Ak is always negative. Thus the capital/deposits ratio will reduce the variance of return. However, a lower variance is consistent with a lower expected return and this may increase the probability of bankruptcy.

Once again the capital/risky assets ratio results in a shift of the bank portfolios. The partial derivative indicates the direction of the shift:

$$\frac{\partial A_1/A_2}{\partial k} = \frac{-2\alpha\sigma_3 k - A_1}{k^2} \qquad (7.28)$$

Thus $\frac{\partial A_1/A_2}{\partial k} < 0$ since k and A1 are non-negative.

Therefore the capital/risky assets ratio causes a shift of the portfolio towards less risky assets. The effect of the constraint on the variance is as follows:

$$\frac{\partial \sigma(r_1)}{\partial k} = \frac{-2\alpha(A_1\sigma^2_3 + \sigma_3\sigma_1{}^2)\ (1-k)2K\sigma_2}{\alpha(\sigma_1 + \sigma_3)^2} \qquad (7.29)$$

thus

$$\frac{\partial \sigma(r_1)}{\partial k} > 0 \qquad (7.30)$$

This indicates that the variance of return will be reduced by the imposition of the capital to risky assets ratio.

For the risk assets ratio (RAR) the partial derivatives obtained were as follows:

$$\frac{\partial A1/A2}{\partial k} < 0 \qquad (7.31)$$

$$\frac{\partial \sigma(rk)}{\partial k} < 0 \qquad (7.32)$$

The results indicate a shift of portfolios towards less risky assets and a reduction of variances of the return on capital. Since regulators aim to reduce high risk in the banks, the risk assets ratio and the capital/risky assets ratio yield results which regulators would expect to get. The effects of these two ratios are to shift bank portfolios to safer assets and reduce the variance (risk), thus reducing the probability of bank failure.

These theoretical results appear to confirm our earlier research on the operational desirability of the gearing ratios and risk assets ratios. They also help to provide some strong theoretical backing to a set of predictions that we can test in the real world.

These results also seem to be consistent with the thinking of international bank supervisors. The Basle Committee is advocating the use of the RAR as the core capital adequacy ratio used in assessing bank soundness. Their preference for RAR is indicative that the capital/deposits ratio is comparatively an inappropriate method. The disadvantages of the capital/deposits ratio (gearing ratio) have already been discussed earlier. Our work in the

following chapters will be devoted to analysing the relationship between capital adequacy supervision and banking risk and return; at its simplest level this may be proxied by the impact on return on capital and variance of return on capital, respectively. In practice, we will use a more extensive set of risk and return measures in order to examine wider aspects of banking efficiency in relation to supervisory capital adequacy.

7.4.4 Other unintended effects

Kane's regulatory dialectic model (1981) can also give us an insight into the more general effects of regulation. Onado (1980) stated that: 'one of the most common criticisms of regulation is that financial intermediaries can always find a loophole in controls and create new instruments or new techniques to circumvent the authorities' intentions. Financial innovation is therefore the normal answer to regulation. The thesis is the action of the authorities, the antithesis the reaction of the regulated firms, and the synthesis a new situation in which the financial institutions as a whole (or at least the cleverest ones) have created an area free from regulation'.

According to Kane (1981), 'political processes of regulation and economic processes of regulatee avoidance are treated as opposing forces, like riders on a seesaw'. Kane notes that there is a lag in the way the regulators respond to regulatees and this is made possible due to changes in technology and other environmental changes. These forces lead to regulatee responses coming more quickly than the regulatory responses. Regulated banking firms thus are in a position to circumvent the regulations imposed upon them.

The increase in off-balance sheet activity after 1982 (up to 1985 and 1986) in many developed countries could be called a circumvention activity spawned by regulation. Thus, another measure which should be included in our analysis is the trend in off-balance sheet assets (contingent liabilities).

Another effect resulting from the need to economise on capital is that banks may merge or form partnerships or some kind of joint ventures. Banks could also consider some sharing arrangements in order to economise on capital resources. In this sense, regulation and supervision may have wider, structural and organisational consequences.

Edwards (1979, p. 2) argues that restricting the type of assets banks may hold eliminates the choice some people could have made. Some people prefer to take more risk and earn higher return. Also restricting the type of assets banks might hold tends to reduce diversification. Edwards (1979, p. 98) also argues that regulatory restrictions might require banks to hold more liquid assets and according to him, this results in lower earnings.

The field survey conducted by the researcher in 1987 (see Chapter 6) provides the following indicators regarding the likely effects of supervision in Zimbabwe (only measurable indicators are shown here, for others see Chapter 6):

- increase in retained earnings
- lower dividend payout
- stimulate off-balance sheet business

All of this evidence, together with the core analysis of this chapter, will be used to help identify the kind of indicators (or

measures) of the effects of capital adequacy regulations on the banking firm and the banking system.

7.5 CONCLUSION: QUANTIFICATION OF THE EFFECTS OF PRUDENTIAL REGULATION

The aim of this chapter was to evaluate the likely effects of capital adequacy requirements on banking portfolios by analysing the costs and benefits of these requirements on bank performance and condition. Some powerful theoretical apparatus was brought to bear on this problem through the work of researchers on bank portfolio allocation in mean-variance space. This work has been directed towards our primary question: 'What are the likely/possible effects of various kinds of capital adequacy regulation on the banking firm's risk and return profile?' This question followed on from the preceding work (in Chapters 5 and 6).

We can now operationalise these measures as a prelude to some empirical testing. Table 7.3 summarises (what we have called a basic performance and condition matrix (BPCM) that contains the kind of indicators that have been developed from the preceding analysis and survey. The most basic measures are return on capital (profitability) and variance of return on capital. The following chapter will explore the impact of capital adequacy regulation on these and other measures.

Banking data for Zimbabwe and other selected developing countries will be used to test the impact of supervision by observing the trends in these measures before and after the implementation of supervision. The basic hypothesis to be tested is that 'supervision affects the risk and return position of the

Table 7.3 The basic performance and condition matrix

Operational area	Indicator	Quantitative proxy	1 Inc./Dec.	2 Inc./Dec.
Profitability	Performance	Mean absolute profits		
Profitability	Performance	Net profit/capital		
Profitability	Performance	Net profit/assets		
Profitability	Performance	Growth in retained earnings		
Operating efficiency	Performance	Operating expenses/operating income		
Growth in assets	Performance	Increase in absolute volume of assets		
Growth in loans	Performance	Increase in absolute volume of loans		
Growth in deposits	Performance	Increase in absolute volume of deposits		
Earnings	Condition	Variance of profit before tax		
Earnings	Condition	Variance of profit after tax		
Capital adequacy	Condition	Capital/deposits		
Capital adequacy	Condition	Capital/assets		
Capital adequacy	Condition	Capital/risky assets		
Liquidity	Condition	Loans/deposits		
Loan quality	Condition	Bad debt provisions/total loans		
Funding risk	Condition	Wholesale deposits/total deposits		
Credit risk	Condition	Loans/total assets		
Off balance sheet exposure	Condition	Total off-balance sheet assets/ total assets		

Key: 1 Before supervision
2 After supervision

banking firm' and the proxy for supervision will be the implementation of formal capital adequacy regulation. Related sub-hypotheses to be explored will be concerned with the comparative differential impacts on banking risk and return of different capital adequacy ratio systems.

CHAPTER 8

THE IMPACT OF SUPERVISION: EMPIRICAL ANALYSIS I

8.1 INTRODUCTION

This chapter, building on the preceding analyses, initiates a more formal, empirical evaluation of the impact of the present and evolving supervisory system in Zimbabwe. The objective is to help develop proposals to improve supervisory policy. In this connexion and building on the preceding analysis we will focus on improvement defined in terms of corresponding positive (beneficial) increments in bank performance and condition.

The general methodological approach used is to analyse trends in performance and condition measures before and after the implementation of supervision. However, since the supervisory system in Zimbabwe is new and only two years data after the implementation of supervision are available to the researcher, it is felt that the period is too short to assess reasonably the impact of the Zimbabwean system of supervision. In order to strengthen this analysis, the researcher selected developing countries whose economic, financial and supervisory characteristics are similar to Zimbabwe and evaluated the impact of supervision in these countries. The results will help assess the likely economic effects of the Zimbabwean supervisory system: whether the present system is appropriate, what its costs and benefits are, and how it can be improved. In this regard, a major part of this chapter involves selecting developing countries and analysing their experiences with supervision.

Chapter 7 identified the hypothesised, directional effects of supervision on bank performance and condition and the relevant indicators were summarised in the form of a basic performance and condition matrix. The theoretical results obtained in Chapter 7 will now be tested empirically using Zimbabwean individual and aggregate commercial and merchant bank data and the selected, comparative countries' aggregate commercial bank data. Thus, Chapter 7 forms the basis for an important subset of our subsequent tests in this and the following chapters.

Another important, related aim of the comparative study is to identify any other methods/characteristics of supervision which might be suitable for adoption by Zimbabwe. The Zimbabwean supervisory system, still in its infancy and not yet fully operational, might benefit from other countries' experiences. This insight is an additional externality sought from our comparative study.

8.2 SELECTION OF COUNTRIES FOR COMPARATIVE STUDY

8.2.1 The ideal sample

This selection aims to delineate the type of countries (their 'characteristic set') that will form our sample of developing countries: that is, the sample countries' desirable (normative) characteristics. It is perhaps wise at this stage to restate the main aim of the comparative study, which is to assess the effects of the present supervisory system in Zimbabwe. This aim implies selecting countries which are similar to Zimbabwe in respect of their economic, financial and supervisory characteristics.

Thus, the countries will ideally be at the same level of economic development or will have followed the same development path as Zimbabwe. The sample will be composed of countries with the same type of financial system as Zimbabwe, will have reached the same level of financial market depth or will have followed the same development path in financial development as Zimbabwe. These countries will ideally have experienced the same growth pattern and will have introduced the same structural changes at the same point in time as Zimbabwe. In the real world, however, any two countries generally do not match up in this idealised way.

On the supervisory front, our comparative approach entails selecting countries which are using similar supervisory capital adequacy systems as Zimbabwe. As a result, we might be able to improve our assessment of the corresponding costs and benefits of the present supervisory system in Zimbabwe as evidenced by the experiences of these countries. In short, a good comparative pool of countries that use a similar supervisory apparatus for capital adequacy regulation, the core element in modern supervision, should enable us to obtain a greater leverage (policy and statistical) on our research objectives.

It would also be 'ideal' if among the sample countries there are at least three countries, each using a different method of capital adequacy system. This would enable us to test Lackman's (1986) results. It will be recalled that Lackman tested the effects of the three main capital-adequacy ratio systems (see Chapter 7). Before analysing the actual sample - that is, their economic, financial and supervisory characteristics - the next section first

discusses in greater detail the procedure for selecting the countries.

8.2.2 Selection procedure

The initial task was to identify developing countries which had been operating supervision for a reasonable period of time and then collect key data on their economic, financial and supervisory systems. There was an immediate problem in that there has not been any published study on developing countries' supervisory systems and there is very limited information on supervision in central bank annual reports. In this regard, the researcher arranged a meeting with the bank supervision department at the Bank of England, who had indicated that they might be able to help with information on developing countries' supervisory systems.

At the meeting held on 21 December 1988 at the Bank of England, the researcher requested the following information:

- a list of developing countries that have implemented supervision in the past 20 years
- any details of Bank of England work in this field, and, if any, a request for an interview with the staff concerned in the Bank and/or a copy of the studies that were undertaken.

The Bank of England indicated that no comparative work had been undertaken by them, and they were not aware of any such studies (except for some work on OECD countries when comparing specific issues concerned with the requirements for the latest - July 1988 - BIS convergence movement). Also they did not have any detailed

information on developing countries' supervisory systems. In this connexion the Bank suggested writing directly to the central banks in order to obtain detailed information. The Bank then provided a list of eleven developing countries and their addresses. The names of the countries suggested were those which, in the Bank's opinion, were likely to respond to requests for information.

Letters (see Appendix 8.1) requesting information on systems of bank supervision were duly sent (January 1989) by the researcher to eleven central banks. Nine countries out of the eleven responded and provided the requested information. The nine countries are shown in Table 8.1.

Table 8.1 List of countries who provided information on supervision

1.	Botswana
2.	Barbados
3.	Cyprus
4.	Hong Kong
5.	Malaysia
6.	Nigeria
7.	Belize
8.	Kenya
9.	Malawi

The next stage was to analyse the financial, economic and supervisory characteristics of these countries in order to identify those countries which had similar economic and financial characteristics to Zimbabwe. This exercise was necessary since any supervisory system is based partly on the type of economic and financial environment in which banks operate.

The next stage in the selection procedure was to collect key data on the nine countries in order to analyse the economic, financial and supervisory systems. Whilst an effort was made to try and include all the nine countries in the sample it was not possible to do so due to a number of factors. First, not enough information and data were available for the researcher in the case of Botswana and Barbados. Initial research also indicated that these countries did not have enough comparability with Zimbabwe. Follow-up research on these countries was felt not to be necessary in the light of the quality of response on six of the countries listed in Table 8.1. Hong Kong was also excluded because it was an important financial centre, and was, therefore, not felt to be comparable with Zimbabwe. As a result, the researcher decided to concentrate on six of the countries shown in Table 8.1. Our sample of countries at this stage is shown in Table 8.2.

Table 8.2 List of countries after initial selection

1.	Belize
2.	Malawi
3.	Kenya
4.	Nigeria
5.	Cyprus
6.	Malaysia

8.2.3 The sample

8.2.3.1 Level of economic development

The indicators chosen are macroeconomic aggregates which describe the main characteristics of a country's economy. The

variables analysed include: gross national product (GNP) per capita, growth in GNP, population, inflation and composition of gross domestic product (GDP). The choice of indicators also depended on statistical material being available for all sample countries and for the same dates in order to enable international comparisons to be effected. Table 8.3 shows the basic characteristics of the sample countries: the six countries pre-selected from Table 8.1, plus Zimbabwe.

Table 8.3 Basic characteristics of the sample

Country	GNP per capita (millions)	av. annual growth (1985-86)	Population (millions)	Inflation (%)	Life expectancy at birth
Zimbabwe	620	1.2	8.7	13.0	58
Malawi	160	1.5	7.4	12.4	45
Nigeria	640	1.9	103.1	10.5	51
Kenya	300	1.9	21.2	9.9	57
Cyprus*	4360	-	672.0	7.4	74
Malaysia	1830	4.3	16.1	1.4	69
Belize*	1170	2.2	170.0	1.6	66

Source: World Bank, World Development Report, 1988

Note: * Population is in thousands

For some countries the variables analysed indicate a higher level of development while in other cases the indication is that

some countries in the sample are at a lower level of development than Zimbabwe. Three countries in particular, Cyprus, Malaysia and Belize, are well ahead of Zimbabwe in all the indicators shown in Table 8.3. Only Nigeria is more comparable to Zimbabwe in terms of per capita GNP. Three countries, Nigeria, Kenya and Malawi are comparable to Zimbabwe in terms of life expectancy. The data in Table 8.3 indicate that Malawi is less developed than Zimbabwe in most of the indicators.

8.2.3.2 Path of economic development

The composition of GDP by industrial origin is shown in Table 8.4. It indicates that in most of the sample countries, the main economic sectors are agriculture, manufacturing, mining, construction, hotels and restaurants, public administration, transport and communications, finance and insurance.

Of significant importance is the fact that these economies share many of the common characteristics of developing countries. A study of the sample countries' characteristics indicate that most of these economies are heavily export-oriented and open to foreign trade vicissitudes, including being highly exposed to global price and growth considerations. There is also considerable dependence on agricultural activity (Table 8.4). The shares of agriculture in GDP in 1986 were as follows: Belize (19.3%), Nigeria (28.1%), Kenya (30.4%), Cyprus (7.3%) and Malaysia (20.8%). These 1986 figures indicate that agriculture is the leading sector in Belize, Nigeria and Kenya. There is also a significant level of public sector participation in economic activity. In addition, external resources are needed to sustain domestic activity and national development.

Other problems include slackening dynamism in the production and export of many traditional commodities, the relatively narrow base of the manufacturing sector and the need for growing imports to meet rising living standards and new investments for the industrialisation drive and the increasing net payments abroad for services.

Table 8.4 Composition of GDP by industrial origin in 1986

Per cent

Sector	Belize	Nigeria	Kenya	Cyprus	Malaysia
Agriculture, forestry and fishing	19.3	28.1	30.4	7.3	20.8
Mining	0.2	18.4	-	0.5	10.6
Manufacturing	13.0	9.0	13.3	14.9	24.1
Electricity and water	2.6	-	-	2.1	-
Construction	5.7	5.1	3.2	9.7	3.2
Hotels and restaurants	18.2	0.5	11.2	19.5	-
Transport and communication	10.4	3.0	6.4	9.7	-
Finance and insurance	5.9	3.7	6.4	9.7	-
Real estate and business services	5.7	3.9	-	-	-
Public administration	12.1	8.7	15.6	12.5	-
Commerce and others	10.7	-	-	-	-
Wholesale and retail trade	-	18.8	-	4.9	-
Commercial, social and personal services	-	-	-	-	41.0
Other	-	-	6.4	0.6	-

Sources: 1. Money and Banking in Malaysia 1988
2. Central Bank of Belize, Statistical Digest 1989
3. Central Bank of Kenya, Annual Report 1987
4. Central Bank of Nigeria, Annual Report and Statement of Accounts 1986
5. Central Bank of Cyprus, Annual Report 1987

Note: - No disaggregation has been provided

Although at least some of these economies' production (e.g. Malaysia) are now broadly based with well-diversified production structures, they have passed through the phases described above. For example, Malaysia relied mainly on two primary commodities (namely rubber and tin) but now its exports include rubber, tin, palm oil, timber, cocoa, crude oil, manufactures and gas.

In the case of Nigeria, the problems of underdevelopment were highlighted when the oil prices in the world market collapsed together with low demand for exportable minerals. There was shortage of foreign exchange for procuring spare parts and other essential imported inputs.

As in other developing countries, factors affecting the trend growth in GDP in Kenya include drought and rising import prices. Growth in GDP was 6.8 per cent in 1968 but had declined to 3.6 per cent by 1974. Import payments were much higher than export receipts thereby reducing the purchasing power of production and dampening real income.

The economy in Malawi also exhibits many similar characteristics of underdevelopment. Malawi is a dual economy with agriculture being the mainstay of the economy (37 per cent of GDP in 1987). The industry is predominantly related to agriculture by being mainly involved in the processing of tobacco, tea and sugar. Exports include tobacco (more than half of total export earnings), sugar and groundnuts. Imports are mainly composed of manufactured goods, industrial raw materials and fuel. Mining is still in its infancy. Manufactured exports are small and are mainly to regional markets.

In Belize, the economy also exhibits a dependence on external financing for developing the infrastructure for sustained growth. There is a need to increase export earnings and to generate adequate domestic public sector savings in order to meet external debt service payments.

Such characteristics as described above are common in the sample countries. The path of economic development in these countries, therefore, has general similarities with the Zimbabwean trends in development (see Chapter 2). We may now turn our attention to financial sector characteristics.

8.2.3.3 Types of financial institutions

The financial system is analysed, first in terms of the kinds of institutions operating in the country; secondly, the maturity and depth of financial markets are analysed; and thirdly, the comparative evolution of financial institutions is examined. Table 8.5 shows the types of financial institutions operating in the sample of developing countries.

Table 8.5 shows that most of the sample countries have a wide range of institutions: namely a central bank, commercial banks, merchant banks, finance houses, insurance companies, provident and pension funds, building societies and development institutions. However, Cyprus and Belize clearly have a much narrower range of financial institutions than the other countries examined.

Table 8.5 Types of financial institutions, 1987

Type of institution	Country					
	Malaysia	Cyprus	Belize	Nigeria	Malawi	Kenya
Central bank	/	/	/	/	/	/
Commercial banks	/	/	/	/	/	/
Finance companies	/	/		/	/	/
Discount houses	/			/		/
Merchant banks	/			/		/
Development institutions	/	/	/	/	/	/
Savings institutions	/	/		/	/	/
Provident and pension funds	/			/	/	/
Insurance companies	/		/	/	/	/
Building societies	/	/		/	/	/
Unit trusts	/			/	/	/
Corporation and credit societies	/	/	/	/	/	/
Other	/			/	/	/

Source: Various central bank reports

Note: / Yes

8.2.3.4 Maturity of financial systems

The growing maturity of a financial system has been recognised as important in promoting rapid economic growth, particularly on the need to harness sufficient resources for development. This approach stresses the need for policies to raise the level of savings through the development of the money and capital markets.

Out of a number of indicators of financial system depth, the researcher has chosen ones which are useful in analysing a country's financial system. Another main criteria was the ease with which the indicators could be constructed for all the sample countries.

One of the main methods of analysing the maturity of a financial system is to analyse the relationship between the total assets of a financial system and the nation's national income to arrive at a crude proxy of the stage of financial intermediation in a country. The aggregate financial assets as a percentage of GNP includes the commercial and deposit bank assets plus outstanding bonds held by commercial banks and other financial institutions. Due to unavailability of data on bonds held by commercial banks and other financial institutions (in the case of some of the sample countries) other indicators of financial system depth are therefore used namely: deposit bank assets as a percentage of GNP, commercial bank assets as a percentage of GNP, broad money as a percentage of GNP and the circulation ratio.

The deposit bank assets/GNP ratio is composed of commercial bank assets and the assets of other financial institutions relative to GNP. Broad money is composed of currency and all deposits. The higher these ratios, the greater the financial maturity of an economy, ceteris paribus. However, the opposite holds true for the

circulation ratio. The circulation ratio is the ratio of total currency in circulation to the total of currency and deposits (liquid financial assets) in financial institutions. This ratio decreases with increasing financial depth unlike the other indicators. An analysis of these ratios will indicate the level of financial development in these countries.

These measures of financial system development area better gauge for inter-country comparisons because they are based on aggregate monetary statistics which are likely to be accurate and uniform. It should be noted, however, that country data and definitions are not entirely consistent, and therefore the figures presented will reflect relative degrees of financial system depth. Also, these indicators are easily calculated from published statistics like international financial statistics, the World Bank, World Development Reports and individual country central bank annual reports.

Once again, countries selected should compare with Zimbabwe in terms of the financial indicators. Table 8.6 shows the maturity of sample countries' financial systems.

In terms of the deposit bank assets/GNP ratio, Nigeria and Kenya are comparable to Zimbabwe. Cyprus and Malaysia are, once again, at a higher level of development than Zimbabwe; Malawi and Belize are at a comparative lower level of development in terms of this same indicator. Comparison of the commercial bank assets/GNP ratio indicates that Malawi, Kenya and Belize are comparable to Zimbabwe, while Nigeria has a higher ratio (63.8 per cent as compared to 27.3 per cent for Zimbabwe). Once again Cyprus and Malaysia are not comparable to Zimbabwe in terms of this indicator

although in terms of the circulation ratio these two countries are similar to Zimbabwe. In terms of the circulation ratio, Nigeria and Kenya are at a lower level of development than Zimbabwe. Comparison of the broad money/GNP ratio, like the other ratios, indicates that Kenya and Nigeria are more comparable to Zimbabwe; Cyprus and Malaysia are at a higher level of development while Belize and Malawi are at a lower level of development than Zimbabwe.

Table 8.6 Measures of financial depth 1986

Country	Deposit bank assets/GNP	Commercial bank assets/GNP	Broad money/GNP	Circulation ratio %
Zimbabwe	57.5	27.3	60.3	7.4
Nigeria	54.3	63.8	67.6	13.8
Malawi	30.9	28.8	36.9	9.8
Kenya	50.2	31.1	44.9	12.6
Belize*	21.4	31.5	20.5	9.5
Cyprus	90.3	90.3	88.3	9.0
Malaysia	87.4	119.0	75.0	6.2

Sources: 1 International Financial Statistics, IMF, 1986
2 International Financial Statistics, IMF, 1989
3 Various central bank annual reports
4 Researcher's computations

Note: * GDP figure was used

8.2.3.5 Evolution of financial institutions

A study of the evolution of financial institutions in the sample countries indicate that the source of growth of currency and banking can be traced to the influence of foreign trade. The course of international trade brought in its wake not only an increase in economic activity and income in the countries, but also the institutions and instruments to facilitate the financing of trade.

Information on these countries indicates that at the start of central banking, their financial systems were dominated by branches of British banks, specialising in financing international trade. Banking was then practised in such a way as to provide financing needed in order to secure efficiently the supplies of raw materials mainly to feed British industry and to ensure a captive market for British manufactures. The needs of the domestic economies were of little direct consequence. Domestic banks only developed after the establishment of central banks. Before central banks the monetary authority was the currency board system in these countries.

Another characteristic noticed in these countries is that commercial banks are the largest subsector in their respective financial systems. The above discussion indicates that the path of development of the sample countries' financial systems is the same as in Zimbabwe (see Chapter 3).

8.2.3.6 Supervisory characteristics

In all the sample countries, the central bank is responsible for prudential supervision of banks and in all the cases there is a special department responsible for the supervisory function. In Nigeria, prudential supervision was initially operated jointly by

the central bank and the Ministry of Finance but all operations have not been brought under central bank supervision, 'in order to ensure an adequate and proper supervision of banks and to bring Nigeria in line with practices in other countries' (Bank Supervision Department, 1988). It was noted in Chapter 6 that in Zimbabwe the licensing of banks is still carried out by the registrar of banks and financial institutions in the Ministry of Finance.

An analysis of the sample countries' supervisory systems identified the following broad-based objectives common to most of the countries in the sample:

- determine the financial health of the institutions in order to ensure that their operations are not detrimental to the interests of depositors
- to foster and encourage the development of the banking sector in a direction consistent with the policy laid down by authorities
- to ensure that the operations and policies of the commercial banks are in accordance with the law
- to maintain a standard of banking practices and a level consistent with the highest international standards
- to ensure that the banking sector acts in the interests of government policy
- to promote good management quality, and
- to ensure compliance with monetary policy.

However, some of these countries' objectives include non-supervisory objectives although it is clear that their overall aim is to ensure

a viable and sound banking system. Supervision in the sample countries is concerned with the following functions:

- identifying problematic areas in commercial banks so that corrective measures can be implemented by analysing reports submitted regularly
- checking banks financial information to ensure compliance with certain banking legal requirements
- changing laws to facilitate quick enforcement procedures of handling problem institutions
- administering and enforcing legislation governing the conduct and operations of the financial institutions under supervision
- maintaining close contact and dialogue with the financial institutions through regular meetings so as to be informed of problems and difficulties faced by them
- ensuring adequacy of record keeping, internal controls and management information systems.

The main institutions under central bank supervision in the sample countries are shown in Table 8.7. The table indicates that all the sample countries supervise commercial banks. Belize and Malawi supervise only commercial banks. Cyprus, Malaysia and Kenya supervise banks and other non-bank financial institutions. Like Zimbabwe, Nigeria supervises commercial and merchant banks.

Table 8.7 Institutions under prudential supervision

Country	Commercial banks	Merchant banks	Other financial institutions
Zimbabwe	/	/	-
Belize	/	-	-
Malawi	/	-	-
Kenya	/	/	/
Nigeria	/	/	-
Cyprus	/	-	/
Malaysia	/	/	/

Table 8.8 indicates the methods used by the sample countries to supervise banks. It is clear that the main methods of supervision are, analysis of returns and on-site bank inspections. Kenya and Nigeria are the only countries in the sample who have a deposit insurance scheme.

Table 8.8 Methods of supervision

Country	Off site analysis of returns	On site bank inspections	Deposit insurance	Other
Zimbabwe	/	/	-	-
Belize	/	/	-	-
Malawi	/	/	-	-
Kenya	/	/	/	-
Nigeria	/	/	/	-
Cyprus	/	/	-	-
Malaysia	/	/	-	-

The main instruments used by these countries to assess the soundness of institutions are: capital adequacy, liquidity, profitability, credit limits, asset quality and quality of management. As was suggested in Chapter 7, the consensus in the sample countries is that capital adequacy is the main instrument of supervision. In Kenya, for example, it was thought that inadequate capital was one of the problems causing bank failures between 1984 and 1986 (Bank Supervision Department, 1988); it was also stated by the bank supervision department in Nigeria (1988) that '... in order to ensure the continued stability of the banking system, there is need to strengthen the capital resource base of the banks'. The next section involves a comparative analysis of capital adequacy systems in the sample countries.

8.2.3.7 Capital adequacy systems

Table 8.9 indicates the different kind of capital adequacy ratios applied by different countries in our sample. Sample countries vary with regard to the type of ratios applied to assess the adequacy of capital in banks. Most banks have been applying different types of the gearing ratio. Malawi and Cyprus are the only countries which have been applying the capital/risk assets ratio. Kenya also intends to apply the capital/risky assets ratio (risky assets = total assets less cash less securities) in the near future. In the case of Cyprus, the capital/risky assets ratio is the only ratio applied to banks. The capital/assets ratio has only been applied by two countries, Malawi and Malaysia (the only ratio for Malaysia so far).

Table 8.9 Capital adequacy systems

Country	Capital assets	Capital/ risky assets	Capital/ deposits	Capital/loans and advances	Capital/ earning assets	Risk assets ratio
Zimbabwe	-	-	/4	-	-	/
Malawi	/	/	-	/	/	/3
Kenya	5	5	/	-	-	-
Nigeria	-	-	-	/	-	/1
Cyprus	-	/	-	-	-	-
Malaysia	/	-	-	-	-	2
Belize	-	-	/	-	-	-

Source: Replies from various central banks

Notes:
1 Nigeria introduced the RAR system in 1988
2 Malaysia is in the process of formulating the RAR system which will replace the gearing ratio system
3 Malawi began assessing capital adequacy using the RAR system in 1988
4 Zimbabwe's gearing ratio is the ratio of adjusted capital/public liabilities
5 Kenya intends to introduce the capital/assets and capital/risky assets ratios in addition to the capital/deposits ratio

Kenya and Belize are the only countries applying the capital/deposits ratio. Since 1988, Malawi and Nigeria introduced the risk assets ratio system. We saw earlier that Zimbabwe introduced the ratio at the start of their supervision system in 1985. Malaysia intends to implement the risk assets ratio (RAR) system to replace the present gearing ratio system. There is no indication of the intention to introduced the RAR system in Kenya and Cyprus.

An interesting feature to note is the fact that all the countries in the sample (except Malawi) have introduced a minimum capital adequacy ratio which banks are expected to observe. Table 8.10 depicts the positions in different countries in this regard.

Table 8.10 Minimum capital adequacy ratios

Per cent

Country	Ratio	Required minimum
Zimbabwe	Capital/public liabilities	5.0
Malawi*	-	-
Kenya	Capital/deposits	7.5
Nigeria	Capital/loans and advances	10.0
Cyprus	Capital/risk assets	5.0
Malaysia	Capital/assets	4.0
Belize	Capital/deposits	5.0

Source: Replies from central banks

Note: * No minimum requirement applied

For the purpose of calculating capital adequacy ratios, all banks in the sample include paid up capital, retained profit and general reserves (Table 8.11). Only Malawi and Cyprus include revaluation reserves in their assessment of capital adequacy. As in Zimbabwe, Cyprus and Malaysia include provisions for bad and doubtful debts in the composition of capital for prudential purposes, while Nigeria deducts these from its capital base. Cyprus is the only country which includes share premium and hidden reserves in the calculation of capital adequacy.

The items which most countries deduct from the capital base for capital adequacy purposes include:

- fixed assets
- plant and equipment
- investments in subsidiaries
- specific provisions for bad and doubtful debts
- debentures and notes
- intangible assets

Besides the imposition of required capital ratios, all sample countries require their banks to maintain a specified initial capital base. In order to ensure adequate capital, Kenya also requires the banks to maintain a reserve fund in which 12.5 per cent of net profit before dividend is invested in government securities. With the same consideration, Nigeria requires the banks to maintain a statutory reserve account as follows: 25 per cent of net profit after tax if the reserve is lower than paid up capital and 12 per cent of net profit is maintained if the reserve account is higher than its paid up capital.

Table 8.11 Components of capital for prudential purposes

Country	Paid up capital	Retained profit	General reserves	Revaluation reserves	Provision for bad debts	Loan capital	Minority interests	Share premium	Hidden reserves
Zimbabwe	/	/	/	-	/	/	/	-	-
Malawi	/	/	/	/	-	-	-	-	-
Kenya	/	/	/						
Nigeria	/	/	/	-	1	/2	-	-	-
Cyprus	/	/	/	/	/	/3	-	/	/
Malaysia	/	/	/	-	/	/	-	-	-
Belize	/	/	/						

Source: Replies from various central banks

Notes:
1 In Nigeria provisions for bad debts are deducted from capital
2 The maturity of loan capital should not be less than 7 years
3 Only subordinated debt which has a minimum initial period of 5 years to maturity and subject to a straight line amortisation in the last 5 years of life and up to 0.5 of adjusted capital base is included

8.2.3.8 Other prudential supervision requirements

A study of the sample countries' supervisory systems revealed that besides capital adequacy restrictions, the authorities also monitor liquidity, profitability, loan concentrations, investments and foreign exchange operations. These are related risk aspects of the banking firm. Ultimately, they have at least an indirect bearing on capital adequacy analysis.

Cyprus, Nigeria, Malawi and Kenyan authorities observe the liquidity ratio (net liquid assets to deposits) and changes in the main factors which normally affect the level of net liquid assets. This measure is mainly used by central banks as a monetary policy measure. However, these countries used the liquidity measure as a prudential supervisory tool to ensure that banks are able to meet their obligations. Malawi and Nigeria monitor the volatility of deposits. Nigeria also monitors the loans/deposits ratio.

Another supervisory requirement which most countries give a great deal of emphasis to is the loans and advances portfolio. When analysing the loans and advances portfolios, most countries examine the bank's credit policy, credit processing, review systems, integrity of the borrowers, relationship between banker and borrower, assessment of the project to be financed, lending limits, security offered and adequacy of provisions.

In order to monitor credit concentrations, many countries impose limits to a single customer as follows: Nigeria (33% of capital), Cyprus (25% of capital), Malaysia (30% of capital), Kenya (100% of capital or 5% of total deposit liabilities) and in Zimbabwe any loans to a single borrower up to 15% of capital needs Reserve Bank approval.

Profitability is another supervisory tool which many countries monitor to assess the soundness of banks. Many countries monitor the following ratios: return on assets, return on capital, net operating income (growth), net interest margin, net interest margin to earning assets, and interest income (gross) to net loans.

Supervisory authorities impose restrictions on holdings of investments. This is done by requiring certain shares not to exceed a specified percentage of capital. For example, Cyprus requires that an investment in shares in companies which do not carry out banking activities should not exceed 5 per cent of paid up capital. Also, Nigerian supervisory authorities require that overall investment in various enterprises should not be more than 33 per cent of paid up capital.

Many countries also monitor foreign exchange positions of banks mainly to ensure that bankers comply with the limits approved by the central bank authorities.

8.2.4 Sample profile

Section 8.2.1 described the normative characteristics of our sample of developing countries. The ideal sample sought was composed of countries which match perfectly with Zimbabwe in respect of their economic, financial and supervisory characteristics. Table 8.12 summarises the main characteristics of our sample examined in the preceding sections. Overall there are clearly real and financial differences between the countries in the sample. However, the countries are felt to be a reasonable sample for present purposes in the light of data availability and the paucity of experience and information on supervisory systems.

Table 8.12 Comparative characteristics of the sample

	Zimbabwe	Belize	Malawi	Kenya	Nigeria	Cyprus	Malaysia
Economic characteristics							
GNP per capital	620.0	1170.0	160.0	300.0	640.0	4360.0	1830.0
Growth in GNP	1.2	2.2	1.5	1.9	1.9		4.3
Leading sector	M	A	A	A	A	H	M
Financial characteristics							
Deposit bank assets/GNP	57.5	21.4	30.9	50.2	54.3	90.3	87.0
Broad money/GNP	60.3	20.5	36.9	44.9	67.6	88.3	75.0
Circulation ratio	7.4	9.5	9.8	12.6	13.8	9.0	6.2
Supervisory characteristics							
Capital adequacy ratios	C/D RAR	-	C/A C/Risky assets RAR	C/D	C/Risky assets RAR	C/Risky assets	C/A
Minimum capital requirements	C/D 5%	-	-	7.5%	C/Risky assets 10%	5%	4%

Notes: C/D = Capital/deposits
RAR = Risk assets ratio
M = Manufacturing
A = Agriculture
H = Hotels

Malaysia and Cyprus are at a higher level of development than Zimbabwe in terms of the real and financial indicators. Belize is at a higher level of development in terms of real development while it has a lower level of financial development than Zimbabwe. Malawi is at a lower level of development in terms of both financial and real development indicators. Kenya is at a lower level of real development while its financial development is slightly lower but more comparable to Zimbabwe. Nigeria's financial and economic development are more comparable to Zimbabwe than other countries. However, all the countries in the sample have a similar broad type of financial systems, share the same characteristics of underdevelopment and have followed the same development path.

There is also a variation although not markedly between the countries in terms of their supervisory characteristics. There are some similarities in that most of the sample countries share the same objectives of supervision and use the same methods of supervision. All countries include core capital in their calculation of capital adequacy although there are variations in other items included as capital. Most of the countries emphasise capital adequacy as the most important single supervisory risk-monitoring instrument although the capital ratios used differ between countries.

Kenya and Malaysia, for example, apply only a gearing ratio. Malawi, Nigeria and Cyprus apply the capital/risky assets ratio. Only Malawi and Nigeria apply a risk assets ratio, although the ratio has only been in effect since 1988. It would be interesting to observe the effects of supervision in Kenya, Cyprus and Malaysia; these countries have applied only one type of capital ratio.

The next section evaluates the effects of the imposition of these capital adequacy restrictions on bank performance and condition.

8.3 THE IMPACT OF SUPERVISION: EMPIRICAL RESULTS

8.3.1 Methodology

In Chapters 6 and 7 it was suggested that capital adequacy was the core supervisory instrument in supervision. Also, the previous section of this chapter indicated the importance that our sample of developing countries place on capital adequacy as an instrument in strengthening their banks. Five of the sample countries require their banks to maintain a prescribed capital ratio. A number of theoretical studies analysed in Chapter 7 identified the effects of imposing capital adequacy requirements on bank performance and condition. Based on the theoretical results of Chapter 7, this chapter will be concerned with exploring these kinds of result using Zimbabwean and sample countries' data. The performance and condition variables identified in Chapter 7 (which were summarised in the form of a basic performance and condition matrix) will be the basis of the tests in this chapter.

In particular, Lackman's (1986) theoretical results will be useful in our tests because the study actually showed in theory how different capital adequacy constraints affect the risk and return positions of banks. This was an interesting and relevant theoretical result for present purposes. However, even if Lackman is wrong, it does not negate the following empirical work. Our primary concern is to examine empirical trends, and this exercise does not rest on the strong acceptance of any theoretical model or

hypothesis. Indeed, given the difficulties of monitoring and separating regulatory targets and instruments, many researchers prefer to focus primarily on attempting to measure empirically regulatory consequences and effects.

One of our main tests, in this regard, will be the evaluation of the risk-return positions (proxied by the return on equity and variability of return) of Zimbabwean and sample banks. However, there are data limitations in our endeavour to analyse sample country bank profitability. The researcher was unable to obtain aggregate commercial bank profit figures for sample countries as these data was not published in the available central bank annual reports. In this connection, letters (see Appendix 8.2) were sent to sample countries requesting profit figures. However, only one country (Malawi) provided the requested information. Reminders (see Appendix 8.3) were sent to the other countries and once again only one country (Belize) provided the information. As a result of this non-availability of profit data, the increase in capital from year-to-year will be used as a proxy for aggregate banking profits.

The publication by The Banker (September 1989) of the top 100 Asian banks and the top 50 African banks was thought initially to be a useful source in the search for profit figures. Based on this information, the researcher contacted The Banker and requested individual bank annual reports for countries in the sample. Also for those sample countries whose banks have head offices in London, the head offices were contacted requesting profit information. However, individual bank annual reports for only two countries (Malaysia and Nigeria) were obtained and the data covered only three years. In each case, information for only two banks in the country

was obtained. Since this is a comparative analysis and there is need for consistency, it was not considered useful to utilise this data.

Since we are exploring the impact of supervision, this requires us to analyse data for two periods, before and after the implementation of supervision, and compare the results. This, however, poses data problems, especially for those countries which started supervision in the 1960s: the data made available to the researcher all relates from the 1970s. Table 8.13 indicates when each country in the sample started supervision.

Table 8.13 Dates when each country started supervision

Country	When supervision started
Belize	1983
Malawi	1975
Kenya	1969
Nigeria	1967
Cyprus	1963
Malaysia	1959

Source: Replies from sample countries

In many cases, bankers tend to refer to their own Banking Acts as the start of prudential supervision. Usually, the start of a Banking Act referred to the overall regulation of banking and concentrated on issues like monetary policy. But many countries, both developed and developing, strengthened their supervisory

processes in the 1970s and 1980s when banking risks increased and many banking problems surfaced and failures occurred (see Chapter 5). It is during this period that many countries started imposing stringent capital adequacy requirements. It is for this reason that the researcher wrote back to the sample countries (Appendix 8.2) to enquire when they first imposed capital adequacy constraints on their banks. Table 8.14 indicates when capital adequacy rules were imposed on banks.

Table 8.14 Imposition of capital adequacy ratios

Country	Start of super-vision	Implementation of capital adequacy ratios
Belize	1983	1983
Malawi	1975	1975
Nigeria	1967	*
Kenya	1969	*
Cyprus	1963	*
Malaysia	1959	1981

Source: Replies from central banks

Note: * no exact information was provided

Generally, for those countries where the exact dates that capital adequacy constraints were imposed are not available (after a follow up was made - Appendix 8.3), trends will be analysed for the period before 1975 and for the period after 1975 (where statistical data are available). The year 1975 is a convenient 'benchmark date' since it is in this period that there was a growing recognition of the need for tighter capital adequacy regulations in many countries.

According to available information from the sample countries and the availability of data, the time periods used in the analysis for each country are as shown in Figure 8.1.

Figure 8.1 Time periods used in the analysis

Country	Before supervision	After supervision
Belize	1977 - 1983	1984 - 1987
Malawi	1970 - 1975	1976 - 1987
Kenya	1970 - 1980	1981 - 1987
Nigeria	1978 - 1980	1981 - 1986
Cyprus	1970 - 1975	1976 - 1987
Malaysia	1975 - 1980	1981 - 1987

As stated earlier, the aim of the exploratory analysis in this section is to determine whether the imposition of capital adequacy ratios was associated with improvements in bank performance and condition. This section will thus present a performance and condition analysis of Zimbabwean and sample country banks before and after the implementation of supervision. Ratio analysis is the method used to evaluate bank performance and condition. Ratios (according to the BPCM identified in Chapter 7) will be formed from banking data and the time series trends observed for the two periods. In order to describe the observed results and make clearer comparisons of the two periods, the computed ratios in Appendices 8.4 - 8.17 will be summarised by the use of averages and measures of dispersion. The ratio results after the implementation of supervision will be compared with the ones before supervision. Graphs of the ratios will also be used to help draw out some initial broad conclusions about the trends observed.

Initially, a time series analysis of each country's trends in performance and condition is presented, then a cross section analysis of the results will be effected in order to compare the results. The comparison is made to identify any similarities in the impact of supervision across the sample of developing countries. In particular, it will be interesting to compare results for countries which have implemented the same kind of capital adequacy systems.

The empirical results are shown in sections 3.2, 3.3 and 3.4. Section 3.2 presents empirical results for Zimbabwe while section 3.3 presents results for individual countries in the sample.

Section 3.4 is a comparative analysis of the sample countries' and Zimbabwe's results. Section 3.5 presents the concluding observations.

The performance and condition of the banks will be first analysed in terms of a risk and return exposition and the results of other performance and condition measures will be summarised in the performance and condition matrix.

8.3.2 Empirical results: Zimbabwe

8.3.2.1 A risk-return analysis

Zimbabwean banks' overall performance is first analysed in terms of a risk-return framework. The basic risk and return analysis of performance and condition (along the lines of basic Markowitzian portfolio theory) will focus on two measures:

- central measures (means/medians) of ROA and ROC
- respective variability by means of ROA and ROC

The trend (time series) analysis of these two profitability measures are shown in Appendices 8.4 and 8.5. Profitability of banks determines their ability to manage economic volatility and to fund growth; good profitability is also necessary to ensure investors a reasonable dividend and prospective capital appreciation. Thus, an increase in profitability and reduction in variability are indicators a priori of improved overall performance. Focusing upon the periods before and after supervision, the averages and

variability measures of the ROC and ROA are summarised in Tables 8.15 and 8.16.

Starting with the return on equity, there is variation in performance for the individual commercial banks analysed. In one case, both the return on equity and variability of return on equity fell after the implementation of supervision. In another case, the return on equity increased after supervision and the variability of returns fell. For the third bank analysed, both the return on capital and the variability increased after supervision. For the aggregate commercial banks, the return on capital trended downwards after supervision and all the measures of variability showed an upward trend. In terms of this measure, there was an apparent increase in risk because return declined and variability increased. the merchant banks showed a different trend in that their return on equity increased after supervision and variability of return declined.

Another measure of profitability considered is the return on assets. For all three individual commercial banks analysed the variability of return fell after supervision but on an aggregate level, variability of the return on capital increased. However, the return on assets on an aggregate level increased after supervision. Once again the merchant banks' return on assets increased and the variability of return decreased after supervision.

Table 8.15 Zimbabwean banks return on capital ratio

per cent

		Barclays	Zimbank	BCCZ	MBCA	Std Merchant	RAL	Aggregate commercial banks	Aggregate merchant banks
Mean	1	38.2	17.6	3.2	8.3	17.2	15.8	13.9	7.8
	2	37.1	18.6	8.1	12.5	25.5	15.8	13.8	12.9
Median	1	26.2	18.3	2.9	8.3	13.9	15.6	14.1	7.2
	2	37.2	18.6	8.1	12.5	25.5	15.8	13.8	12.9
Standard deviation	1	26.5	1.8	2.2	-	7.7	0.9	3.5	3.1
	2	7.7	0.8	2.6	1.5	0.2	0.6	4.3	2.3
Variance	1	702.3	3.2	4.8	-	59.3	0.8	12.3	9.6
	2	59.3	0.6	6.8	2.3	0.04	0.4	18.5	5.3
Coefficient of variation	1	69.4	10.2	68.8	-	44.8	5.7	25.2	39.7
	2	20.8	4.3	32.1	12.0	0.8	3.8	31.2	17.8

Source: Appendix 8.4

Note: 1 Period before supervision
2 Period after supervision

Table 8.16 Zimbabwean banks return on assets ratio

per cent

		Barclays	Zimbank	BCCZ	MBCA	Std Merchant	RAL	Aggregate commercial banks	Aggregate merchant banks
Mean	1	0.85	1.40	0.16	0.50	0.96	1.01	0.7	0.98
	2	1.30	1.20	0.25	1.10	1.45	1.20	0.9	2.15
Median	1	0.80	1.40	0.10	0.50	0.70	0.90	0.7	1.00
	2	1.30	1.20	0.25	1.10	1.45	1.20	0.9	2.15
Standard deviation	1	0.25	0.28	0.14	-	0.64	0.18	0.3	0.46
	2	0.00	0.00	0.07	0.14	0.07	0.00	0.4	0.07
Variance	1	0.06	0.08	0.019	-	0.40	0.03	0.009	0.20
	2	0.00	0.00	0.005	0.019	0.004	0.00	0.16	0.005
Coefficient of variation	1	29.40	20.00	87.50	-	66.60	17.80	42.8	46.90
	2	0.00	0.00	28.00	12.70	4.80	0.00	44.4	3.30

Source: Appendix 8.5

Note: 1 Period before supervision
2 Period after supervision

8.3.2.2 Other performance and condition measures

8.3.2.2.1 Earnings

Four measures of earnings were considered namely, mean absolute profits, profit margin, variance of profit before tax and variance of profit after tax. A banking system requires strong, steady growth in earnings to build reserves needed to absorb losses that occur in the normal course of the business cycle. Thus an increase in earnings and low variability of earnings is needed if the banking system should remain strong. Data on the four measures of earnings are shown in Tables 8.17 and 8.18.

Table 8.17 Zimbabwe commercial banks profits

US$ million

	Mean		Variance	
	Before supervision	After supervision	Before supervision	After supervision
Net profit	9.3	24.8	39.9	136.2
Gross profit	148.5	294.3	4956.2	894.0

Source: CSO, Finance Department (December 1988)

Aggregate net profit of commercial banks increased after supervision (Table 8.17). The variance of profit before tax declined after supervision while as the variance of profit after tax increased (Table 8.17).

Table 8.18 Zimbabwean banks profit margin

		Barclays	BCCZ	Aggregate commercial banks	Aggregate merchant banks
Mean	1	44.9	41.2	9.3	7.3
	2	49.0	21.8	8.2	11.5
Median	1	45.1	23.0	8.7	5.5
	2	49.0	21.8	8.2	11.5
Standard deviation	1	25.7	34.5	2.7	3.1
	2	0.9	2.5	3.1	0.3
Variance	1	660.5	1190.3	7.3	9.6
	2	0.8	6.3	9.6	0.09
Coefficient of variation	1	57.2	83.7	29.0	42.5
	2	1.8	11.5	37.8	2.6

Source: Appendix 8.6

Notes: 1 Before supervision
2 After supervision

On an aggregate commercial bank level, the profit margin (Table 8.18) declined after supervision and variability in this measure increased. However, two individual commercial banks analysed showed different results. One bank showed an increase in the profit margin after supervision while the other one showed a declining trend. For both banks, however, all three measures of variability analysed showed a decreasing trend after supervision. Once again, the merchant banks showed improvement in performance and condition. Their profit margin increased and variability decreased after supervision.

8.3.2.2.2 Operating efficiency

Next, we consider the measure of a bank's operating efficiency, the ratio of total operating expenses to total operating income. This ratio indicates how much a financial burden operating expenses are imposing on operating earnings. An increase in this ratio would indicate a decrease in efficiency. Data for Zimbabwean banks are depicted in Table 8.19.

Table 8.19 Zimbabwean banks operating efficiency

		Aggregate commercial banks	Aggregate merchant banks
Mean	1	41.7	11.3
	2	33.4	12.9
Median	1	35.8	10.3
	2	33.4	12.9
Standard deviation	1	10.6	1.9
	2	0.4	1.4

Source: Appendix 8.7

Notes: 1 Before supervision
2 After supervision

For aggregate commercial banks, these data indicate that operating efficiency was higher after supervision: the average ratio was 41.7 per cent before supervision and fell to 33.4 per cent after supervision. However, aggregate merchant banks depict a different picture. Their operating expenses/operating income ratio was 11.3

per cent before supervision and increased to 12.9 per cent after supervision, showing a deterioration in operating efficiency.

8.3.2.2.3 Capital adequacy

The major aim of the supervisory authorities in Zimbabwe is to determine and monitor capital adequacy in banks. The adequacy of capital is an important factor in a bank's ability to withstand unexpected losses. Regulatory initiatives can lead banks to bolster their capital positions. Thus an increase in capital adequacy ratios will indicate a stronger prudential position ceteris paribus while a decrease in these ratios will indicate a more risky position. The data for Zimbabwean banks are depicted in Tables 8.20 and 8.21.

It is clear that on all the measures of capital adequacy analysed, there is improvement after supervision although on an individual bank level there are slight variations.

The average ratio of capital to deposits was 6.6 per cent before supervision and rose to an average of 7.7 per cent for the period after supervision. The banks in Zimbabwe are required to observe a capital to liabilities to the public ratio of 5 per cent. The merchant banks' capital to deposits ratio was well in excess of the minimum requirement of 5 per cent. The merchant banks' ratio was at an average of 12.7 per cent before supervision and rose to 17.1 per cent after supervision.

Table 8.20 Zimbabwean banks capital/deposits ratio

per cent

		Barclays	Zimbank	BCCZ	MBCA	Std Merchant	RAL	Aggregate commercial banks	Aggregate merchant banks
Mean	1	3.8	10.7	10.9	11.2	16.4	15.0	6.6	12.7
	2	4.1	8.4	3.8	26.8	22.3	30.1	7.7	17.1
Median	1	4.5	10.2	8.5	13.0	15.3	14.0	6.6	13.5
	2	4.1	8.4	3.8	26.8	22.3	30.1	7.7	17.1
Standard deviation	1	1.8	2.3	8.3	4.1	5.3	2.9	0.2	1.9
	2	0.7	1.1	0.3	0.5	1.3	0.07	1.3	3.2

Source: Appendix 8.8

Notes: 1 Before supervision
2 After supervision

Table 8.21 Zimbabwean banks capital/assets ratio

per cent

		Barclays	Zimbank	BCCZ	MBCA	Std Merchant	RAL	Aggregate commercial banks	Aggregate merchant banks
Mean	1	3.3	8.1	8.9	5.5	5.2	6.6	6.6	12.7
	2	3.7	6.6	3.7	9.1	5.8	7.7	7.2	17.1
Median	1	4.0	8.0	7.4	6.3	5.0	6.4	6.6	13.5
	2	3.7	6.6	3.7	9.1	5.8	7.7	7.15	17.1
Standard deviation	1	1.7	1.1	6.1		1.9	1.2	1.16	0.2 1.9
	2	0.7	0.3	0.4	0.07	0.2	0.2	0.4	3.2

Capital/risky assets ratio

Mean	1	7.9
	2	9.0
Median	1	8.3
	2	9.0
Standard deviation	1	1.4
	2	0.6

Source: Appendices 8.9 and 8.10

Notes: 1 Before supervision
2 After supervision

8.3.2.2.4 Loan analysis

The loan portfolio and its quality will be analysed using the ratios of loans/deposits, loans/assets and provisions for loan losses/total loans (in respect of loan quality). The data in respect of these ratios are presented in Tables 8.22 and 8.23.

The loan/deposits ratio is a measure of bank liquidity or the extent to which deposits have been used to meet loan requests. An increasing ratio would indicate declining liquidity. Liquidity is a bank's most important safeguard against funding difficulties. Even the most well managed banks are not invulnerable to a sudden erosion of market confidence.

On an aggregate commercial and merchant bank level, the loans/deposit ratio increased after supervision. For commercial banks, the average ratio was 57.4 per cent before supervision and rose to an average of 59.6 per cent after supervision. The increase was not substantial. The aggregate merchant bank's average ratio was 47.1 per cent before supervision and an average 69.1 per cent after supervision. All of the three individual merchant banks' ratios analysed increased after supervision. Two of the three individual banks' ratios declined after supervision.

The average loans/assets ratios are presented in Table 8.23. A high ratio indicates that a large part of the assets are in the form of commercial loans while a low ratio would be indicative of a higher asset liquidity. This ratio is used by supervisory authorities as a measure of credit risk. However, it is also a measure of liquidity. An increase of loans as a proportion of total assets would increase credit risk. High loan demand leads to growth in loans.

Table 8.22 Zimbabwean banks loans/deposits ratio

per cent

		Barclays	Zimbank	BCCZ	MBCA	Std Merchant	RAL	Aggregate commercial banks	Aggregate merchant banks
Mean	1	57.9	72.4	59.9	46.0	59.8	70.0	57.4	47.1
	2	59.8	71.9	50.5	69.9	79.8	112.6	59.6	69.1
Median	1		74.5	66.3	43.7	59.1	67.4	58.7	42.8
	2		71.9	50.5	69.9	79.8	112.6	59.6	69.1
Standard deviation	1	10.9	6.5	14.3	15.7	15.8	27.9	5.9	12.3
	2	2.8	1.4	3.6	4.3	4.3	3.3	1.6	3.5

Source: Reserve Bank of Zimbabwe, Economic and Statistical Review (various issues)

Notes: 1 Before supervision
2 After supervision

Table 8.23 Zimbabwean banks loans/assets ratio

per cent

		Barclays	Zimbank	BCCZ	MBCA	Std Merchant	RAL	Aggregate commercial banks	Aggregate merchant banks
Mean	1	49.3	54.7	50.4	22.8	19.2	30.4	49.9	31.2
	2	53.4	57.2	46.3	24.0	21.1	28.9	50.2	41.7
Median	1		58.0	55.2	23.3	19.3	33.7	51.3	28.2
	2		57.2	46.3	24.0	21.1	28.9	50.2	41.7
Standard deviation	1	11.9	7.1	10.9	7.3	3.2	8.8	5.2	8.2
	2	2.6	5.6	3.6	0.8	1.6	0.4	2.7	0.2

Source: Reserve Bank of Zimbabwe, Economic and Statistical Review (various issues)

Notes: 1 Before supervision
2 After supervision

In addition, higher gearing ratios like the capital/assets ratio might encourage banks to hold higher yielding assets such as commercial loans. For the aggregate commercial banks in Zimbabwe, the proportion of bank assets allocated to loans rose from an average of 49.9 per cent before supervision to an average of 50.2 per cent after supervision. The rise was not substantial. The aggregate merchant banks' ratio of loans/assets followed a similar trend to that of commercial banks.

The quality of Zimbabwean banks' loan portfolio is depicted in Table 8.24. Although the loan volume in terms of adequacy of capital may be considered at a safe level, the quality of the loans is more important. Loan quality is measured as ratio of provisions for loan losses to total loans. An increase in this ratio indicates poor loan quality and this suggests a more risky position. Due to the unavailability of data on provisions for bad debts, a ratio of total bad debts to total loans was analysed instead. This ratio increased for aggregate commercial banks from an average of 0.08 per cent before supervision to an average of 0.10 per cent after supervision. The ratios for the aggregate merchant banks declined after supervision.

8.3.2.2.5 Rates of growth

Finally, Zimbabwean banks rates of growth of assets, deposits and loans are examined. The data are shown in Table 8.25. The data indicates that the growth in loans and growth in deposits declined after supervision while the growth in assets increased. The growth in loans declined from an average of 12.5 per cent to an average of 11.6 per cent. The growth in deposits declined from an average of

13.3 per cent to an average of 12.2 per cent while the growth in assets increased from an average of 12.4 per cent to an average of 13.6 per cent after supervision.

Table 8.24 Zimbabwean banks loan quality (bad debts/total loans)

		Commercial banks	Merchant banks
Mean	1	0.08	0.25
	2	0.10	0.04
Median	1	0.10	0.20
	2	0.10	0.04
Standard deviation	1	0.06	0.21
	2	0.00	0.01
Variance	1	0.00	0.04
	2	0.00	0.00
Coefficient of variation	1	75.00	84.00
	2	0.00	25.00

Source: Appendix 8.11

Notes: 1 Before supervision
2 After supervision

8.3.2.2.6 Summary: performance and condition of Zimbabwean banks

A summary of the performance and condition of Zimbabwean banks is depicted in the form of a Basic Performance and Condition Matrix (Table 8.26). Table 8.26 shows performance and condition of banks after supervision. The results indicate an increase in absolute profits but a decrease in the return on capital. Also the variance

of profit before tax decreased while the variance of profit after tax increased. Profit margin for commercial banks also decreased after supervision. The results on profitability indicate a general decline in performance.

Table 8.25 Zimbabwe: average rates of growth

per cent

		Aggregate commercial banks		
		Loans	Assets	Deposits
Mean	1	12.5	12.4	13.3
	2	11.6	13.6	12.2
Standard deviation	1	19.1	11.8	8.6
	2	11.6	3.0	5.7

Source: Appendix 8.10

Notes: 1 Before supervision
2 After supervision

The capital adequacy measures indicate an improvement in condition of banks after supervision. There was a decline in liquidity as indicated by the increase in the loan/deposit ratios. There was also a decline in loan quality as indicated by the increase in the loan losses/total assets ratio. Operating efficiency also declined as shown by the increase in the ratio of operating expenses to total operating income. Growth in assets increased but growth in deposits decreased after supervision.

Table 8.26 Zimbabwe commercial banks: the basic performance and condition matrix

Operational area	Indicator	Quantitative proxy	Increase	Decrease
Profitability	Performance	Mean absolute profit	X	
Profitability	Performance	Net profit/capital		X
Profitability	Performance	Net profit/assets	X	
Profitability	Performance	Profit margin		X
Assets growth	Performance	Percentage increase	X	
Deposits growth	Performance	Percentage increase		X
Loans growth	Performance	Percentage increase		X
Operating efficiency	Performance	Operating expenses/ Operating income	X	
Variance of profit	Condition	Variance before tax		X
Variance of profit	Condition	Variance after tax	X	
Capital adequacy	Condition	Capital/assets	X	
Capital adequacy	Condition	Capital/deposits	X	
Capital adequacy	Condition	Capital/risky assets	X	
Liquidity	Condition	Loans/deposits	X	
Credit risk	Condition	Loans/assets	X	
Loan quality	Condition	Bad debts provisions/ total loans	X	

Source: Tables 8.15-8.25

8.3.3 Empirical results: sample countries

This section analyses performance and condition of banks on a country by country basis.

8.3.3.1 Cyprus

The analysis of data for Cyprus for the periods before and after supervision is shown in Tables 8.27 to 8.29.

8.3.3.1.1 A risk return analysis

According to Table 8.27 both the return on capital and return on assets fell after supervision. The average return on capital was 14.1 per cent before supervision and was 12.4 per cent after supervision. The average return on assets was 1.4 per cent before supervision and fell to 11 per cent after supervision. The variation of both the return on capital and return on assets shows a declining trend on all the measures analysed as shown in Table 8.27. Although risk (as measured by variation of return) declined, the downward trend in profitability is indicative of a risky position. We will, however, evaluate other performance and condition measures in order to show the general picture regarding the impact of supervision in Cyprus.

8.3.3.1.2 Other performance and condition measures

The results on the movements of other variables are depicted in Tables 8.28 and 8.29. Starting with the capital adequacy measures analysed, the trend shows a decline in all the three ratios analysed. the average capital/deposits ratio declined from 12.5 per cent before supervision to a 12.2 per cent capital/assets ratio from

9.8 per cent to 9.4 per cent and the capital/risky assets ratio from 12.8 per cent to 11.9 per cent (Table 8.29). However, the decline was not substantial and considering Cyprus' minimum capital/risky assets requirement of 5 per cent, the ratios are well in excess of the requirements.

Table 8.27 Cyprus: bank profitability

		Return on capital	Return on assets
Mean	1	14.1	1.4
	2	12.4	1.1
Median	1	14.0	1.5
	2	12.7	1.2
Standard deviation	1	6.9	0.7
	2	4.8	0.5
Variance	1	47.6	0.5
	2	23.0	0.25
Coefficient of variation	1	48.9	50.0
	2	38.7	45.5

Source: Appendix 8.12

Notes: 1 Before supervision
2 After supervision

Both the loans/deposits ratio and the loans/assets ratios declined after supervision. The average loans/deposits ratio was 79.1 per cent before supervision and fell to 78.2 per cent after supervision. The average loans/assets ratio was 62.1 per cent before supervision and fell to 60.2 per cent after supervision. These results indicate a healthy position with regard to liquidity.

Table 8.28 Cyprus: other performance and condition measures

		Increase in loans	Increase in assets	Increase in deposits	Capital/ risky assets	Capital/ assets	Capital/ deposits	Loans/ assets	Loans/ deposits
Mean	1	16.6	14.6	15.4	12.8	9.8	12.5	62.1	79.1
	2	14.8	17.1	16.4	11.9	9.4	12.2	60.2	78.2
Median	1	16.7	16.2	17.1	12.7	9.8	12.7	62.3	79.9
	2	14.1	18.0	16.0	11.8	9.5	12.3	58.3	75.9
Standard deviation	1	8.6	7.3	7.4	1.0	1.0	1.2	4.1	4.7
	2	2.9	3.6	4.0	1.1	1.0	1.1	5.3	5.5
Variance	1	73.9	53.3	54.8	1.0	1.0	1.0	16.8	22.1
	2	8.4	12.9	16.0	1.2	1.0	1.2	28.1	30.3
Coefficient of variation	1	51.8	50.0	48.1	7.8	10.2	9.6	6.6	5.9
	2	19.6	21.1	24.4	9.2	10.6	9.0	8.8	7.0

Source: Appendix 8.12

Notes: 1 Before supervision
2 After supervision

Table 8.29 **Cyprus commercial banks: the basic performance and condition matrix**

Operational area	Indicator	Quantitative proxy	Inc.	Dec.
Profitability	Performance	Net profit/capital		x
Profitability	Performance	Net profit/assets		x
Assets growth	Performance	Percentage increase	x	
Deposits growth	Performance	Percentage increase	x	
Loans growth	Performance	Percentage increase		x
Variance of profit	Condition	Variance before tax		
Variance of profit	Condition	Variance before tax		
Capital adequacy	Condition	Capital/assets		x
Capital adequacy	Condition	Capital/deposits		x
Capital adequacy	Condition	Capital/risky assets		x
Liquidity	Condition	Loans/deposits		x
Credit risk	Condition	Loans/assets		x

Source: Tables 8.27 and 8.28

Notes: Inc. = Increase
Dec. = Decrease

The average rates of growth of assets and deposits increased after supervision while the average rate of growth of loans decreased after supervision. The average rate of growth of assets increased from 15.4 per cent to 16.4 per cent. The average growth in loans fell from 16.6 per cent to 14.8 per cent.

8.3.3.2 Kenya

8.3.3.2.1 A risk return analysis

Considering the return on capital measure, there is improvement in the risk and return position of banks. The average return on capital increased from 73.5 per cent to 82.9 per cent after

supervision. The variation of the return on capital also fell considerably after supervision. For example the standard deviation was 6.9 per cent before supervision but after supervision it fell to 2.6 per cent. Other measures of dispersion followed the same trend.

Table 8.30 Kenya: bank profitability

		Return on capital	Return on assets
Mean	1	73.5	17.4
	2	82.9	12.6
Median	1	74.7	17.8
	2	83.2	13.5
Standard deviation	1	6.9	6.8
	2	2.6	8.8
Variance	1	47.6	46.2
	2	6.7	77.4
Coefficient of variation	1	9.4	39.1
	2	3.1	69.8

Source: Appendix 8.13

Notes: 1 Before supervision
2 After supervision

The return on assets measure shows a different position (Table 8.30). The average return on assets was 17.4 per cent before supervision and fell to 13.5 per cent after supervision. All the measures of dispersion analysed show an upward trend after supervision. This position indicates ceteris paribus an increasingly risky position.

Table 8.31 Kenya: other performance and condition measures

		Capital/ assets	Capital/ deposits	Loans/ assets	Capital/ risky assets	Loans/ deposits	Increase in deposits	Increase in assets	Increase in deposits
Mean	1	7.1	7.3	71.6	7.9	73.5	19.2	22.9	20.1
	2	9.6	10.6	75.3	10.4	82.9	12.1	12.8	12.2
Median	1	7.1	7.5	71.8	7.8	74.6	15.5	28.4	16.2
	2	9.7	10.8	76.2	10.5	83.2	11.5	12.7	11.2
Standard deviation	1	0.4	0.6	5.5	0.4	6.9	12.2	12.8	10.6
	2	0.5	0.7	2.8	0.7	2.6	7.3	2.9	8.2
Variance	1	0.2	0.4	30.3	0.2	47.6	148.8	163.8	112.4
	2	0.3	0.5	7.8	0.5	6.7	53.3	8.4	67.2
Coefficient of variation	1	5.6	8.2	7.6	5.1	9.4	63.5	55.8	52.7
	2	5.2	6.6	3.7	6.7	3.1	60.3	22.6	67.2

Source: Appendix 8.13

Notes: 1 Before supervision
2 After supervision

8.3.3.2.2 Other performance and condition measures

The results for other performance and condition measures are documented in Tables 8.31 and 8.32. The three capital adequacy measures analysed show an upward trend after supervision. The capital/assets ratio increased from 7.1 per cent to 9.6 per cent after supervision, and the capital/deposits ratio increased from 7.3 per cent to 10.6 per cent.

Table 8.32 Kenya commercial banks: the basic performance and condition matrix

Operational area	Indicator	Quantitative proxy	Inc.	Dec.
Profitability	Performance	Net profit/capital	x	
Profitability	Performance	Net profit/assets		x
Assets growth	Performance	Percentage increase		x
Deposits growth	Performance	Percentage increase		x
Loans growth	Performance	Percentage increase		x
Variance of profit	Condition	Variance before tax		
Variance of profit	Condition	Variance after tax		
Capital adequacy	Condition	Capital/assets	x	
Capital adequacy	Condition	Capital/deposits	x	
Capital adequacy	Condition	Capital/risky assets	x	
Liquidity	Condition	Loans/deposits	x	
Credit risk	Condition	Loans/assets	x	

Source: Tables 8.30 and 8.31

Notes: Inc. = Increase
Dec. = Decrease

The loans/deposits ratio and the loans/assets ratio also increased after supervision: from 73.5 per cent to 82.9 per cent and 71.6 per cent to 75.3 per cent, respectively. This trend

suggests ceteris paribus declining liquidity and may be risky for the banks.

The rates of growth of assets, deposits and loans decreased after supervision. Deposits fell to 12.1 per cent while they were 19.2 per cent on average before supervision. The average growth on assets was 20.1 per cent before supervision and fell to an average of 12.2 per cent after supervision. On these indicators there was no improvement in performance.

8.3.3.3 Malawi

8.3.3.3.1 A risk return analysis

Both of the profitability measures analysed showed a decline after supervision (Table 8.33). The average return on capital was 33.2 per cent before supervision and fell substantially to an average of 12.0 per cent after supervision. The average return on assets was 1.5 per cent before supervision and fell to an average of 0.9 per cent after supervision. On both measures of profitability, the variation of return declined. However, the coefficient of variation increased on both measures and profitability declined after supervision, indicating a risky position.

8.3.3.3.2 Other performance and condition measures

The data on other measures of performance and condition are depicted in Tables 8.34 and 8.35. Although absolute profits increased after supervision the coefficient of variation was 66.7 per cent before supervision but increased to 82.2 per cent after supervision. This suggests a movement towards a more risky position.

Table 8.33 Malawi: bank profitability

		Return on capital	Return on assets
Mean	1	33.2	1.5
	2	12.0	0.9
Median	1	38.1	1.6
	2	11.2	0.9
Standard deviation	1	16.3	0.9
	2	11.2	0.8
Variance	1	264.4	0.8
	2	124.3	0.7
Coefficient of variation	1	48.9	61.3
	2	92.7	87.6

Source: Appendix 8.14

Notes: 1 Before supervision
2 After supervision

The growth in assets, deposits and loans decreased after supervision. Growth in assets, for example, was at an average of 24.3 per cent before supervision but declined to an average of 16.3 per cent after supervision.

All the three capital adequacy measures analysed increased after supervision (Table 8.34). The capital to assets ratio increased from an average of 4.3 per cent to an average of 8.8 per cent after supervision (Table 8.35).

Table 8.34 Malawi: other performance and condition measures

		Net profit	Gross profit	Capital/ assets	Capital/ deposits	Loans/ assets	Loans/ deposits	Capital/ risky assets	Inc. in loans	Inc. in assets	Inc. in deposits
Mean	1	1538	2708	4.3	5.1	53.8	64.2	6.3	25.2	24.3	23.1
	2	3149	68.24	8.8	13.1	61.3	91.8	12.5	13.4	16.3	16.2
Median	1	1514	2564	3.9	4.8	55.3	65.0	6.4	25.1	29.3	20.8
	2	3071	5768	9.1	13.3	67.7	90.1	11.8	10.4	17.1	17.4
Standard deviation	1	1156	1808	0.6	0.8	6.6	8.9	1.6	20.5	12.7	14.3
	2	2356	5606	0.7	1.8	12.6	23.1	3.0	17.2	7.9	13.5
Variance	1	1336336	3268864	0.36	0.64	43.5	79.2	2.5	420.3	161.2	204.5
	2	5550736	31427236	0.49	3.24	158.7	533.6	9.0	295.8	62.4	182.2
Coefficient of variation	1	75.2	66.7	13.9	15.6	12.2	13.8	25.4	81.3	52.5	61.9
	2	74.8	82.2	7.9	13.7	13.7	25.1	24.0	128.3	48.4	83.3

Source: Appendix 8.14

Notes: 1 Before supervision
2 After supervision

Table 8.35 Malawi commercial banks: the basic performance and condition matrix

Operational area	Indicator	Quantitative proxy	Inc.	Dec.
Profitability	Performance	Mean absolute profits	x	
Profitability	Performance	Net profit/capital		x
Profitability	Performance	Net profit/assets		x
Assets growth	Performance	Percentage increase		x
Deposits growth	Performance	Percentage increase		x
Loans growth	Performance	Percentage increase		x
Variance of profit	Condition	Variation before tax	x	
Variance of profit	Condition	Variation after tax	x	
Capital adequacy	Condition	Capital/assets	x	
Capital adequacy	Condition	Capital/deposits	x	
Capital adequacy	Condition	Capital/risky assets	x	
Liquidity	Condition	Loans/deposits	x	
Credit risk	Condition	Loans/assets	x	

Source: Tables 8.33 and 8.34

Notes: Inc. = Increase
Dec. = Decrease

Both the loans/deposits ratio and the loans to assets ratio increased after supervision. The loans/deposits ratio increased from an average of 64.2 per cent to an average of 91.8 per cent after supervision. This is indicative of a risky position in terms of declining liquidity.

8.3.3.4 Belize

8.3.3.4.1 A risk return analysis

Both the return on capital and return on assets fell substantially after supervision (Table 8.36). The average return on capital was 30.9 per cent before supervision but declined to an average of 16.5 per cent after supervision. The average return on assets was 5.9 per cent before supervision and was 1.8 per cent after supervision. However, the variance of return fell. Although the variance of return fell, the banks are in a risky position because of the fall in profitability. The importance of profitability in banks has already been stated.

Table 8.36 Belize: bank profitability

		Return on capital	Return on assets
Mean	1	30.9	5.9
	2	16.5	1.8
Median	1	32.6	6.8
	2	16.0	1.6
Standard deviation	1	8.1	2.0
	2	3.9	0.5
Variance	1	65.6	4.0
	2	15.2	0.3
Coefficient of variation	1	26.2	33.8
	2	23.6	27.7

Source: Appendix 8.15

Notes: 1 Before supervision
2 After supervision

Table 8.37 Belize: other performance and condition measures

		Increase in assets	Increase in loans	Increase in deposits	Capital/ risky assets	Capital/ assets	Capital/ deposits	Loans/ assets	Loans/ deposits	Gross profits	Net profits
Mean	1	15.6	14.8	14.3	5.6	5.0	7.8	64.1	100.7	3658.3	2231.0
	2	6.2	4.3	11.8	6.2	5.0	7.1	62.7	89.3	2969.3	1943.5
Median	1	13.7	10.5	12.7	5.6	4.8	7.8	65.1	103.5	3418.0	2038.5
	2	6.1	1.8	10.8	6.3	5.0	7.2	62.6	85.9	2408.5	2039.5
Standard deviation	1	5.3	10.6	7.6	0.7	0.5	0.7	3.7	10.1	1007.2	639.7
	2	6.9	13.3	8.5	0.6	0.2	0.5	4.9	14.6	441.7	397.5
Variance	1	28.1	112.4	57.8	0.49	0.25	0.49	13.7	102.0	1014451.8	409216.1
	2	47.6	176.8	72.3	0.36	0.04	0.25	24.0	213.2	195098.8	158006.3
Coefficient of variation	1	33.9	71.6	53.1	12.5	10.0	8.9	5.7	10.0	27.5	28.6
	2	111.3	9.3	72.0	9.6	4.0	7.0	7.8	16.3	14.9	20.5

Source: Appendix 8.15

Notes: 1 Before supervision
2 After supervision

8.3.3.4.2 Other performance and condition measures

Both the gross profits and net profits declined after supervision (Tables 8.37 and 8.38). Once again the variance of profit before and after tax fell. The capital/assets ratio and the capital to risky assets ratio increased after supervision but the capital/deposits ratio fell. The capital/risky assets increased from an average of 5.6 per cent before supervision to an average of 6.2 per cent after supervision. The capital/deposits ratio fell from 7.8 per cent before supervision to 7.1 per cent after supervision.

Table 8.38 Belize commercial banks: the basic performance and condition matrix

Operational area	Indicator	Quantitative proxy	Inc.	Dec.
Profitability	Performance	Net profit/capital		x
Profitability	Performance	Net profit/assets		x
Assets growth	Performance	Percentage increase		x
Deposits growth	Performance	Percentage increase		x
Loans growth	Performance	Percentage increase		x
Variance of profit	Condition	Variance before tax		x
Variance of profit	Condition	Variance after tax		x
Capital adequacy	Condition	Capital/assets	x	
Capital adequacy	Condition	Capital/deposits		x
Capital adequacy	Condition	Capital/risky assets	x	
Liquidity	Condition	Loans/deposits		x
Credit risk	Condition	Loans/assets		x

Source: Tables 8.36 and 8.37

Notes: Inc. = Increase
Dec. = Decrease

Both the loans/deposits ratio and the loans/assets ratio declined after the implementation of supervision. The average loans/deposits ratio was 100.7 per cent before supervision and was 89.3 per cent after supervision. A declining trend indicates an improvement in liquidity.

8.3.3.5 Malaysia

8.3.3.5.1 A risk-return analysis

Table 8.39 Malaysia: bank profitability

		Return on capital	Return on assets
Mean	1	17.2	0.5
	2	20.9	1.0
Median	1	12.6	0.3
	2	17.1	0.8
Standard deviation	1	9.8	0.3
	2	11.5	0.4
Variance	1	98.0	0.09
	2	132.3	0.2
Coefficient of variation	1	56.9	60.0
	2	55.0	40.0

Source: Appendix 8.16

Notes: 1 Before supervision
2 After supervision

Both measures of profitability show an upward trend after supervision (Table 8.39). The return on capital increased from an average of 17.2 per cent to an average of 20.9 per cent after

Table 8.40 Malaysia: other performance and condition measures

		Capital/ deposits	Capital/ assets	Loans/ deposits	Loans/ assets	Increase in loans	Increase in assets	Increase in deposits	Capital/ risky assets
Mean	1	4.0	3.0	81.5	61.2	26.7	24.5	23.0	3.9
	2	8.1	5.1	99.9	63.3	14.1	15.0	11.7	5.9
Median	1	4.1	3.0	80.1	60.4	25.2	27.7	21.9	3.8
	2	8.4	5.3	102.1	62.7	16.2	11.2	12.4	6.3
Standard deviation	1	0.3	0.2	4.8	3.1	6.6	7.2	6.1	0.4
	2	1.7	0.8	7.1	2.3	8.5	8.0	6.3	0.9
Variance	1	0.09	0.04	23.0	9.6	43.5	51.8	37.2	0.2
	2	2.9	0.6	50.4	5.3	72.3	64.0	39.7	0.8
Coefficient of variation	1	7.5	6.6	5.8	5.1	24.6	29.4	25.7	10.3
	2	20.9	15.7	7.1	3.6	60.3	53.3	53.8	15.3

Source: Appendix 8.16

Notes: 1 Before supervision
2 After supervision

supervision. The return on assets was 0.5 per cent before supervision and increased to 1.0 per cent after supervision. The variation in the return shows an upward trend as shown by the standard deviation and variance. The coefficient of variation, however, was smaller after supervision.

8.3.5.5.2 Other performance and condition measures

Data on other measures are shown in Tables 8.40 and 8.41.

Table 8.41 Malaysia commercial banks: the basic performance and condition matrix

Operational area	Indicator	Quantitative proxy	Inc.	Dec.
Profitability	Performance	Net profit/capital	x	
Profitability	Performance	Net profit/assets	x	
Assets growth	Performance	Percentage increase		x
Deposits growth	Performance	Percentage increase		x
Loans growth	Performance	Percentage increase		x
Variance of profit	Condition	Variance before tax		
Variance of profit	Condition	Variance after tax		
Capital adequacy	Condition	Capital/assets	x	
Capital adequacy	Condition	Capital/deposits	x	
Capital adequacy	Condition	Capital/risky assets	x	
Liquidity	Condition	Loans/deposits	x	
Credit risk	Condition	Loans/assets	x	

Source: Tables 8.40 and 8.41

Notes: Inc. = Increase
Dec. = Decrease

The three capital adequacy ratios analysed showed an upward trend after supervision. The average capital/deposits ratio was 4.0 per cent before supervision and increased to 8.1 per cent after supervision. The capital/assets ratio increased from 3.0 per cent to 5.1 per cent and the capital/risky assets ratio increased from 3.9 per cent to 5.9 per cent after supervision. An increase in capital ratios leaves banks in a safe position. Thus in terms of the capital adequacy measures, Malaysian banks' condition improved after supervision.

Both the loans/deposits ratio and loans/assets ratio increased after supervision. The loans/deposits ratio was 81.5 per cent but increased to 99.9 per cent after supervision. This is a risky situation in terms of the decline in liquidity. The loans/assets ratio increased from an average of 61.2 per cent to an average of 63.3 per cent after supervision.

The growth in assets, deposits and loans decreased after supervision. The growth in assets decreased from an average of 24.5 per cent to an average of 15.0 per cent after supervision. The growth in deposits was 23.0 per cent before supervision but declined to 11.7 per cent after supervision. The variation in the growth rates also increased and thus indicated a deterioration in performance.

8.3.3.6 Nigeria

8.3.3.6.1 A risk return analysis

The return on capital fell from an average of 17.2 per cent before supervision to an average of 16.9 per cent after supervision (Table 8.42). The variation in the return on capital increased

after supervision on all the measures of variation analysed (Table 8.42). These results indicate a deterioration in the risk return position of Nigerian banks. Although the return on assets increased the variation in the return also increased indicated increased risk in banking operations.

Table 8.42 Nigeria: bank profitability

		Return on capital	Return on assets
Mean	1	17.2	0.4
	2	16.9	0.5
Median	1	17.2	0.4
	2	17.6	0.5
Standard deviation	1	1.9	0.1
	2	7.0	0.2
Variance	1	3.6	0.01
	2	49.0	0.04
Coefficient of variation	1	11.0	25.0
	2	41.4	40.0

Source: Appendix 8.17

Notes: 1 Before supervision
2 After supervision

8.3.3.6.2 Other performance and condition measures

Data on the other measures are in Tables 8.43 and 8.44.

The three capital adequacy measures analysed indicated an improvement in the condition of banks after supervision (Table 8.43). The capital/loans ratio was 2.7 per cent before supervision

Table 8.43 Nigeria: other performance and condition measures

		Increase in loans	Increase in assets	Increase in deposits	Capital/ assets	Capital/ deposits	Loans/ assets	Loans/ deposits	Capital/ risky assets
Mean	1	25.3	34.4	37.5	2.7	4.5	41.7	69.2	3.5
	2	14.6	13.8	10.4	3.1	5.9	41.2	77.7	4.2
Median	1	25.3	34.4	37.5	2.9	4.7	41.1	66.3	3.5
	2	12.2	14.5	12.2	3.1	6.1	40.8	79.0	4.3
Standard deviation	1	18.2	15.6	8.6	0.3	0.6	3.1	7.3	0.5
	2	11.6	4.9	4.8	0.3	0.7	3.0	5.7	0.8
Variance	1	331.2	243.4	73.9	0.09	0.36	9.6	53.3	0.25
	2	134.6	24.0	23.0	0.09	0.5	9.0	32.5	0.64
Coefficient of variation	1	71.9	45.3	22.9	11.1	13.3	7.4	10.5	14.3
	2	79.5	35.5	46.2	9.7	11.9	7.3	7.3	19.0

Source: Appendix 8.17

Notes: 1 Before supervision
2 After supervision

and increased to 3.1 per cent after supervision and the capital/deposits ratio increased from 4.5 per cent to 5.9 per cent after supervision. The capital/risky assets ratio increased from 3.5 per cent before supervision to 4.2 per cent after supervision.

Table 8.44 Nigeria commercial banks: the basic performance and condition matrix

Operational area	Indicator	Quantitative proxy	Inc.	Dec.
Profitability	Performance	Net profit/capital		x
Profitability	Performance	Net profit/assets	x	
Assets growth	Performance	Percentage increase		x
Deposits growth	Performance	Percentage increase		x
Loans growth	Performance	Percentage increase		x
Variance of profit	Condition	Variance before tax		
Variance of profit	Condition	Variance after tax		
Capital adequacy	Condition	Capital/assets	x	
Capital adequacy	Condition	Capital/deposits	x	
Capital adequacy	Condition	Capital/risky assets	x	
Liquidity	Condition	Loans/deposits	x	
Credit risk	Condition	Loans/assets		x

Source: Tables 8.42 and 8.43

Notes: Inc. = Increase
Dec. = Decrease

The loans/deposits ratio increased from 69.2 per cent before supervision to 77.7 per cent after supervision. The upward trend in this ratio indicates declining liquidity. The loans/assets ratio fell from 41.7 per cent to 41.2 per cent after supervision.

The growth in assets, deposits and loans fell after supervision indicating a decrease in performance.

8.3.4 Comparative analysis

This section is a cross-section analysis of the performance and condition of banks of each country after supervision. Countries' banks are analysed in terms of their profitability, growth, capital adequacy and liquidity in order to draw some tentative conclusions about the effects of capital adequacy constraints. Table 8.45 compares the results of the risk return positions of banks in Zimbabwe and sample countries after supervision.

Table 8.45 indicates that countries varied in terms of their risk return positions after the implementation of supervision. In terms of return, there was a decrease after supervision in Zimbabwe, Belize, Malawi, Nigeria and Cyprus. The only countries with a higher return after supervision were Kenya and Malaysia. In terms of risk (as measured by variability of return), there was higher variability in Zimbabwe, Nigeria and Malaysia after supervision. The only country whose overall risk-return position improved is Kenya in that return increased and variability fell. The conclusion for the other countries, in terms of this ROC and ROA analysis, is that after supervision, return and risk generally deteriorated. A graphic exposition of the risk-return position of Zimbabwe and sample countries is depicted in Figure 8.2 and the results explained above are clearly shown. Of course, this kind of return/variability of return analysis depicts only a part of the overall performance (return)/condition (risk) profile of banking. This is why we have used a more comprehensive form of analysis in the form of a BPCM.

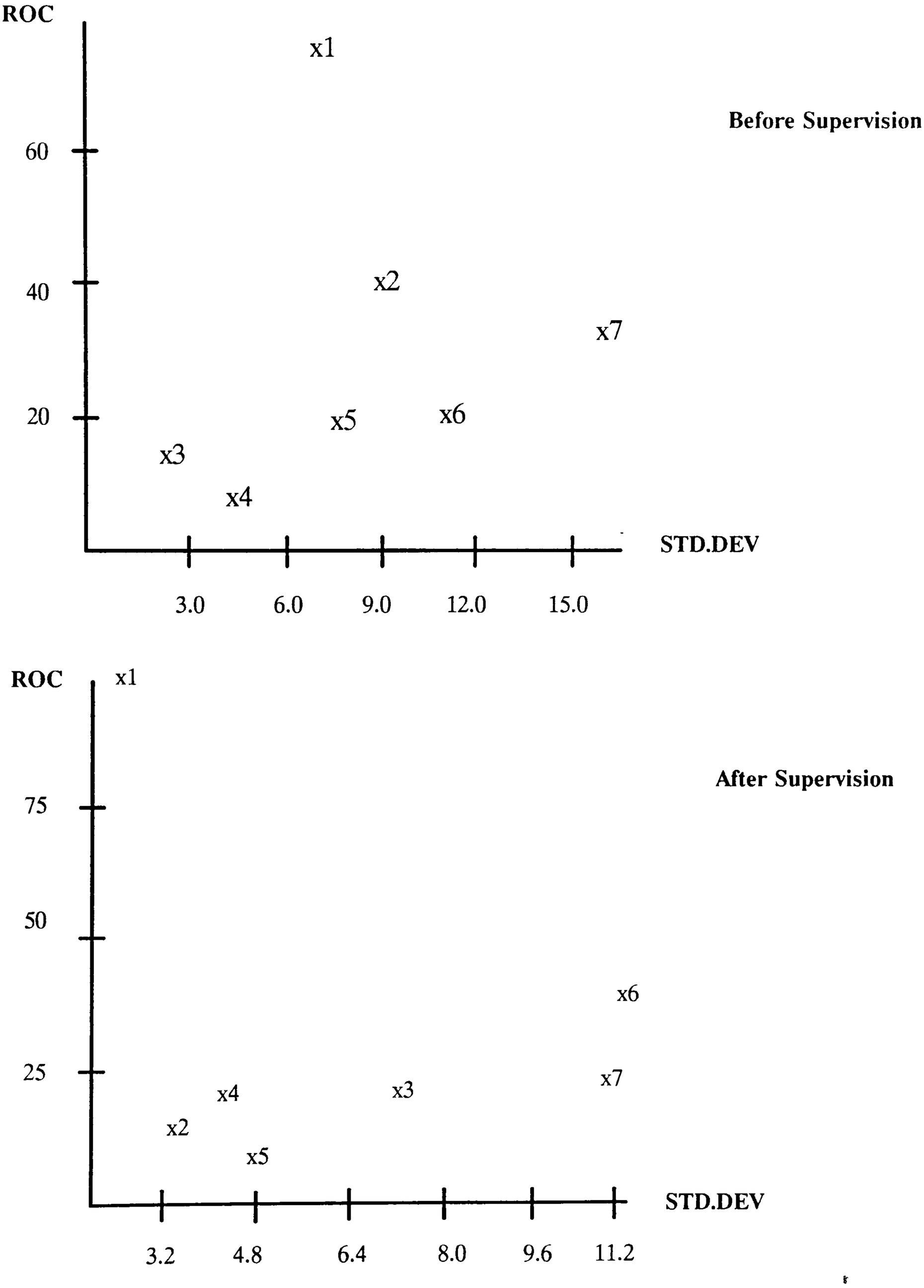
Table 8.45 Risk-return analysis after supervision

	Zimbabwe		Belize		Malawi		Kenya		Nigeria		Cyprus		Malaysia	
	ROC	ROA	ROC	ROA	ROC	ROA	ROC	ROA	ROC	ROA	ROC	ROA	ROC	ROA
Mean	-	x	-	-	-	-	x	-	-	-	-	-	x	x
Standard deviation	x	x	-	-	-	-	-	x	x	-	-	-	x	x
Variance	x	x	-	-	-	-	-	x	x	-	-	-	x	x
Coefficient of variation	x	x	-	-	x	x	-	x	x	-	-	-	-	-

Notes: x Increase
- Decrease

Key:
Zim. Zimbabwe
Bel. Belize
Mlw. Malawi
Ken. Kenya
Nig. Nigeria
Cyp. Cyprus
Mal. Malaysia

Figure 8.2 *A Risk Return Diagram*



Key

1 Kenya
2 Belize
3 Nigeria
4 Zimbabwe
5 Cyprus
6 Malyasia
7 Malawi

Table 8.46 Zimbabwe and sample countries' commercial banks: the basic performance and condition matrix (after supervision)

Operational area	Indicator	Quantitative proxy	Zim.	Bel.	Mlw.	Ken.	Nig.	Cyp.	Mal.
Profitability	Performance	Return on capital	-	-	-	x	-	-	x
Assets growth	Performance	Percentage increase: assets	x	-	-	-	-	x	-
Deposits growth	Performance	Percentage increase: deposits	-	-	-	-	-	x	-
Capital adequacy	Condition	Capital/assets	x	x	x	x	x	x	x
Capital adequacy	Condition	Capital/deposits	x	-	x	x	x	x	x
Liquidity	Condition	Loans/deposits	x	-	x	x	x	-	x

Notes: x Increase after supervision
- Decrease after supervision

Key:

Zim.	Zimbabwe	Ken.	Kenya
Bel.	Belize	Nig.	Nigeria
Mlw.	Malawi	Cyp.	Cyprus
Mal.	Malaysia		

Table 8.46 shows a cross section analysis of the countries' results in terms of other key performance and condition measures. Table 8.46 shows clearly that in all the countries capital adequacy was strengthened by banks after supervision as indicated by the increase in ratios analysed. There was a variation in terms of the liquidity positions but most of the countries had a decline in liquidity with the exception of Belize and Cyprus. Also, there was generally a decline in the growth of assets and deposits after supervision. The only exceptions in terms of growth were Zimbabwe and Cyprus although in Zimbabwe the growth in deposits fell after supervision.

Another consideration is whether there are any similarities in countries that use the same capital adequacy systems. Table 8.47 indicates the type of capital adequacy systems used.

Table 8.47 Comparison of capital adequacy systems

per cent

Capital/ deposits	Capital/ assets	Capital/ risky assets	Capital/ loans + advances	RAR
Zimbabwe (5) Kenya (7.5) Belize (5)	Malaysia (4)	Cyprus (5)	Nigeria (10)	*

Notes: 1 Malawi is not shown in the table because it does not prescribe any minimum capital requirements

* No country as yet prescribes any minimum RAR although some countries in the sample are in the process of implementing the RAR along the lines suggested by the Basle Committee

Figures in brackets are the minimum capital requirements imposed on banks

The results for groups of countries which prescribe the same capital adequacy ratio are depicted in Table 8.48.

Table 8.48 Performance and condition after supervision

Country	Profitability	Capital adequacy	Growth	Liquidity
Zimbabwe	Decrease	Increase	Increase	Decrease
Kenya	Increase	Increase	Decrease	Decrease
Belize	Decrease	Increase	Decrease	Decrease

The countries in Table 8.48 implement the same capital adequacy system (capital/deposits gearing ratio). Their overall results are not similar, although in some of the variables they had congruent results. Zimbabwe and Belize prescribe a 5 per cent gearing ratio while Kenya prescribes a gearing ratio of 7.5 per cent.

8.3.5 Conclusions

The evaluation of the effects of supervision produced different results for different variables although there were similar results in some cases. However, in all countries, capital ratios increased after supervision. In most of the countries profitability and liquidity tended to decline and growth in deposits and assets also followed a declining trend in most cases. There was also marked variability of results in countries using the same ratios.

Another general observation was that there was not much of a difference in the magnitude of the changes between the two periods. This situation is shown clearly by the graphic summary of the effects of supervision (Appendices 8.18-8.23).

According to Lackman's theoretical results (1986), applying the capital/deposits ratio reduces the variance of return on equity and also decreases the return on equity. Countries which apply the capital/deposits ratio include Kenya and Belize. For Kenya, variance of return decreased and return on capital increased. The results for Kenya did not confirm Lackman's results (see Table 8.49). However, Belize's results (Table 8.49) confirm Lackman's theoretical results; the return on capital decreased and variance decreased.

Another of Lackman's (1986) results was in regard to capital/risky assets ratio. Applying the capital/risky assets ratio reduces variance of return and causes a shift of portfolios towards less risky assets. Cyprus applies a capital/risky assets of 5 per cent. Cyprus' results (see Table 8.49) indicate a decrease in variance of return on capital and decrease in return on capital. In Cyprus there is improvement in liquidity, higher growth in assets and deposits, higher return on assets and lower loans/assets ratio after supervision.

Another interesting result was that most of the countries in the sample had a higher loans/asset ratio after supervision than before (Table 8.49). This suggests ceteris paribus increasing risk exposure (more credit risk exposure and reduced asset liquidity). Only Cyprus and Nigeria had a lower loans/assets ratio after supervision.

Table 8.49 Summary of performance and condition of banks

		Capital/ assets	Capital/ deposits	ROC	Loans/ deposits	Loans/ assets	ROA	Capital/ risky assets	Percentage increase in assets	Percentage increase in deposits
				(x)						
Zimbabwe	1	6.6	6.6	13.9	57.4	49.9	0.7	7.9	12.4	13.3
* (C/D 5%)	2	7.2	7.7	13.8	59.6	50.2	0.9	9.0	13.6	12.2
				(-)						
Belize	1	5.0	7.8	30.9	100.7	64.1	5.9	5.6	15.6	14.3
* (C/D 5%)	2	5.0	7.1	16.5	89.3	62.7	1.8	6.2	6.2	11.8
				(x)						
Malawi	1	4.3	5.1	33.2	64.2	53.8	1.5	6.3	24.3	23.1
	2	8.8	13.1	12.0	9.8	61.3	0.9	12.5	16.3	16.2
				(-)						
Kenya	1	7.1	7.3	73.5	73.5	71.6	17.4	7.9	20.1	19.2
* (C/D 7.5%)	2	9.6	10.6	82.9	82.9	75.3	12.6	10.4	12.2	12.1
				(-)						
Cyprus	1	98	12.5	14.1	79.1	62.1	1.4	12.8	14.6	15.4
* (C/risky assets 5%)	2	9.4	12.2	12.4	78.2	60.2	1.1	11.9	17.1	16.4
				(x)						
Nigeria	1	2.7	4.5	17.2	69.2	41.7	0.4	3.5	34.4	37.5
* (C/L 10%)	2	3.1	5.9	16.9	77.7	41.2	0.5	4.2	13.8	10.4
				(x)						
Malaysia	1	3.0	4.0	17.2	81.5	61.2	0.5	3.9	24.5	23.0
* (C/A 4%)	2	5.1	8.1	20.9	99.9	63.3	1.0	5.9	15.0	11.7

Notes: 1 Before supervision
2 After supervision
* Figures in brackets are minimum capital ratio requirements on banks

x Increase in variance
- Decrease in variance

Overall, different countries experienced different results in terms of the variables analysed. Within a country there was no consistency within the performance and condition groups (intra-group) in the results obtained from analysing different variables. For example, capital adequacy might have improved, while liquidity declined or profitability declined. A basic empirical problem in the preceding analysis has been our inability to make statistical statements (other than descriptive observations) on whether key groups of ratios have altered before and after supervision. Another related problem has been the isolation of supervisory effects on our indicators from other trends and structure influences. We shall seek to refine our empirical analysis along these lines in the following chapters.

CHAPTER 9

THE IMPACT OF BANK SUPERVISION: EMPIRICAL ANALYSIS II

9.1 INTRODUCTION

This chapter is a more detailed, follow-up analysis of the data and results in Chapter 8. These latter results indicated differences in performance and condition of banks after the implementation of supervision. The analysis of performance and condition variables before and after supervision on a country by country basis, however, did not always yield consistent results. For example, there was sometimes an improvement in performance or condition variables in some countries while in other countries there was a corresponding declining performance or condition in these same variables. A good example was that three countries in the sample had higher liquidity (loans/assets ratio) after supervision while four countries recorded lower liquidity. Such apparently inconsistent results made it difficult to draw meaningful conclusions regarding the generalised performance/condition and risk/return effects of supervision on most variables. More consistent results were obtained in capital adequacy ratios, however, which generally improved after supervision for six out of the seven countries analysed.

In order to address this problem of apparently conflicting results, the current chapter will analyse each selected variable for all supervisory countries combined together as one group. More powerful statistical techniques will also be employed in this analysis. The objective is to draw more meaningful conclusions from the dataset explored in the preceding chapter.

It is also possible that the changes observed in the time series analysis of Chapter 8 could be due to structural changes occurring over time. Since the main aim of this analysis is to determine the effects of supervision, there is a clear need for comparison of bank performance and condition for the supervisory countries with non-supervisory countries. In short, a control group will be used in order to isolate statistically the impact of supervision on key performance and condition variables.

9.2 METHODOLOGY

This study will benefit methodologically from earlier, important financial studies by Weston and Mansingka (1971) and Melicher and Rush (1973, 1974). These studies empirically tested the operating performance of conglomerate firms over time. Their aim was to evaluate whether these firms had achieved profitability or leverage benefits due to conglomeration. In effect, they were testing for before- and after-conglomeration effects, which is similar statistically to our objectives: that is, before- and after-supervision effects.

Weston and Mansingka (1971) empirically tested the performance of conglomerate firms. The study made use of two control samples for comparisons of performance. Two screening rules were used to select the sample of 63 conglomerate firms: see Weston and Mansinghka (1971, p. 22). Two control groups were selected. One control group was made up of industrial companies while the other consisted of both industrial and non-industrial companies. The aim was to compare performance of the conglomerate with the non-

conglomerate companies. Conglomerate firms' performance was compared with each control group separately and jointly.

Comparisons were made over a period of time from when conglomeration started up to the height of the US conglomeration movement: the period covered was 1958-68. Two periods were compared: 1958-68 and 1960-68. For the performance measures chosen, namely growth and several measures of earnings performance, statistical tests of significance (F-tests) of the differences between means were analysed to compare the conglomerate firms with the non-conglomerate firms.

Melicher and Rush (1973) analysed the performance of conglomerate firms by examining several measures of operating profitability on a yearly basis. The period of analysis chosen covered before and after the period of major acquisition diversification. In the study, conglomerate firms' performance was compared with that of non conglomerate firms. The analysis of variance techniques were again used to analyse the results. In order to analyse acquisition-related benefits, Melicher and Rush (1974) examined pre-merger financial characteristics of conglomerate companies as well as companies they acquired. The same characteristics were analysed for a sample of acquisitions completed by non-conglomerate firms.

Our study will adopt and extend methodologies similar to the ones outlined above. Although the studies reviewed above analysed the performance of corporate firms and not banking firms as in our case, their techniques provide us with a well-established, general methodology that we can use as a starting point for present purposes. An important feature of our present analysis will be the

use of control groups to compare results of bank performance and condition of our supervisory group. Our study will also investigate the robustness of the F-ratio, and explore a non-parametric approach.

9.3 SPECIFIC METHODOLOGY

9.3.1 The hypothesis

The main (null) hypothesis to be tested is that supervision, proxied as the imposition of capital adequacy constraints, will reduce risk in the banking system. As we have seen on several occasions, the main objective of supervision (Chapter 5) is to help ensure the safety and soundness of banking institutions. Thus supervisors' practical objectives are to reduce the probability of bank failure by making sure that banks are adequately capitalised, they have adequate liquidity and profitability, and that they do not take excessive risks. In the general context of capital adequacy analysis, these objectives are all inter-related; they may all operate to lower the probability of bank failure.

Chapter 7 explained how portfolio theory can be used to help explain how banks might attain efficiency by choosing the most efficient risk and return positions. Theoretical results (Chapter 7) also showed that capital adequacy constraints which take into consideration the risk positions of banks' portfolios resulted in safer assets and therefore a reduction in corresponding portfolio risk. Thus, ideally, appropriate supervision should result in efficiency improvements in the performance and condition of banks.

Chapter 8 defined improvement in performance and condition as the situation where capital adequacy, profitability, liquidity and growth measures were higher after supervision. However, it should be pointed out that theory (Chapter 7) has also shown that the imposition of capital adequacy constraints could result in banks taking on more risk. This is so because higher capital adequacy requirements lead ceteris paribus to lower returns on capital, and since banks need to maintain the same level of profitability they might acquire riskier portfolio which have corresponding higher returns. At a policy level, this implies that the kind of close supervision on bank risk taking that accompanies increased capital adequacy regulation might be more important overall than these regulations viewed in isolation. For statistical, hypotheses testing purposes, however, it shows a lack of justification for using one-tailed tests. In this regard, it is more meaningful and safer in our statistical testing to test for no differences before and after supervision. In the face of possible perverse (increased risk-taking) bank actions following increased supervisory capital adequacy ratios, and the concomitant possibility of banks innovating to avoid such ratios, we do not have strong a priori grounds for assuming a unidirectional effect from tighter capital adequacy ratios. This is why we have adopted two-tail testing in this chapter.

9.3.2 Identification and selection of control groups

The selection of seven developing countries' supervisory group was documented in Chapter 8 and the same countries will be analysed in this chapter as the supervisory group (G1). The selection of

countries without supervision proved to be a difficult task because almost all countries have now implemented prudential supervision of some kind. The aim was to select a group of non-supervisory developing countries, matched by development and financial characteristics to the supervisory group we are testing. Severe research problems were encountered in this exercise.

Unfortunately, information on supervision is not always available in the central bank annual reports. The Bank of England has lists of supervisory countries, but they are not in direct contact with many countries who do not have effective supervisory systems. Telephone enquiries (November and December 1989) were made by the researcher to the Bank of England (building on earlier research contacts), The Banker, international banks in London, selected African embassies (see Appendix 9.1) in London and the Zimbabwe Banking Supervision Department. These enquiries indicated that there is hardly any country (countries with similar broad characteristics as Zimbabwe) which has not yet implemented supervision. Through these various enquiries, however, two countries were identified that are still in the process of developing a supervisory system: these are Sierra Leone and Lesotho. Thus our control group of non-supervisory countries (G2) is composed of Sierra Leone and Lesotho.

A third sample, a developed country with supervision, was considered to be useful for comparative purposes, and the United Kingdom was selected. There are many reasons why the United Kingdom might be a useful control group for present purposes. Most of the selected developing countries' financial systems were modelled on the UK system. Also, the present supervisory system in Zimbabwe was

modelled on the Bank of England's present supervisory system. Thus, it was considered that including the United Kingdom as a second control group might provide additional insight into the performance and condition of banks for countries which have implemented supervision. Thus the United Kingdom will be our control sample with supervision (G3).

9.3.3 The proposed statistical test

It has already been indicated that in this chapter, analysis is based on the supervisory group combined and not each country separately. This poses a problem because different countries in this larger, 'pooled' group started supervision at different times, and we need to select a common period after supervision. It was assumed in Chapter 8 that many countries strengthened their supervisory systems in the later part of the 1970s and the early 1980s. Based on this practical consideration, our period 'before supervision' will be 1975-80 and the period 'after supervision' will be 1981-87. Data for the control groups will, of course, be analysed for the same periods.

We have already indicated that our aim is to compare bank performance and condition between the supervisory group and the non-supervisory countries. The statistical test of significance, the analysis of variance technique (F-test), will be used to test the difference between means of selected key performance and condition measures. The analysis of variance technique was chosen due to the fact that our analysis is based on a comparison of three samples; a t-test approach would have been more appropriate with two sample comparisons. It was also explained earlier, that the F-test has

been used in some important empirical finance studies that are methodologically congruent with our present research objectives.

Thus the analysis of variance, or F-test, will be used to indicate whether the variation among the different groups, G1, G2 and G3 is significantly greater than the variation we would expect to see given the amount of variation within the groups. Thus our basic research question is, do all the groups have the same mean? The null (H0) and alternative (H1) hypotheses are:

$$H0: \quad \mu1 = \mu2 = \mu3 \tag{9.1}$$

$$H1: \quad \mu1 \neq \mu2 \neq \mu3 \text{ .} \tag{9.2}$$

where the μ's indicate different population means. Since the alternative hypothesis is non-directional, for the reasons stated earlier, the F-test statistic used is the two tailed test.

9.4 EMPIRICAL RESULTS

9.4.1 Comparison of performance and condition of banks between the supervisory group and the two control groups

As indicated by the null hypothesis and the alternative hypothesis, the question is, how similar or dissimilar was the supervisory group compared with the two control groups separately and combined. Our dataset (used in Chapter 8) was constructed and analysed on Minitab 7.2 VAX/VMS version, using the mainframe VAX computer at the University College of North Wales. The computed F-tests are presented in Table 9.1 and the analysis was for the period before supervision (1975-80) and the period after supervision (1981-87).

Table 9.1 Comparison of performance and condition of banks

Variable	Sample means			F-statistics			
	G1	G2	G3	G1 G2	G1 G3	G2 G3	G1 G2 G3
				1975-80			
Performance							
ROC	18.4	16.1	19.7	0.27	0.08	0.95	0.22
ROA	1.7	0.7	1.3	1.29	0.20	5.81*	0.77
Increase in assets	18.0	29.1	15.8	4.81*	0.20	2.63	2.91
Increase in deposits	17.3	23.4	7.6	1.64	2.83	3.55	2.50
Condition							
Capital/assets	6.4	4.7	9.1	2.71	5.10*	55.38*	5.27*
Capital/deposits	8.1	7.0	13.5	0.72	9.58*	19.37*	6.65*
Loans/deposits	80.1	48.4	114.9	30.05*	17.82*	47.35*	26.99*
Loans/assets	61.4	32.7	78.7	60.87*	15.71*	267.18*	49.26*
Capital/risky assets	7.9	5.9	9.7	2.69	1.60	43.91	2.90

Table 9.1 continued

Variable	Sample means			F-statistics			
	G1	G2	G3	G1 G2	G1 G3	G2 G3	G1 G2 G3
				1981-87			
Performance							
ROC	14.8	13.7	18.3	0.11	1.05	0.43	0.43
ROA	1.1	0.8	1.0	0.95	0.14	0.13	0.53
Increase in assets	14.6	28.3	16.6	13.02*	0.41	1.41	6.77*
Increase in deposits	14.1	30.3	17.7	19.71*	1.25	2.39	10.48
Condition							
Capital/assets	6.8	4.7	10.4	7.18*	15.71*	21.51*	12.57*
Capital/deposits	8.6	6.9	19.5	3.89	116.03	72.09*	53.44*
Loans/deposits	82.2	44.1	151.3	56.00*	81.45*	107.61*	78.24*
Loans/assets	58.5	30.5	80.3	53.13*	21.27*	46.38*	41.18*
Capital/risky assets	9.2	7.9	10.7	0.83	1.03	1.77	1.10

Notes: G1 sample of 7 supervisory countries
G2 sample of 2 non supervisory countries
G3 the UK clearing banks
* significant at the 0.05 level

The analysis is designed to enable us to determine whether supervision enables banks to improve performance and condition compared with non-supervision countries/periods. A significant F-test indicates difference in performance or condition of banks between the groups. For any variable analysed, a significant difference may suggest the effect that supervision has on that variable.

9.4.1.1 Profitability

The two measures of profitability analysed are the return on capital (ROC) and the return on assets (ROA). The aim is to test whether there are significant differences in the two profitability measures after supervision.

Comparison between the supervisory developing countries and the non-supervisory countries (that is G1 G2) indicated that there was no significant difference in profitability both before and after supervision. The same result was obtained when the two supervisory groups (G1 G3) were compared (the United Kingdom and the supervisory developing countries). However, when the United Kingdom was compared with the non-supervisory group (G2 G3), the results showed that the United Kingdom's ROA was significantly higher than that for the non supervisory group before supervision although there was no significant difference after supervision. The ROA for the United Kingdom fell after supervision while that for the non-supervisory group increased. This could be the reason why there was no longer any significant difference between these two groups after supervision. The decline in the ROA after supervision - that is, the period when supervision was strengthened - indicates the effect

supervision has on profitability when capital adequacy ratios are increased. This finding is in line with theory which suggests that supervisors' efforts to minimise risk exposure may thwart bankers' attempts to reap higher expected returns. In this regard, supervision has the effect of reducing expected return because of the bias against high risk/high return assets. This is in line with finance theory which suggests that unless a bank assumes greater risk, it usually cannot reap a larger expected return.

9.4.1.2 Growth in assets and deposits

Both before and after supervision, growth in assets for the supervisory developing countries was significantly lower than that for the non supervisory countries (G1 G2, Table 9.1) The other comparisons made (the United Kingdom vs the non supervisory countries and the United Kingdom vs the supervisory developing countries, G2 G3 and G1 G3) did not show any significant difference in the growth of assets both before and after supervision.

Whilst there was no significant difference in the growth in deposits before supervision in all the comparisons made, after supervision the supervisory developing countries had significantly lower growth in deposits than the non supervisory countries (G1 G2). It is also interesting to note that growth in deposits for supervisory developing countries fell while that for non supervisory countries increased after supervision.

With regard to growth in both assets and deposits after supervision, we reject the null hypothesis of no difference and conclude that supervision had the effect of curbing growth in assets and deposits. One of the aims of supervision is to ensure that

total banking operations are related to the amount of capital held by them. Thus the observed decline in balance sheet magnitudes, deposits and assets could have been due to the increased capital adequacy requirements.

9.4.1.3 Capital adequacy

Three capital adequacy ratios were analysed namely: capital/assets ratio, capital/deposits ratio and capital/risk assets ratio.

Our findings indicate that supervisory countries had significantly higher capital adequacy ratios after supervision. Looking at each comparison separately, the developing countries' supervisory group's capital ratios were not significantly different from those of the non-supervisory group before supervision (G1 G2). It was after supervision that the supervisory group had significantly higher capital/assets ratios than the non supervisory group (G1 G2). The other comparisons made (the United Kingdom versus the non supervisory group (G2 G3) and the United Kingdom versus the developing countries supervisory group (G1 G3)) indicated that the United Kingdom had significantly higher capital/assets and capital/deposits ratios than the non supervisory group and the supervisory group both before and after supervision. The comparison between the United Kingdom and the non-supervisory group (G2 G3) also indicated significantly higher capital/risky assets ratios but only during the period 1975-80 (period defined as the 'before supervision'). After supervision there was no significant difference in this ratio in all the comparisons made.

The results suggest that supervision ensured higher capital adequacy ratios (capital/assets and capital/deposits) in banks during the review period. These results confirm what is expected that supervisory countries will have higher ratios due to supervisors' initiatives to bolster banks' capital positions. Since the capital ratios are viewed as a rough measure of risk, higher ratios are considered, ceteris paribus as measures of increased banking strength. However, capital may still be inadequate if banks also take on corresponding excessive risks. Examining simple capital ratios alone does not pick up this kind of more detailed information.

9.4.1.4 Liquidity

Liquidity is a bank's most important safeguard against funding difficulties. Even with good management, banks are not invulnerable to a sudden erosion of market confidence. Ideally, supervision should help to ensure adequate liquidity. The two measures of liquidity analysed are the loans/deposits ratio and the loans/assets ratio. It will also be noted that the loans/assets ratio is also considered as a measure of credit risk in that a higher loans to assets ratio increases credit risk exposure potential as well as reducing asset liquidity.

Table 9.1 indicates that the supervisory countries had significantly lower liquidity as compared to the non-supervisory countries (G1 G2) both before and after supervision. Thus once again, the null hypothesis of no differences is rejected and our finding in terms of liquidity is that supervision reduced liquidity in banks for the countries analysed. This result might indicate an

increase in funding risk if banks depend entirely on deposits as a source of liquidity. If banks are simultaneously developing other sources of liquidity, like access to liability management techniques, and stability of the deposit base is assured, then the loans/deposits ratios alone may be an insufficient indicator of funding risk.

9.4.2 Comparison of performance and condition of banks between supervisory and non supervisory countries: year by year basis

Comparison of performance and condition of banks was also effected on a year-by-year basis; the same variables as in the previous section were analysed. However, only two comparisons are made on a year by year basis: that is, the seven developing countries' supervisory group's performance and condition is compared to that of the two non-supervisory countries (G1 G2). In this analysis, the United Kingdom is dropped since there is only one observation to be considered on a year by year basis. Thus, as before, the aim is to identify any significant differences in performance between supervisory countries and non-supervisory countries. Since our aim is also to compare performance and condition of banks before and after supervision, year by year comparisons are made for the years 1978 to 1987. The year 1978, instead of 1975 as in the previous analysis, is chosen due to the non availability of all the required data. The F-test results are shown in Table 9.2.

There was no significant difference in ROCs between the supervisory countries and the non supervisory countries in all the ten years analysed.

Table 9.2 Mean values and F-ratio results for selected performance and condition variables

Variable	Sample	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
ROC	G1		14.7	18.2	23.9	15.9	16.2	13.2	11.1	10.8	11.9
	G2		19.5	12.4	10.8	14.3	37.4	12.7	4.2	13.6	2.8
	F		0.37	0.36	1.77	0.08	3.07	0.01	0.82	0.10	1.88
ROA	G1		1.8	1.7	2.0	1.2	1.3	0.9	0.7	0.8	1.2
	G2		0.9	0.6	0.2	0.4	2.8	0.7	0.2	1.4	0.2
	F		0.17	0.27	1.0	0.90	0.95	0.16	5.71	0.57	15.17*
Inc. assets	G1		19.9	19.7	19.3	18.1	12.7	14.6	7.8	14.6	11.8
	G2		26.9	17.0	27.5	24.4	24.1	25.8	30.4	58.3	7.6
	F		1.32	0.07	0.78	6.08*	3.39	2.78	9.99*	4.32	1.11
Inc. deposits	G1		14.9	19.5	17.7	15.8	10.9	16.2	8.8	13.6	16.4
	G2		22.0	9.9	25.9	28.2	13.1	34.0	52.3	24.6	34.1
	F		0.53	0.81	1.52	7.9*	0.19	2.81	12.7*	1.89	1.53
Capital/assets	G1	6.5	6.3	6.3	6.4	6.5	6.8	6.7	6.9	6.8	7.4
	G2	4.6	4.5	4.6	4.0	3.7	5.8	5.6	4.3	4.9	4.8
	F	0.63	0.68	0.56	1.26	1.74	0.18	0.24	1.54	0.60	1.34

Table 9.2 continued

Variable	Sample	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Capital/deposits	G1	8.2	8.5	8.6	8.5	8.8	9.3	9.1	9.4	9.3	9.6
	G2	6.4	6.5	6.9	6.2	5.6	9.1	8.3	5.9	6.7	6.2
	F	0.37	0.42	0.29	0.95	1.69	0.01	0.08	2.07	0.78	1.57
Loans/deposits	G1	79.0	85.2	83.7	85.2	87.3	88.1	81.5	80.5	78.0	73.8
	G2	44.2	42.2	51.4	50.1	48.2	46.2	42.5	36.7	44.1	41.6
	F	20.2	4.55	3.49	9.08*	7.25*	8.96*	7.12*	9.03*	6.4*	3.13
Loans/assets	G1	61.6	61.1	59.6	61.2	61.1	60.9	57.3	57.2	55.1	56.3
	G2	31.6	29.2	33.5	34.1	33.5	28.9	27.8	27.3	30.3	32.0
	F	12.33*	8.66*	4.91	7.02*	8.46*	10.42*	7.44*	6.80*	4.62	2.94
Capital/risky assets	G1	8.7	7.2	7.7	7.8	7.9	8.2	8.6	9.1	9.3	10.5
	G2	5.4	5.7	6.6	6.1	6.0	8.7	8.2	7.1	8.3	10.9
	F	1.2	0.52	0.16	0.39	0.48	0.03	0.01	0.47	0.05	0.01

Notes: G1 sample of 7 countries with supervision
G2 sample of 2 countries without supervision
* significant at the 0.05 level

However, the supervisory countries had significantly higher ROAs than the non-supervisory countries in 1987. For the other years analysed, there was no significant difference in profitability between the two groups.

Significantly lower growth in both assets and deposits were observed in 1982 and 1985. For all the other years there was no significant difference. Although the significant differences were only observed for two out of the ten years analysed, the overall conclusion is consistent with the previous results.

For the three capital adequacy ratios analysed, there was no significant difference between the supervisory countries and the non-supervisory countries on a year by year basis for all the years analysed. The previous analysis suggested that supervisory countries had higher capital-adequacy ratios.

The two liquidity ratios analysed indicated that the supervisory countries had significantly lower liquidity for seven out of the ten years analysed. The result confirms the previous finding that supervisory countries had lower liquidity than the non supervisory countries after supervision.

9.4.3 Analysis of the test results

The previous two sections analysed the differences in performance and condition of banks between supervisory countries and non supervisory countries. Comparisons were made, firstly for the periods 'before supervision' and 'after supervision', and secondly the same comparisons were made on a yearly basis. There were not many significant differences in performance and condition of banks on a yearly basis for most of the years analysed except for the

liquidity measures. The possible explanation for this is that there were only two observations for the non supervisory group against seven observations for the supervisory group. Thus the yearly comparisons, in this regard, were not very useful as a further explanation of the effects of supervision. However, in the case of the few instances where significant differences were observed, the results were in line with the other comparisons made for two periods before and after supervision.

Four comparisons were made; between the developing countries supervisory group and the non-supervisory group (G1 G2), between the developed country supervisory group (UK) and the developing countries' supervisory group (G1 G3), the developed country supervisory group and the non-supervisory group (G2 G3) and lastly the three groups combined (G1 G2 G3). It was expected that during the first period 1975-80 (period before supervision), no significant differences would be observed. However there were some significant differences between the groups. This could have occurred because some countries in the supervisory group may have strengthened their supervisory systems by the mid 1970s.

Another interesting observation was that there were significant differences in performance and condition of banks between the developing countries' supervisory group and the United Kingdom. It would have been thought that both groups being supervisory groups, no differences would be observed. This might suggest that the differences in the development of the economic and financial systems between these two supervisory groups are important for 'explaining' the differences in performance and condition of banks. In this regard our analysis should probably concentrate on the comparison

between the developing countries supervisory group and the developing countries non-supervisory group's performance and condition of banks.

Our aim is to determine whether changes in performance and condition of banks were associated with changes in supervision. In this regard, we are more interested in the period identified as 'after supervision' since it is considered (and assumed earlier) that by this time supervisory systems had been strengthened worldwide. The analysis of the sample countries' supervisory systems indicated that capital adequacy ratios were formally implemented early in this period. Based on this, significant differences were observed in capital adequacy, growth and liquidity. Thus our findings were that the supervisory group had lower growth in assets and deposits, higher capital/assets ratios and lower liquidity than the non-supervisory group. There was no significant difference in terms of profitability.

The significance of these findings for evaluating the effects of supervision (that is, whether supervision improves performance and reduces risk in the banking system) was not obvious.

The reduction in growth of assets and deposits may imply poor performance if it is considered that the growth in the volume of assets, say, is indicative of increased earnings potential especially in the face of entry barriers. Because of capital adequacy constraints, banks are constrained in the scale of their operations and thus it is expected that the result of higher capital adequacy ratio requirements is a decline in balance sheet footings relative to capital held by banks. This might imply ceteris paribus safer banking positions.

The higher loans to deposits and loans to assets ratios after supervision might suggest that banks have taken on higher risks since loans generally have a comparative low liquidity and are exposed to credit risk. Whether higher loans imply high risk in bank portfolios depend on a number of factors. Firstly, if the loans are made to high quality borrowers, then higher loans relative to assets may not impose higher credit risk potential. This suggests that the loan quality should also be analysed. Secondly, a higher loans/deposits ratio may not necessarily suggest increased funding risk if the banking sectors' need for liquidity is lessened by a greater stability of funding sources. In this regard it would be more appropriate to analyse the diversity and stability of funding sources in addition to the analysis of the total loans to total deposits.

Traditionally, supervisors employ various capital adequacy ratios as first approximations of a bank's risk exposure. If higher capital ratios are taken as measures of bank strength, our findings indicate that risk exposure has reduced for sample supervisory systems. However, we are reminded by theoretical (see Chapter 7) and practical (see Chapter 6) considerations that capital ratios alone are not conclusive: they must be analysed alongside all other pertinent factors, including earnings capacity. Thus, the increase in capital/assets ratios for the sample countries may not necessarily suggest a reduction of risk. For example, an increase in capital/assets ratios may induce banks to choose higher risk assets which offer higher returns since they need to maintain at least the same level of profitability in order to meet the new capital adequacy requirements. Theory (see Chapter 7) suggests that

higher capital requirements by themselves always result in lower returns on capital. Our findings indicated higher loans (riskier assets) relative to total assets: this might have been a result of higher capital ratio requirements by regulators. It implies that capital ratios, for example, capital/assets ratios (gearing ratio), may not be good measures for gauging the relative strength of individual capital positions and may be misleading. This is so because gearing ratios (five of the sample countries use gearing ratios) do not impose any constraint on bank balance sheet structure. In particular, such ratios do not consider risks within a bank's portfolio. Thus increasing capital ratios, instead of curbing excessive risk taking, sometimes might actually encourage banks to take on more risk.

Thus, whether a bank's capital level is adequate depends on its level of risk. In this regard, risk-based capital requirements seem to be more appropriate indicators of capital adequacy in banks.

9.4.4 Further sensitivity analysis

Theory (see Lackman, 1986) suggests that imposing capital restrictions in relation to portfolio risk (in particular risk assets ratios and capital/risk assets ratios) reduces risk while gearing ratios (capital/deposits ratios) increases risk (see Chapter 7). In order to test the hypothesis that appropriate capital adequacy ratios reduce risk, F-tests were also computed comparing performance and condition of banks for different countries using different capital adequacy ratios.

Thus supervisory countries were grouped according to the type of capital adequacy ratios used. The aim was to compare countries using gearing ratios with those using a risk-based capital adequacy systems. The groups identified were as follows: G4 - two countries using capital/assets ratios, G5 - two countries using capital/deposits ratios, G6 - one country using capital/risky assets ratios and G7 - one country using capital/loans and advances ratios. As before, comparisons were made for the period before supervision and period after supervision. The F-test results are shown in Table 9.3.

Comparisons between countries using the capital/assets ratios and those using the capital/risky assets ratios (G4 G6) indicated that the country using the capital/risky assets ratio had higher capital and liquidity after supervision. In particular this comparison (G4 G6) showed that this country had higher capital/assets ratio, higher capital/risky assets ratio and higher liquidity (lower loans/assets ratio) after supervision.

When comparisons were made between two countries using the capital/deposits ratios and the country using the capital/risky assets ratios (G5 G6, Table 9.3), our findings were that: the country using the capital/risky assets ratio had higher capital/assets ratios, higher capital/risky assets ratios and higher liquidity (lower loans/deposits ratios).

Significantly higher ROAs, higher capital/assets ratios, higher capital/deposits ratios, higher capital/risky assets and lower liquidity (higher loans/assets ratios) were observed for the country using the capital/risky assets ratios when compared to the country

Table 9.3 Comparison of bank performance and condition for countries using different capital adequacy ratios

Variable	Sample means				F-statistics					
	G4	G5	G6	G7	G4 G5	G4 G6	G4 G7	G5 G6	G6 G7	G4 G5 G6 G7
				1975-80						
Performance										
ROC	18.1	19.4	12.3	17.1	0.68	0.68	2.15	0.03	1.49	0.95
ROA	0.4	3.0	1.3	0.4	3.24	3.24	0.10	1.50	2.72	1.92
Increase in assets	22.0	10.8	15.4	34.4	4.03*	4.03*	1.74	2.10	1.02	5.51
Increase in deposits	21.6	12.1	14.9	37.5	4.30	2.06	4.25	0.36	14.02*	4.76*
Condition										
Capital/assets	5.3	5.2	10.6	2.7	17.40*	0.01	27.66*	3.08	62.77*	461.07*
Capital/deposits	5.9	6.3	13.4	4.5	0.14	69.08*	1.27	59.14*	420.26*	26.34*
Capital/risky assets	6.0	6.2	13.1	3.5	0.06	47.81*	2.32	47.07*	81.86*	20.63*
Loans/deposits	79.4	72.0	83.8	69.1	1.49	1.30	3.03	7.08*	1.71	18.63*
Loans/assets	67.4	54.5	65.9	41.7	14.08*	0.22	32.45*	9.55*	138.05*	14.45*

Table 9.3 continued

Variable	Sample means				F-statistics					
	G4	G5	G6	G7	G4 G5	G4 G6	G4 G7	G5 G6	G6 G7	G4 G5 G6 G7
				1981-87						
Performance										
ROC	16.0	17.9	12.1	16.9	0.73	0.27	0.79	0.03	3.49	2.20
ROA	0.9	2.0	1.0	0.4	2.55	0.17	5.68*	2.09	8.45*	3.09*
Increase in assets	14.0	13.0	16.5	13.7	0.31	0.08	0.60	0.01	0.82	1.26
Increase in deposits	12.4	13.7	16.1	10.4	0.28	1.51	0.37	0.68	4.60	0.98
Condition										
Capital/assets	7.4	5.7	8.9	3.1	16.26*	5.29*	2.36	17.07*	55.71*	386.9*
Capital/deposits	9.4	7.0	8.0	5.8	19.79*	2.41	19.85*	3.88	8.23*	11.42*
Capital/risky assets	8.2	7.1	11.7	4.2	2.03	12.49*	14.47*	52.97*	269.45*	19.88*
Loans/deposits	91.1	77.9	75.0	77.7	2.79	3.97	15.85*	8.56*	0.12	1.30
Loans/assets	68.9	57.3	57.2	41.1	18.19*	20.96*	100.09*	0.00	101.56*	28.50*

Notes:
- G4 2 supervisory countries using the capital/assets ratio
- G5 2 supervisory countries using the capital/deposits ratio
- G6 1 supervisory country using the capital/risky assets ratio
- G7 1 supervisory country using the capital/loans ratio
- * significant at the 0.05 level

using capital/loans and advances ratio (G6 G7, Table 9.3) after supervision.

When the two countries using capital/assets ratios were compared with countries using the capital/deposits ratios (G4 G5, Table 9.3) - that is, comparison between the countries using different gearing ratios - the results were that the countries using capital/assets ratios (G4) had higher capital ratios and lower liquidity (higher loans/assets ratios) than the countries using the capital/deposits ratios (G5), after supervision. The aim of this comparison was to determine whether countries using gearing ratios would experience the same banking performance and condition. The result suggests that using a capital/assets ratio would lead to higher capital ratios and the lower loans/assets ratios indicate a movement towards safer assets.

However, the main concern is a comparison between using gearing ratios and risk based capital ratios. Our findings suggest that in all the comparisons made (where some kind of gearing ratio was compared with the capital/risky assets ratio), the country using the capital/risky assets had higher ROAs, higher capital ratios and higher liquidity. Thus, using a risk-based capital adequacy ratio system seems to be associated with superior banking performance than the gearing ratio schemes. However, it should be noted that only one country was used in the analysis and thus the result should be treated with caution.

9.4.5 Critique/limitations of the result

The analysis of variance technique used to compare the performance and condition of banks between supervisory and non

supervisory groups assumes a random sample from each population, that each population has a normal distribution and that all the populations have the same variance. The researcher felt that the three assumptions embodied in the F-test were unlikely to be met in the dataset used in this chapter. For example, the dataset is very small and random sampling methods could not be carried out. Berenson and Levin (1986) suggest, however, that the F-tests may be robust when the normality assumption is violated as long as the distributions are not extremely different from a normal distribution. However, it is felt that the homogeneity of variance assumption may not be met from the data being investigated.

The homogeneity assumption indicates equal variance within each group for all groups. In our case the homogeneity assumption means the variance for the developing countries supervisory group should be equal to the variances of the United Kingdom and the non supervisory group. This is needed because in computing the F-statistics, the variances within the groups are combined into a single 'within groups' source of variation. It is suggested that if the sample sizes are equal the inferences made based on the F-tests may not be seriously affected. In our case, unequal samples were compared and thus the unequal variances from group to group might affect the inferences drawn from the analysis of variance tests.

To address the problem, a t-test, in which separate variance estimates are included in the test statistic will be used. Once again the statistical package, Minitab, will be used to compute the t-statistics. Thus as a check on the robustness of the F-test, two sample t-tests will be performed (wherever two groups were previously compared in Table 9.1) as follows: the developing

countries supervisory group (G1) versus the non supervisory group (G2), the developing countries supervisory group (G1) versus the United Kingdom (G3), the United Kingdom (G3) versus the non supervisory group (G2).

As in the F-tests, two tailed t-tests are performed since we are testing for differences or no differences in banking performance and condition.

The same variables as in the F-tests (see Table 9.1) that is, profitability, growth, capital adequacy and liquidity will be analysed. If the t-test results are generally similar to the F-test results, then our original F-test results and related analysis are validated.

9.4.6 Two sample t-tests

9.4.6.1 Comparison of bank performance and condition between supervisory and non supervisory groups before and after supervision

The t-tests comparing the means of the supervisory groups and the non supervisory group are shown in Table 9.4.

The supervisory countries had significantly higher ROAs than the non supervisory group before supervision (see G1 G2 and G2 G3), but after supervision there was no significant difference in profitability between the two groups. It is interesting to note that the supervisory group's ROA fell after supervision while that for the non supervisory group increased. There was no significant difference in profitability between the United Kingdom and the supervisory group (see G1 G3) both before and after supervision.

Table 9.4 Comparison of performance and condition of banks

Variable	Sample means			T-statistics		
	G1	G2	G3	G1 G2	G1 G3	G2 G3
			1975-80			
Performance						
ROC	18.4	16.1	19.7	0.64	-0.51	-1.02
ROA	1.7	0.7	1.3	2.15*	0.98	-2.55*
Increase in assets	18.0	29.1	15.8	-1.59	0.88	1.92
Increase in deposits	17.3	23.4	7.6	-2.40*	1.25	2.40*
Condition						
Capital/assets	6.4	4.7	9.1	2.68*	-4.22*	-7.54*
Capital/deposits	8.1	7.0	13.5	1.59	-2.83*	-3.58*
Loans/deposits	80.1	48.4	114.9	9.09*	-2.91*	-5.63*
Loans/assets	61.4	32.7	78.7	10.39*	-8.44*	-19.03*
			1981-87			
Performance						
ROC	14.8	13.7	18.3	0.23	-1.11	-0.83
ROA	1.1	0.8	1.0	0.86	0.72	-0.50
Increase in assets	14.6	28.3	16.6	-2.08*	-0.65	1.55
Increase in deposits	14.1	30.3	17.7	-2.86*	-1.25	2.05*
Condition						
Capital/assets	6.8	4.7	10.4	2.28*	-8.67*	-6.46*
Capital/deposits	8.6	6.9	19.5	1.62	-16.44*	-11.05*
Loans/deposits	82.2	44.1	151.3	7.47*	-5.76*	-8.53*
Loans/assets	58.5	30.5	80.3	5.96*	-3.88*	-7.16*

Note: * significant at the 0.05 level

The supervisory countries had significantly lower growth in deposits than the non supervisory group (G1 G2 and G2 G3) both before and after supervision. Whilst there was no significant difference in the growth in assets between the supervisory and non supervisory groups before supervision, after supervision the supervisory group had lower growth in assets. There was once again no significant difference in the asset growth measures both before and after supervision when the United Kingdom was compared with the developing countries' supervisory group (G1 G3). Thus we reject the null hypothesis and accept the alternative hypothesis that there were significant differences in growth. The finding suggests that supervision led to lower growth in assets and deposits of banks.

In terms of capital adequacy, the supervisory countries had significantly higher capital/assets ratios both before and after supervision. The other two comparisons (the United Kingdom versus the supervisory group (G1 G3) and the United Kingdom versus the non supervisory group (G2 G3)), indicated that the United Kingdom had significantly higher capital/assets and capital/deposits ratios both before and after supervision. Once again the null hypothesis of no differences is rejected and our finding is that supervision led to increases in capital adequacy ratios.

In all the three comparisons, the supervisory group and the two control groups separately, the results with regard to liquidity (loans/deposits ratios and loans/assets ratios) suggested that supervision led to lower liquidity. Both supervisory groups' liquidity ratios rose after supervision while the liquidity ratios for the non supervisory group fell after supervision.

9.4.6.2 Comparison of bank performance and condition between the supervisory group and the non supervisory group on a yearly basis

The same variables as in the previous section are analysed and comparison in bank performance and condition between seven supervisory countries and two non supervisory countries are made. The t-statistics showing the differences between means of the two groups on a year by year basis beginning in 1978 to 1987 are shown in Table 9.5.

There was no significant difference in profitability between the supervisory countries and the non supervisory countries (G1 G2) in all the years reviewed. In this regard we cannot reject the null hypothesis of no differences. The changes in both profitability measures for the supervisory group on a year by year basis were not significantly different from those for the non supervisory group. Thus the effect of supervision on profitability cannot be deduced from the results.

In terms of growth in assets and deposits, the supervisory group had significantly lower growth in assets than the non supervisory group in 1979. During the other years there was no significant difference in balance sheet growth in terms of assets and deposits.

Significant differences in capital/deposits ratios were observed in 1982. Although in all the other years analysed and in all the capital ratios, the supervisory countries had higher capital ratios, the differences were not significant on a year by year basis.

Table 9.5 Comparison of performance and condition of banks

Variable	Sample	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
ROC	G1		14.7	18.2	23.9	15.9	16.2	13.2	11.1	10.8	11.9
	G2		19.5	12.4	10.8	14.3	37.4	12.7	4.2	13.6	2.8
	T		-0.61	0.65	1.07	0.46	-0.94	0.22	0.41	-0.15	2.02
ROA	G1		1.8	1.7	2.0	1.2	1.3	0.9	0.7	0.8	1.2
	G2		0.9	0.6	0.2	0.4	2.8	0.7	0.2	1.4	0.2
	T		0.68	0.86	1.74	1.72	-0.58	0.46	1.56	-0.45	3.41
Inc. assets	G1		19.9	19.7	19.3	18.1	12.7	14.6	7.8	14.6	11.8
	G2		26.9	17.0	27.5	24.4	24.1	25.8	30.4	58.3	7.6
	T		-2.07*	0.47	-0.69	-2.14	-1.58	-0.96	-1.65	-0.96	1.82
Inc. deposits	G1		14.9	19.5	17.7	15.8	10.9	16.2	8.8	13.6	16.4
	G2		22.0	9.9	25.9	28.2	13.1	34.0	52.3	24.6	34.1
	T		-1.27	0.91	-0.86	-1.85	-0.64	0.62	-1.63	-1.00	-0.70
Capital/assets	G1	6.5	6.3	6.3	6.4	6.5	6.8	6.7	6.9	6.8	7.4
	G2	4.6	4.5	4.6	4.0	3.7	5.8	5.6	4.3	4.9	4.8
	T	1.28	1.08	0.93	1.53	2.03	0.32	0.33	1.02	0.46	0.63

Table 9.5 continued

Variable	Sample	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Capital/deposits	G1	8.2	8.5	8.6	8.5	8.8	9.3	9.1	9.4	9.3	9.6
	G2	6.4	6.5	6.9	6.2	5.6	9.1	8.3	5.9	6.7	6.2
	T	1.19	1.22	1.04	1.91	2.54*	0.07	0.18	1.18	0.54	0.69
Loans/deposits	G1	79.0	85.2	83.7	85.2	87.3	88.1	81.5	80.5	78.0	73.8
	G2	44.2	42.2	51.4	50.1	48.2	46.2	42.5	36.7	44.1	41.6
	T	6.52*	4.19*	3.65*	3.60*	2.89	3.07	2.59	2.36	1.74	1.32
Loans/assets	G1	61.6	61.1	59.6	61.2	61.1	60.9	57.3	57.2	55.1	56.3
	G2	31.6	29.2	33.5	34.1	33.5	28.9	27.8	27.3	30.3	32.0
	T	5.40*	3.81*	2.50	1.79	1.83	2.45	2.25	1.97	1.27	1.16

Note: * significant at the 0.05 level

Comparisons of the differences in the loans/deposits ratios on a year by year basis indicated that the supervisory group had significantly lower liquidity between 1978 and 1981. The supervisory group also had significantly lower liquidity in terms of the loan/assets ratios in 1978 and 1979. For all the other years and for both liquidity measures analysed, the supervisory group had lower liquidity than the non supervisory group although the differences were not significant. However, the overall result is that for the years where significant differences were observed, supervisory countries had lower liquidity than the non supervisory countries.

9.4.6.3 Comparison of bank performance and condition between countries using different capital adequacy ratios

As in the preceding F-tests analysis, comparisons of performance and condition of banks between countries using different capital adequacy ratios aims to test whether there are any differences in performance between countries using risk based capital ratios and those using gearing ratios. Once again the same variables were analysed and the t-test results are shown in Table 9.6.

Comparisons between the country using the capital/risky assets ratios and the countries using the capital/assets ratios (G4 G6) suggested that the country using capital/risky assets ratios had higher capital/assets ratios and higher liquidity (based on both measures analysed) after supervision. Before supervision, the country using capital/risky assets ratios had higher ROAs, higher capital ratios and lower liquidity.

Table 9.6 Comparison of performance and condition of banks

Variable	Sample means				T-statistics				
	G4	G5	G6	G7	G4 G5	G4 G6	G4 G7	G5 G6	G6 G7
				1975-80					
Performance									
ROC	18.1	19.4	12.3	17.1	-0.27	1.60	0.35	1.44	-1.59
ROA	0.4	3.0	1.3	0.4	-2.34*	-2.47*	0.47	1.57	2.87*
Increase in assets	22.0	10.8	15.4	34.4	2.54*	1.42	-1.08	-1.01	-1.65
Increase in deposits	21.6	12.1	14.9	37.5	2.10*	1.60	-2.32	-0.63	-3.34
Condition									
Capital/assets	5.3	5.2	10.6	2.7	0.07	-7.25*	3.50*	-9.73*	26.41*
Capital/deposits	5.9	6.3	13.4	4.5	-0.37	-11.26*	2.02*	-9.67*	20.42*
Loans/deposits	79.4	72.0	83.8	69.1	1.05	-2.08*	2.26	-1.69	3.30*
Loans/assets	67.4	54.5	65.9	41.7	3.70*	0.61	9.16*	-3.84*	11.34*
				1981-87					
Performance									
ROC	16.0	17.9	12.1	16.9	-0.52	1.14	-0.22	2.18*	-1.43
ROA	0.9	2.0	1.0	0.4	-2.17*	-0.41*	2.54*	1.97*	3.09*
Increase in assets	14.0	13.0	16.5	13.7	0.29	-0.96	0.09	-1.16	1.10
Increase in deposits	12.4	13.7	16.1	10.4	-0.53	-1.42	0.72	-0.93	2.14*
Condition									
Capital/assets	7.4	5.7	8.9	3.1	2.30*	-2.10*	6.29*	-8.67*	20.58*
Capital/deposits	9.4	7.0	8.0	5.8	4.45*	1.58	6.11*	-1.49	3.04*
Loans/deposits	91.1	77.9	75.0	77.7	1.99*	5.52*	3.67*	0.48	-1.07
Loans/assets	68.9	57.3	57.2	41.1	4.26*	5.86*	13.12	0.02	9.99*

Note: * significant at the 0.05 level

When the country using the capital/risky assets ratios was compared with the countries using capital/deposits ratios (G5 G6), the country using the capital/risky assets ratio had higher capital ratios and lower profitability. Before supervision this country had higher capital ratios and lower liquidity.

Another comparison was between the country using the capital/risky assets ratio and the one using the capital/loans and advances ratio (G6 G7). The finding was that the country using the capital/risky assets ratio had higher capital ratios and lower liquidity after supervision and higher ROAs before supervision.

Overall, the country using capital/risky assets ratios (G6) had consistent results with regard to capital ratios (higher ratios) than the countries using the gearing ratios. With regard to liquidity, the country using the capital/risky assets ratio had superior performance over the country using the capital/assets ratios.

Another comparison made was between countries using gearing ratios to see if there was any difference in their performance. After supervision the country using the capital/assets ratio was found to have superior performance over the countries using capital/deposits ratios (G4 G5) and the one using capital/loans and advances ratios (G7).

9.4.7 Analysis of test results

Two sample t-tests were aimed at checking on the validity or otherwise of the F-tests. Comparisons were made between the supervisory countries and the non supervisory countries before and after supervision and on a yearly basis. The overall results before

supervision were that the supervisory countries had higher ROAs, lower growth in deposits, higher capital/assets ratios, lower liquidity on both measures. After supervision, the supervisory countries (G1) had lower growth in assets and deposits, higher capital/assets ratios and lower liquidity on both measures.

The year by year comparisons were not very useful in explaining the changes in performance and condition (the same finding as for the F-tests).

When these t-test results are compared with the F-test results (Table 9.7) the overall conclusions are exactly the same after supervision (1981-87). Before supervision there are more significant variables when t-tests were computed than the F-tests. It is interesting to note that the t-tests suggest that supervision increases ROAs. However, after supervision there was no significant difference in the ROAs between the two groups. Another difference is that the t-tests suggest that capital/assets ratios were higher for the supervisory group before supervision.

Comparisons of the F-tests results and the t-tests results with regard to countries using different types of capital adequacy ratios are shown in Table 9.8.

As shown in Table 9.8, in some cases the t-tests produced exactly the same results as the F-tests. In other cases, although the overall result is the same (in that at least one measure of capital adequacy, say, was significant) there were cases where results were different: for example, when the capital/risky assets was compared with the capital/assets group the t-test result indicated significant difference in one liquidity measure while the F-test results did not show any significant difference in both the

liquidity measures. The overall results were the same in that the country using the capital/risky assets measure of capital adequacy was found to have superior performance than countries using the gearing ratios in most of the variables.

Table 9.7 Comparison of results of the t-tests and the F-tests

Variable	F-tests	t-tests
1975-80		
ROC		
ROA		*
Increase in assets	*	
Increase in deposits		*
Capital/assets		*
Capital/deposits		
Loans/deposits	*	*
Loans/assets	*	*
1981-87		
ROC		
ROA		
Increase in assets	*	*
Increase in deposits	*	*
Capital/assets	*	*
Capital/deposits		
Loans/deposits	*	*
Loans/assets	*	*

Note: * indicates those variables where there were significant differences

However, due to some differences and apparent inconsistencies which have been observed in the two tests analysed, it is proposed as a further check to use a non-parametric test in the data analysis.

Table 9.8 Comparison of F-tests and t-tests

	C/RA vs C/A		C/RA vs C/D		C/RA vs C/L	
	F-tests	t-tests	F-tests	t-tests	F-tests	t-tests
1975-80						
ROC	*	*				*
ROA	*					
Increase in assets						
Increase in deposits					*	
Capital/assets		*		*	*	*
Capital/deposits	*	*	*	*	*	*
Loans/deposits		*	*			*
Loans/assets			*	*	*	*
1981-87						
ROC				*		
ROA				*	*	*
Increase in assets						
Increase in deposits						*
Capital/assets	*	*	*	*	*	*
Capital/deposits					*	*
Loans/deposits		*	*			
Loans/assets	*	*			*	*

Note: * indicates those variables where there were significant differences

Non parametric tests are useful when the assumptions underlying the use of the classical methods are not met. The classical procedures of hypothesis testing require very stringent assumptions (as already indicated) and the results are valid if the assumptions are met. Violations of the assumptions affect the true level of significance and the power of the test.

Thus the advantages of using a non parametric test in our case are (see Berenson and Levin, 1986):

- non parametric methods may be more powerful when the assumptions of the classical procedure are not met or equally as powerful if the assumptions are met.
- non parametric methods are useful when the sample sizes are small
- non parametric methods make fewer and less stringent assumptions.

Thus, although it is suggested that in the F-tests departures from the normality assumption may not invalidate the results as long as the distributions are not extremely different from a normal distribution and the samples are large, this may not be the case in our case since our samples are small. An alternative to the analysis of variance test proposed, in our case, is the Kruskal-Wallis test.

The Kruskal-Wallis test is considered to be as powerful as the F-test (Berenson and Levin, 1986). The Kruskal-Wallis test does not require that samples are drawn from underlying normal populations. The shapes of the population distributions are irrelevant for the Kruskal-Wallis test.

9.4.8 Kruskal-Wallis tests

The Kruskal-Wallis test will be computed using the statistical package, Minitab. The same comparisons as the F-tests and the same variables will be analysed in this section. As in the previous tests, the aim is to identify any differences in bank performance and condition between the supervisory and non-supervisory countries before and after supervision.

9.4.8.1 Comparison of bank performance and condition between supervisory and non supervisory countries before and after supervision

The Kruskal-Wallis (H) test results are shown in Table 9.9. After supervision, the supervisory countries had significantly higher ROAs than the non supervisory countries. Both the F-tests and the t-tests did not show significant differences in any profitability measure between the supervisory countries and the non supervisory countries after supervision had been strengthened. Theory suggests that supervision, that is increased capital ratios, affect banks by reducing return on equity (see Chapter 7). It is uncertain from theory what the effect of supervision on ROA is. Our finding is that supervision affects profitability by increasing ROAs. The supervisory countries' ROAs increased after supervision while ROAs for non supervisory countries fell after supervision (G1 G2).

Growth for the supervisory countries was lower than that for the non-supervisory countries both before and after supervision (G1 G2). The other two tests had the same result as the Kruskal-Wallis tests.

Table 9.9 Comparison of performance and condition of banks

Variable	Sample medians			H-statistics			
	G1	G2	G3	G1 G2	G1 G3	G2 G3	G1 G2 G3
1975-80							
Performance							
ROC	15.7	19.5	23.6	0.44	0.44	0.06	1.82
ROA	0.7	0.9	1.3	0.10	0.83	1.08	0.34
Increase in assets	18.1	18.0	14.6	0.06	1.79	6.56*	0.10
Increase in deposits	16.7	26.2	12.5	4.87*	1.12	7.37*	8.50*
Condition							
Capital/assets	6.6	5.2	9.2	2.11	4.72*	10.12*	8.82*
Capital/deposits	7.4	6.9	17.4	0.25	7.67*	10.12*	8.30*
Loans/deposits	80.1	47.9	113.0	18.54*	9.95*	10.12*	26.55*
Loans/assets	64.2	35.4	78.2	20.50*	13.03*	10.12*	30.25*
1981-87							
Performance							
ROC	14.35	14.40	19.9	0.00	0.73	2.23	3.37
ROA	0.9	0.4	1.1	6.75*	0.47	3.07	7.37*
Increase in assets	17.05	16.70	14.5	0.16	0.21	1.42	5.94
Increase in deposits	13.35	23.7	16.5	8.88*	1.18	1.61	9.42*
Condition							
Capital/assets	6.5	5.9	10.3	2.42	12.00*	13.36*	11.69*
Capital/deposits	8.0	6.0	19.5	3.59	18.00*	13.36*	21.50*
Loans/deposits	79.5	55.0	166.0	26.30*	7.24*	13.36*	29.31*
Loans/assets	60.1	29.7	85.5	21.75*	10.78*	11.27*	30.39*

Note: * significant at the 0.05 level

In terms of capital adequacy ratios, the comparison between the supervisory developing countries and the non-supervisory countries (G1 G2) did not indicate any significant differences in all the ratios. However the comparison between the United Kingdom and non supervisory group indicated that the United Kingdom (supervisory country) had significantly higher capital ratios both before and after supervision than the non supervisory group (see G2 G3). The comparison for all the three groups combined showed significant differences in capital ratios. Thus it is reasonable to conclude that supervision increased capital ratios in banks for the countries analysed.

All the comparisons undertaken indicated that supervisory countries had significantly lower liquidity (based on both loans/deposits and loans/assets ratios) both before and after supervision than the non supervisory group (G1 G2 and G2 G3).

Comparisons of bank performance and condition between supervisory and non supervisory countries were also done on a yearly basis.

9.4.8.2 Comparison of bank performance and condition between supervisory and non supervisory countries on a yearly basis

The Kruskal-Wallis tests are shown in Table 9.10. Comparison of profitability between supervisory and non-supervisory countries (G1 G2) on a yearly basis did not show any significant difference in all the two measures of profitability and in all the years reviewed.

Table 9.10 Comparison of performance and condition of banks

Variable	Sample	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
ROC	G1		0.6	0.7	1.3	0.8	1.0	0.8	0.7	0.6	1.2
	G2		0.9	0.6	0.2	0.4	2.8	0.7	-0.2	1.4	0.2
	H		0.34	0.34	0.34	0.77	0.77	0.34	0.00	0.00	1.78
ROA	G1		14.2	15.7	20.8	18.0	17.2	14.1	12.3	10.7	15.8
	G2		19.5	12.4	10.8	14.3	37.4	12.7	4.2	13.6	2.8
	H		0.03	0.11	2.78	1.78	0.11	0.00	3.36	0.00	3.75
Inc. assets	G1		19.7	15.2	19.0	17.7	12.1	14.7	11.1	11.4	14.4
	G2		26.9	17.0	27.5	24.4	24.1	25.8	30.4	58.3	7.6
	H		2.14	0.00	0.34	3.09*	1.37	0.77	4.20*	1.37	0.6
Inc. deposits	G1		13.0	16.7	20.5	17.3	12.4	14.7	9.9	12.3	14.8
	0.44		22.0	9.9	25.9	28.2	13.1	34.0	52.2	24.6	34.05
	H		0.54	0.77	0.77	4.20*	0.09	1.37	4.20*	1.37	0.44
Capital/assets	G1	6.1	7.1	6.6	6.4	6.5	6.0	6.7	6.5	6.8	8.0
	G2	4.6	3.3	4.6	4.0	3.7	2.0	5.6	4.3	4.9	4.8
	H	0.34	0.43	0.34	0.77	1.37	4.20*	0.19	0.77	0.34	0.03

Table 9.10 continued

Variable	Sample	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Capital/deposits	G1	6.6	7.6	8.1	9.3	7.3	8.0	8.4	9.0	9.0	10.0
	G2	6.4	6.5	6.9	6.3	5.6	9.1	8.3	5.9	6.7	6.2
	H	0.09	0.77	0.34	0.44	2.55	0.09	0.02	1.37	0.09	0.44
Loans/deposits	G1	82.9	80.3	87.3	84.1	85.5	83.4	78.5	78.6	77.7	75.4
	G2	44.2	42.2	51.4	50.0	48.2	46.2	42.4	36.7	44.0	41.6
	H	4.20*	4.20*	2.14	4.20*	4.20*	4.20*	3.09	4.20*	3.09	1.78
Loans/assets	G1	64.2	65.1	64.4	62.6	60.6	61.1	54.7	56.6	55.9	57.7
	G2	31.6	29.1	33.5	34.1	33.4	28.9	27.8	27.2	30.3	32.0
	H	4.20*	4.20*	2.14	3.01	3.09	4.20*	3.09	3.09	2.14	1.78
Capital/risky assets	G1	7.9	7.9	9.3	8.1	8.2	8.4	8.5	8.3	8.6	9.4
	G2	5.4	5.7	6.6	6.1	6.0	8.7	8.2	7.1	8.3	10.9
	H	1.00	0.34	0.34	0.34	0.09	0.00	0.09	0.77	0.09	0.00

Notes: G1 sample of 7 countries with supervision
G2 sample of 2 countries without supervision
* significant at the 0.05 level

Both the growth in assets and deposits measures indicated the supervisory group having significantly lower growth in 1982 and 1985. For the other years there was no significant difference in the changes in the growth measures.

For all the capital ratios analysed, significant differences were only observed in 1983 in respect of the capital/assets ratio. Although the supervisory countries had higher ratios for all the years and for all the capital ratios analysed, there was no significant difference on a year by year basis.

More significant differences were observed in the liquidity measures, especially the loans/deposits ratio. The F-tests and t-tests had the same kind of result with regard to the liquidity measures. The finding with regard to liquidity was that supervisory countries had lower liquidity than the non supervisory countries.

Once again, as in the F-tests and the t-tests, the comparisons of bank performance and condition on a yearly basis between supervisory countries and non supervisory countries were not very useful in analysing the effects of supervision. On a yearly basis, no significant differences were observed for most years. It has already been noted that there are only two observations for the non supervisory group on a yearly basis and this could distort the results. However, where significant differences were observed, the overall results were similar to the results obtained when the supervisory countries were compared with non supervisory countries before and after supervision.

The overall results obtained, comparing supervisory and non supervisory countries' performance and condition after supervision

are that supervision leads to higher ROAs, lower growth in deposits, higher capital ratios and lower liquidity.

Kruskal-Wallis tests were also computed to analyse the hypothesis that using risk-based capital ratios produced superior performance than using the gearing ratios.

9.4.8.3 Comparison of bank performance and condition for countries using different capital adequacy ratios before and after supervision

As in the previous tests the country using the capital/risky assets ratio will be compared with countries using capital/assets ratios, capital/deposits ratios and capital/loans and advances ratios. The Kruskal-Wallis tests are shown in Table 9.11. The aim of the analysis was (as previously) to identify any significant differences in performance and condition of banks.

Comparisons between the country using the capital/risky assets ratio and the countries using the capital/assets ratios (G4 G6) showed that the country using the capital/risky assets ratios had higher ROAs and higher capital ratios before supervision. After supervision, the country using the risk-based capital ratio had higher liquidity.

When comparisons were made between the country using the capital/risky assets ratio and the countries using the capital/deposits ratio (G5 G6), the result was that the country using the capital/risky assets ratio had higher capital ratios both before and after supervision and lower liquidity before supervision.

Table 9.11 Comparison of bank performance and condition for countries using different capital adequacy ratios

Variable	Sample medians				H-statistics				
	G4	G5	G6	G7	G4 G5	G4 G6	G4 G7	G5 G6	G6 G7
				1975-80					
Performance									
ROC	16.7	15.7	13.8	18.5	0.04	1.97	0.00	1.18	0.25
ROA	0.3	0.7	1.4	0.4	2.14	4.01*	0.03	0.00	2.25
Increase in assets	18.3	5.2	17.9	23.4	4.92*	0.49	0.02	0.73	2.25
Increase in deposits	20.3	9.1	16.9	37.5	3.93	1.45	3.90*	0.60	4.00*
Condition									
Capital/assets	5.1	5.7	10.7	2.9	0.13	11.37*	3.00	10.59*	5.40*
Capital/deposits	5.8	6.6	13.5	4.7	0.04	11.37*	0.33	10.59*	5.40*
Loans/deposits	79.0	62.9	84.3	66.2	0.98	3.17	6.75*	1.42	5.40*
Loans/assets	66.3	54.8	66.9	41.0	8.80*	0.04	6.75*	7.95*	5.40*
				1981-87					
Performance									
ROC	15.5	16.5	11.7	17.6	0.36	1.25	0.44	3.76	1.65
ROA	0.8	1.3	1.0	0.5	3.21	0.20	4.90*	1.70	4.59*
Increase in assets	11.2	12.6	17.8	14.4	0.06	1.25	0.01	1.80	1.15
Increase in deposits	11.8	15.9	15.2	12.2	0.61	2.01	0.17	0.36	2.94
Condition									
Capital/assets	7.6	5.7	8.9	3.1	2.30	0.14	12.00*	13.36*	9.00*
Capital/deposits	10.0	6.8	8.4	6.0	9.76*	2.94	8.10*	2.01	3.72
Loans/deposits	87.3	70.3	74.8	79.0	3.21	13.36*	6.54*	0.02	1.00
Loans/assets	68.1	56.1	56.6	40.7	9.91*	11.78*	12.00*	0.01	9.00*

Comparisons between the country using capital/risky assets ratios and the country using the capital/loans and advances ratios (G6 G7), showed that the country using the capital/risky assets ratios had higher ROAs, higher capital ratios and lower liquidity after supervision.

Comparisons between countries using different gearing ratios (G4 G5) indicated that countries using the capital/assets ratios had superior performance and condition than the countries using capital/deposits ratios and those using capital/loans and advances ratios. However, countries using the capital/assets ratios always had lower liquidity than countries using capital/deposits and capital/loans and advances ratios.

Overall, as in the previous tests, the country using capital/risky assets ratios had superior performance than countries using gearing ratios. It has, however, been noted that this result should be treated with caution since only one country was used in the analysis.

9.4.9 Overall analysis of test results

This chapter presented statistical analysis of the supervisory group's banking performance and condition characteristics before and after the implementation of supervision. The goal was to determine whether performance and condition of banks had improved or otherwise due to supervision. Three different statistical hypothesis testing techniques were used to analyse the data namely, the analysis of variance (F-tests), two sample t-tests and Kruskal-Wallis tests.

A summary of the results of the three tests are shown in Table 9.12. These results are comparisons of bank performance and

condition between the supervisory countries and the non supervisory countries. The summary in Table 9.12 indicates the variables which showed significant differences for each test. Since the comparisons were between supervisory and non supervisory countries, these differences imply that supervision affects performance and condition of banks.

Table 9.12 Comparison of F-tests, t-tests and Kruskall-Wallis tests

	Supervisory vs non supervisory			Supervisory vs UK			Non-supervisory vs UK		
	F	T	H	F	T	H	F	T	H
1975-80									
ROC									
ROA			*						
Increase in assets	*						*	*	
Increase in deposits		*	*					*	*
Capital/assets		*		*	*	*	*	*	*
Capital/deposits				*	*	*	*	*	*
Loans/deposits	*	*	*	*	*	*	*	*	*
Loans/assets	*	*	*	*	*	*	*	*	*
1981-87									
ROC									
ROA			*						
Increase in assets	*	*							
Increase in deposits	*	*	*					*	
Capital/assets	*	*		*	*	*	*	*	*
Capital/deposits				*	*	*	*	*	*
Loans/deposits	*	*	*	*	*	*	*	*	*
Loans/assets	*	*	*	*	*	*	*	*	*

Note: * indicates those variables where there were significant differences
F F-tests
T T-tests
H Kruskal-Wallis tests

Table 9.12 shows that for some variables the three tests produced the same results while in other instances the three tests differed. For all the variables which were significant, the direction of change after supervision was the same in all the three tests. Even if, for example, the F-tests indicated that supervision reduces growth in assets while the t-tests and Kruskal-Wallis tests indicated that supervision reduces growth in deposits, it is reasonable as an overall conclusion to say that all the three statistical tests showed that supervision affects growth in some balance sheet magnitude.

In this regard the overall findings based on the three tests performed indicated that supervision affects banking performance and condition by reducing growth, increasing capital ratios, and reducing liquidity.

Table 9.12 also indicates that the more consistent findings - that is, where all or at least two of the tests showed significant changes - were the growth in deposits and assets, capital/assets ratios and loan/deposits and loans/assets ratios. Only the Kruskal-Wallis test indicated that banks experienced higher returns on assets after supervision. In the other tests no significant difference was observed in both the ROCs and ROAs. The observed higher return on assets could have been the result of banks taking on high risk assets than before supervision. Our results also indicate higher loans/assets ratios.

Initially, the supervisory countries were grouped together in this analysis irrespective of the type of capital ratio system applied. Based on the theoretical results which indicate that risk-based capital adequacy ratios produce superior supervisory results,

comparisons were also made of countries using different capital adequacy ratios. A summary of the results based on three statistical tests are shown in Table 9.13. Once again the results indicate variables where significant differences occurred in the various comparisons. The three tests produced the same results in some cases while in other instances the results were different.

Table 9.13 Summary of results for the three tests

	G4 G6 C/A C/RA			G5 G6 C/D C/RA			G4 G7 C/A C/L			G6 G7 C/L C/RA		
Variable	F	T	H	F	T	H	F	T	H	F	T	H
1975-80												
ROC												
ROA	*	*	*								*	
Inc. in assets	*											
Inc. in deposits									*	*		*
Capital/assets		*	*		*	*	*	*		*	*	*
Capital/deposits	*	*	*	*	*	*		*		*	*	*
Loans/deposits		*		*					*		*	*
Loans/assets				*	*	*	*	*	*	*	*	*
1981-87												
ROC					*			*				
ROA					*		*		*	*	*	*
Inc. in assets												
Inc. in deposits											*	
Capital/assets	*	*		*	*	*		*	*	*	*	*
Capital/deposits							*	*	*	*	*	
Loans/deposits		*	*	*			*	*	*			
Loans/assets		*	*	*			*	*	*	*	*	*

Note: * indicates those variables where there were significant differences

The overall observation was that the country using the capital/risky assets ratio had superior performance and condition than the countries using gearing ratios. These results suggest that improvement in banking performance and condition are related to the type of capital adequacy ratios imposed on the banks.

9.5 CONCLUSIONS

The objective of the analysis in this chapter was to help draw conclusions on the benefits and costs of supervision. The previous section indicated that the analysis showed that after supervision liquidity was lower, growth was lower and capital ratios were higher. The question is, did supervision lead to stronger and safer banking systems?

Our results imply that supervision may lead to reduction in risk while sometimes it may be associated with increased risk in the system. Higher capital ratios may indicate stronger banking systems in that the banks' ability to cover unexpected losses is increased (increase in capital ratios). However, if an inappropriate ratio is used, for example, a higher capital/assets ratio (see Chapter 7) which does not take into consideration the riskiness of the banks' assets, this ratio in its turn may not be a good indicator of capital adequacy. In order to assess the adequacy of capital, other factors like the quality of loans should be analysed.

The lower liquidity in our empirical results may indicate risky banking positions. However, the measures analysed in our analysis are not adequate to evaluate adequate liquidity in a bank. Other factors like funding sources, stability of deposits should be taken into consideration.

In this regard, it is noticed that the data analysed in this study are highly aggregated and do not permit analysis of all the factors affecting bank performance and condition which would enable us to draw conclusions on the effects of supervision. However, the comparisons between countries using different capital adequacy ratios provided further light on the appropriate-ness of capital adequacy ratio systems. Using a risk-based system of capital adequacy produced superior performance while using gearing ratios may actually increase risk in the banking system. Given the paucity of data, the kind of statistical testing used in this chapter extends the more descriptive, exploratory analysis of Chapter 8. However, it would be dangerous to assert more than our results do seem to tie in with theory (see Chapter 7) and what practical experience (see Chapter 6) would suggest.

CHAPTER 10

SUPERVISION AND ZIMBABWE: POLICY IMPLICATIONS

10.1 INTRODUCTION: A RESUME

A primary aim of this study is to evaluate the impact of supervision (prudential regulation) on the efficiency of the banking system in Zimbabwe. It has been shown that this is, at an important level, equivalent to evaluating the effects of capital adequacy constraints on the performance and condition of banks. At the very least, this is an important 'quantitative expression' of the impact of supervision - one of the areas where some measurement is possible. The study analysed the economic, financial and regulatory systems in Zimbabwe with these aims in mind. An extensive analytical survey on the objectives, instruments, rationale and forms of supervisory systems was also undertaken. An interview survey was carried out in Zimbabwe to establish the supervisory authorities' and bankers' views on the rationale, objectives, methods and likely impact of the new supervisory system. The previous three chapters evaluated theoretical and empirical evidence of the impact of capital adequacy systems on the behaviour of the banking firm so as to provide an insight into the policy consequences of capital adequacy regulation in general and different kinds of capital adequacy ratio systems in particular.

Chapter 1 explained that the ultimate aim of the study was to suggest the most appropriate supervisory system or alternative possible systems for Zimbabwe. The present chapter draws some important conclusions from the previous analyses, suggesting the rationale, role, targets, instruments and policy framework which

Zimbabwe may adopt. Thus the objective here is to identify possible and useful policy alternatives, and their range of likely consequences. The first main part of this chapter will provide a 'bridge' to the policy evaluation phase of this study, which utilises a series of simulation experiments. The latter will focus on a series of 'what if ......?' questions directed at the financial(performance and condition) consequences of the supervisory policies identified from the first part of this chapter. A deterministic financial simulation model will be described and used in this particular research exercise. The simulation exercise is a complementary, though markedly different research methodology and technique to the statistical research of the previous two chapters.

In a methodological sense this chapter completes a kind of triangulating process used by the researcher, where field survey, theory and statistical analysis, and (now) simulation have been applied to the research problem. Each technique has its own strengths and weaknesses, and provides its own insights. Further statistical analysis - like using regression and dummy variable techniques - is probably not fruitful for present purposes because of the data problems explained in the previous chapter. The present chapter is aimed at running some simulation experiments that illustrate more clearly some of the important policy implications of our earlier work.

10.2 POLICY FRAMEWORK

10.2.1 Supervision and developing countries

The factors identified in Chapter 5 as justifying supervision and the concomitant need for effective capital adequacy regulation

include the problem of banking crises and failures due to increased risks in banking. Banking has become riskier as markets have become interdependent due to trends like internationalisation. Innovations in new financial instruments have brought about new and often unfamiliar risks. Deregulation or liberalisation of financial systems in both industrial and developing countries has increased competition in banking which has sometimes led to excessive risk taking.

Chapter 3 indicated how Zimbabwe's financial and banking system has developed to become the most comprehensive and sophisticated system in Africa (besides South Africa). Like most developing countries the Zimbabwean financial sector plays a major role in mobilising domestic resources and allocating them to investment needs. The financial sector in Zimbabwe acts as a channel for monetary policy and as a link with the international market. The commercial banks are the prime intermediaries and, together with the reserve bank, form the foreign exchange market. Some of the commercial banks have merchant bank subsidiaries whose main functions are to grant acceptance credit facilities to finance internal and external trade. The financial sector in Zimbabwe tries to keep pace with recent technological developments like computerisation. One attribute of the post-independence financial sector is that it is well-run and stable (as evidenced by a good record of debt repayment) with the result that trade credit and lines of credit and other forms of loan facilities are made available from the international banking sector.

As a developing nation, Zimbabwe is ready to undertake several restructuring programmes. The Banker (May 1990) has confirmed that: '... Zimbabwe is about to launch into a major beefing up of its economy and infrastructure'. A structural adjustment and liberalisation programme is due to be announced in Zimbabwe in June 1990. It is expected that the programme will be export-led and would allow the public and private sectors to re-equip, modernise and expand in order to help relieve an economy hit by import compression, state intervention and diversion of resources to non-productive spheres. The funding of the programme will include a mixed package of multilateral programme borrowing to fund foreign currency for imports, followed by inflows from export earnings and private investment backed by medium to long-term bilateral project lending and aid.

Whilst at the time of writing (May 1990) the full spectrum of the planned reforms are not yet available to the researcher, The Banker (May 1990) indicates that there will be both trade liberalisation and financial liberalisation. Some of the envisaged financial reforms include relaxation of restrictive price controls, reduction of liquidity ratios and introduction of two-tier bank rates favouring investors.

Whilst the potential benefits of these liberalisation moves may be substantial over time, it is important to consider their implications for financial stability, especially in the short term. For example, financial liberalisation in Chile in 1973 was followed by a collapse of eight financial institutions which had to be bailed out by the central bank. Some of the causes of the bank failures included bad banking practices and mismanagement. In Chile, new

entrants had no banking experience. Chilean banks raised interest rates in order to attract new deposits to cover loan losses (as non-performing assets rose). Most countries (Latin American countries, Philppines, Turkey) which have undertaken financial liberalisation during recent years have experienced exceptionally high real interest rates caused by distress borrowing. Fry (1988, P318) summed up the root cause of the problems cited above as 'lack of sound regulation'. Thus financial deregulatory reforms require associated strong supervision in order to ensure financial stability, at least in the 'transition phase'.

Recent innovations might have improved efficiency in the international financial markets by offering a wider range and more flexible instruments in order to hedge interest and exchange rate exposures. However, such innovations have brought with them new risks and created greater uncertainties. Domestic markets of countries are also increasingly affected by these international developments, and the trends are likely to continue as deregulatory moves continue and their effects spread worldwide. The internationalisation and growing interdependence of finance indicates that the wind of change is not localised in certain countries but that changes are spreading throughout the global financial services industry. In this regard, there is a need for a developing country like Zimbabwe to be cognizant of and responsive to global financial developments since these rapid changes which have increased supervisory concern in developed countries ultimately affect developing countries' economies and financial sectors. This is particularly the case of Zimbabwe, with one of the most developed banking and financial sectors in Africa.

One rationale for supervision in Zimbabwe could also arise in the event that there is a stronger need in the future to promote indigeneous financial enterprises as a government objective. The new institutions would be initially at a competitive disadvantage in being unable to trade on a parent bank's reputation. Bank failure would have an undesirable impact through a strong detrimental effect on attitudes towards indigeneous financial institutions in general. Thus close supervision of bank operations to ensure prudent financial behaviour could bolster confidence in the banking system. Public confidence in financial institutions might also promote the banking habit and help financial intermediation.

The important role of banks in providing the payments services and portfolio management has been stated. Losses arising from poor portfolio management can undermine the provision of services throughout the banking system. The primary generalised rationale for supervision arises out of asymmetric information problems that characterise banking markets. Banks are considered as 'inside lenders' because of the specialised information they have about borrowers which outsiders do not possess. In this respect banks act inter alia as 'credit filters' and managers of credit information and loan portfolios. Because of the specialised nature of the information, the public and 'the market' generally are unable to assess accurately the riskiness of a bank's portfolio. This kind of information asymmetry problem is likely to be even more acute by definition in a developing country where financial markets are still underdeveloped.

Due to the differences in information, bankers can increase their profit margins by lowering the quality of their assets (selecting risker activities). In banking, however, it is difficult to distinguish between a relatively high rate of return due to increased efficiency or due to undertaking a riskier activity. Asymmetric information is another important rationale for supervision. Supervisors can be a proxy for a perfectly informed market.

Another related rationale for supervision arises out of the externality problem. The collapse of a bank could, in the absence of any official action, lead to a loss of confidence in the system as a whole. If enough depositors seek to withdraw their funds at the same time, not even the strongest and most efficient bank may be able to meet such withdrawals. This could lead to a generalised run on many banks as depositors panic. The rationale for supervision here stems from the fear of the disruptive consequences of bank failures. The aim of supervision is to reduce the chances of bank failures.

Another rationale of supervision arises out of some of the macroeconomic policies pursued by developing countries. An example is selective credit policies (directing credit to certain priority sectors) which are endemic in most developing countries. An analysis of monetary policies in Zimbabwe (Chapter 4) indicated that banks are required to lend a certain proportion of their funds to the agricultural sector, for example. Such policies may increase fragility in the banking system by forcing banks to increase their risk exposure without compensating return. Fry (1988, P424) stated that 'directed credit programs are partly responsible for the alarming amount of non performing assets on the books of many

financial institutions in developing countries'. In this regard, the survey evidence of Chapter 6 confirms that one of the pressures leading to supervision in Zimbabwe was that banks are heavily exposed to agriculture and mining sectors which are characterised by high variance in profitability. Failure of these industries could wipe out the banking sector.

Another rationale of having a supervisory body is that it has the advantage of possessing confidential (insider) information about all the institutions. As a result the supervisory authority can recognise weaknesses which those operating the institutions may not be able to see. This is because they oversee the activities of all institutions in a wide range of areas, and should act as a kind of 'forum' or 'best practice' monitor that collects and searches for comparable experiences in other countries. In this regard supervisors can act as 'best practice' advisors of institutions on risks and how to manage them. In short, a centralised supervisory authority is in a good position to develop 'best practice' experience in important banking risk and return decision areas.

One other rationale for bank supervision arises out of the need to prevent excessive risk taking brought on by moral hazard problems. This problem arises out of the belief that either the authorities will not allow the institutions to fail or that if they fail depositors will be paid out. The problem of moral hazard is even more important in a developing country like Zimbabwe where bank loans to priority sectors are guaranteed. It was suggested by Fry (1988, p. 316) that weak supervision and government guarantees of deposits permitted some Latin American countries to assume imprudent risks. A related role of supervision, in this regard, is to ensure

that there is not an excessive reliance on the lender-of-last-resort as lender-of-first-resort.

10.2.2 Supervisory objectives and the role of capital adequacy

The generalised rationales for supervision discussed above confirm that there is a need to strengthen banking systems in developing countries as rapid structural changes (sometimes the result of international pressures) take place and the economic policy makers strive for accelerated economic development. Inadequacy of bank supervision has been cited as the major reason for recent banking problems and failures in developing countries. As Fry (1988, p. 322) has observed: 'although government intervention in financial sectors of developing countries appears to have increased during the postwar period, bank prudential supervision has typically remained inadequate'.

In this regard, supervisory objectives should focus on combating those problems (discussed in the previous section) which threaten the stability of the financial system. The need for stronger banking systems increases the need for adequate bank capital. In Chapter 7 it was suggested that capital adequacy is the main supervisory tool used to assess bank soundness worldwide because of the important, 'risk management role' of capital in a bank. The survey evidence (Chapter 6) confirmed that Zimbabwe's main instrument of supervision is the analysis of capital adequacy in banks. An analysis of sample developing countries' systems (Chapter 8) also showed that capital adequacy was perceived to be the main indicator of bank soundness.

The primary role of capital as a kind of internal insurance fund arises because of uncertainties facing the outcomes of bank decisions. The return on investments is usually affected by unforseeable changes in the economy. Adequate capital helps to reduce the probability of failures because of its ability to cover unexpected losses. Gardener (1990) states that, 'in many respects a bank's capital adequacy is a kind of 'final line of defence' against severe and unanticipated pressures; it stands behind a bank's reserves (or provisions) and earnings'. Adequate capital is thus important to ensure the maintenance of confidence in banks. In this regard, the role of capital adequacy is to help protect depositors and other creditors.

We have suggested that in the case where the authorities wish to carry out any financial reforms, an adequately capitalised banking system would be able to meet better any unforseeable losses arising. The evidence of the past two decades in developed and developing countries is that the immediate result of a marked deregulation is that some financial institutions may 'overshoot' or over-adjust their portfolios in the new environment (see Llewellyn, 1986). It is especially during this 'adjustment phase' that the propensity for under-pricing risk and excessive risk-taking by banks is apparently most evident; the BIS recently warned about these problems in the so-called 'Cross Report' (BIS, 1986). We have already noted Fry's empirical evidence in this connexion for developing country experiences. The important role of capital adequacy is recognised by the fact that, as a result of the banking crises and failures in the past two decades, both developed and

developing countries now emphasise adequacy of bank capital to help ensure bank stability.

10.2.3 Impact of capital adequacy requirements

The need for a strong banking system has been confirmed, and it was suggested that (supervisory) capital adequacy had a major role to play in a supervisory system. Our next question is, what should be done to ensure adequate supervision: that is , what should be the targets, instruments and techniques, and how should they be implemented in Zimbabwe? In order to consider the most suitable system of supervision, the results of the survey (Chapter 6), the theoretical (Chapter 7) and empirical (Chapters 8 and 9) study of the effects of capital adequacy constraints will analysed.

The views of the Zimbabwean bankers (Chapter 6) were that capital adequacy constraints should enable risk taking to be related to capital resources, and that inadequate supervision might allow banks to overextend themselves as has happened in other developing countries and some developed countries. Capital adequacy supervision would ensure control of risks in lending and banks would be encouraged to spread their portfolios. Another effect would be to ensure prudence in banking operations. The bankers surveyed also indicated, however, that the imposition of capital adequacy ratios might cause banks to concentrate on off balance sheet business. Capital adequacy might also lead to reduction in dividends due to the need to retain more profit in order to meet the capital requirements. Capital adequacy rules might also weaken competition in that banks are constrained according to their capital strength.

In this case, banks with lower capital would be unable to attract more business as compared to highly capitalised banks.

The bankers in Zimbabwe contend that the imposition of capital adequacy constraints would force banks to restructure their balance sheets. In this regard bankers felt that banks might become more aggressive in their operations and seek new avenues in order to increase their profits. This might also cause banks to revise their marketing strategies and become more selective in their strategies. The overall observation is that capital adequacy constraints are likely to change bankers attitudes towards risk taking; bankers may become more prudent and more efficient. Their resultant actions might also increase risk potential if in their endeavour to become more profitable, the new avenues sought to increase profits are too risky and if banks concentrate on off balance sheet activities which (in Zimbabwe) do not require capital cover at the moment. Thus supervisors have a role in ensuring that the resultant effects of imposing capital adequacy constraints are closely monitored to avoid any (unplanned) increases in risk exposure. Increased capital adequacy requirements without effective supervision may be risk-producing, an apparent paradox. This is a danger about which a developing country like Zimbabwe must be especially aware, as we have emphasised. All of our preceding research has confirmed this important policy requirement for Zimbabwean supervisors.

The theoretical results of Chapter 7 indicated that supervision affects the risk-return trade-offs of banks by inducing banks to restructure their portfolios. For bank supervisors, bank soundness is generally achieved when banks shift their portfolios from a risky to a less risky position. In this way the probability of failures is

reduced (the ultimate rationale for imposing the constraints). In this case, ceteris paribus an increase in the variance of banking return increases the probability of failure while an increase in banking returns ceteris paribus decreases failure risk.

The theoretical results of Chapter 7 suggests that increases in capital adequacy requirements can produce varied results. An increase in capital requirements can increase the costs of deposits because of the need by banks to maintain the volume of loans. Banks can also adjust their loan composition in order to offset the impact of the increase in deposit cost. The constraints on bank activity, by affecting portfolio allocation, affect bankers' attitudes towards risk: sometimes this might imply moral hazard problems.

The theoretical results of Chapter 7 also indicate that an increase in some kinds of capital adequacy ratios may result in lower expected return due to the bias against high risk, high return assets. According to finance theory, a high return can only be achieved by taking on more risk. This is acceptable so long as banks operate on the market-determined (and/or supervisory-agreed) risk-return trade-off function. Our results also indicated, however, that it is quite possible that bankers might select portfolios with higher risk without the corresponding higher matching return.

Thus supervisory capital-adequacy regulation can result in either reduction in risk or increase in risk. The theoretical study by Lackman (1986) showed that different capital adequacy ratios had different effects on banking risk and return. Other students have confirmed these general results (see Chapter 7). In particular Lackman showed that imposing higher gearing ratios may increase risk in the banking system by shifting portfolios to higher risk assets.

Although the variance of return on capital decreases, the expected return also decreases thereby increasing the probability of failure.

The theoretical results indicate that imposing the capital/ risky assets ratio and the risk assets ratio (RAR) reduce risk in the system by shifting bank portfolios towards less risky assets. The variance of return on capital is also reduced. These results indicate that in order to improve performance and condition of banks, appropriate capital adequacy ratios should be used. An inappropriate ratio would induce banks to take on excessive risks or adopt inefficient portfolios. Capital adequacy ratios affect the structure (portfolio composition) of banking firms in that the resulting portfolio allocation is different from that obtained before the imposition of the capital requirement.

In order to test these important theoretical results, data for Zimbabwean banks and sample countries were used to evaluate the effects of capital adequacy ratios on developing countries' banks performance and condition (Chapters 8 and 9). For the group of supervisory developing countries analysed in Chapter 8, profitability declined after supervision although the change was not significant (see Chapter 9). This result indicates that supervision may not have had a direct effect on banking profitability. Lower growth was also observed after supervision. In terms of overall improvement in bank performance, this might imply reduced performance in so far as growth might indicate a potential to earn more profit. Lower growth, however, might also indicate a safer position in relation to capital resources.

After the implementation of supervision, higher capital/assets ratios were observed for the supervisory developing countries. For supervisors higher capital ratios indicate ceteris paribus reduction of risk exposure since higher capital gives banks the ability to meet unexpected losses. However, supervisors should not be content with higher capital ratios if excessive risk positions are simultaneously adopted by banks. This means that supervisors should also be concerned with the composition of assets in relation to capital. This confirms our earlier recommendation in this section that capital ratios by themselves are not enough to assess bank safety.

Higher loans/deposits and higher loans/assets ratios were observed after the implementation of supervision. Higher loans/deposits ratios indicate lower liquidity in banks and this may create funding risk. Higher loans/assets ratios (as observed) indicate lower asset liquidity and increased credit risk potential. However, higher loans in relation to total assets may not necessarily imply high credit risk if the loans are made to first class borrowers. This implies that information on the type of borrowers should also be analysed. Also, high loans/deposit ratios do not necessarily imply greater funding risk if there are other sources of funds and if the deposit base is stable. Once again these results and further considerations are a warning on the need to interpret and use any kind of ratio system of prudential supervision with great care.

These results are, therefore, not conclusive in as far as the reduction of risk after supervision is concerned. The empirical evidence, however, suggest strongly that capital adequacy

supervision does affect the performance and condition of banks, thereby helping to substantiate the theoretical findings of Lackman and others. Thus, supervision influences the portfolio decisions of banks: in some cases this might imply an increase in risk aversion.

The empirical evidence on comparisons made between countries using different capital adequacy ratios indicated differences in bank performance and condition. This result implies that trends in the performance and condition of banks in developing countries are influenced strongly by the type of capital adequacy system employed. The next question is: what does all this evidence imply in terms of supervisory policies for Zimbabwe? To put this in another way, what does the study indicate about objectives, targets, instruments and supervisory framework for Zimbabwe.

10.2.4 Policy findings for Zimbabwe

10.2.4.1 Objectives and policy framework

From the foregoing analysis, supervisory objectives in Zimbabwe should focus on the prevention of the many causes of the banking problems which have been causal factors of crises and banking failures in both developed and developing countries and the potential problems which might arise as a result of supervisory actions themselves. One of the roles that Zimbabwean supervision sets out to achieve is overcoming asymmetric information problems. The survey results indicated that supervision was implemented so as 'to learn how banks operated' in order to improve on future policy formulations. In this regard, a supervisory objective is to monitor closely the operations of banks, improving the availability and quality of supervisory information and establishing reporting

systems which take into account the growing complexities of financial transactions as the financial system develops. The feedback from banks provide a regular flow of information which is more up-to-date and more extensive than any published data. Without thorough supervision, it has been shown that weak and inadequate supervision will leave undetected problem banks.

One of the findings from the study is that banking crises arise out of the externality problem: that is, problems in one bank affecting other banks, or large withdrawals of funds by one depositor causing others to doubt the safety of their funds. The objectives of the supervisors is to reduce or eliminate the causes of this kind of problem, and thus there is need to understand the causes of bank runs so as to reduce their probability. Such causes could arise from underpricing of risk by operators or overtrading. These might be the consequences of macro instability due to swings in investment expenditures, technological changes and wars. Greater risk taking in banks can also arise out of moral hazard problems, deregulation (liberalisation) or even from inappropriate regulations. We have already made these points strongly in the preceding sections, and they are especially relevant to a developing country like Zimbabwe.

Another finding from the study is that the burden of regulations could force banks to concentrate on activities which would avoid the burdens of these regulations. The survey results indicated that one of the likely effects of regulations was the increase of off balance sheet finance. Off balance sheet activities allow banks to earn fee income for taking risk while avoiding the need to increase capital so long as off-balance sheet business is

not included in capital ratios. This allows banks to raise their measured capital ratio whilst maintaining their return on equity, but it may increase the riskiness of the banks. The objective of supervision should be to ensure that off balance sheet activities are subject to the same close scrutiny of potential risks as on balance sheet activities.

Another related banking problem arising out of the burden of regulations is the question of competitive equality. The survey results indicated that although other financial institutions like building societies and finance houses are adequately controlled by their respective acts, there are other deposit-taking institutions which had escaped the supervisory net. There is need for supervisory policy to be directed towards a more comprehensive coverage of all institutions performing a banking business or carrying on activities that could be assimilated to banking functions.

The results of the survey in Chapter 6 also indicated one of the ultimate goals of supervision as 'it is in the state's interest to promote sound management in banks'. In this regard, supervision could seek to encourage a greater role of the market in preserving financial discipline within banks. The philosophy of supervision in this regard is to recognise that the prime responsibility for running a bank in a safe and sound manner lies with its management. Thus the management of banks must posses adequate capacity to detect any ensuing problems and initiate corrective action. The objective of supervision is to ensure that adequate systems to detect problems are in place and to promote such practices and offer suggestions and requirements for corrective action.

10.2.4.2 Monitoring and qualitative aspects

The theoretical and empirical evidence of this study indicated that the performance and condition of banks can be improved from a supervisory (risk/return) perspective by appropriate regulations. In this regard the supervisory authorities should monitor the performance and condition of banks to ensure that the probability of failure is kept low and acceptable.

The study also confirmed (Chapter 9) that the present capital and liquidity ratios, used by themselves, cannot capture the overall quality of a bank's operations. In this regard both quantitative and qualitative aspects of banking must be assessed. Thus supervisors should assess loans and other assets to ensure that their quality is not deteriorating, and that the portfolio is prudently managed. The supervisor should also review other aspects of the bank's financial operations to ensure the adequacy of earnings, asset and liability management strategies, and any other operations that might affect the safety and soundness of the institutions.

One of the factors contributing to banking problems has been concentration of credit to one sector or related firms. This calls for diversification of portfolio risks. Diversification in this regard calls for limitations on the proportion of total loans going to single firms, either individually or as a part of a group. Limitations on the types of business to which banks could lend would also reduce bank's risk exposure. Another aspect of diversification is to monitor the banks' lending to commercial enterprises in which they have an equity interest. In this regard, the role of the supervisor is to ensure that sectoral classifications for monitoring

lending policies are appropriate and that there are adequate accounting and control mechanisms in the institutions.

Risk concentration should not only be considered in terms of credit risk but also funding risk: that is concentration on certain sources of funding (e.g. short term money market sources of funds). In this regard definition of risk concentration should be broad to encompass all forms of risk exposure: supervisors should also ensure that management have a responsibility for spreading exposures across economic sectors compatible with their financial strength. Supervisors should have criteria for assessing the extent and quality of management control in this area.

It has been indicated that during the past decade one of the structural changes that occurred in Zimbabwe (see Chapter 6) was the broadening of the range of bank activities. In terms of prudential policy the question is: What limits could be set on the broadening of bank activities? There is need to ensure that all banking activities, existing and developing, are adequately covered under the supervisory framework since from the view point of supervision, new or additional elements of risk arise continually from the broadening of bank activities.

On the other hand, broadening the scope of bank activities could be taken as diversifying risk. New innovations, for example off balance sheet activities, might increase the earnings potential of banks. But some of these activities may be designed to circumvent bank regulations (as stated ealier), and thus supervisors should concern themselves with activities which carry high credit risk exposure.

The banking problems encountered by developing countries who experienced bank failures (e.g. Latin American countries) indicate that a more effective supervisory system which would detect poor management and unsound practices is an important policy need. The main problems included bad loans which were rolled over and distress borrowing which created a false demand for credit. In general these developing countries experienced excessively high real interest rates signaling unsound lending practices in which firms borrowed more funds to meet their interest payments. In this regard, there is need for more appropriate loan policies. Prudence and integrity in a bank's management are of crucial importance.

One of the main methods of regulation which could contribute to effective monitoring of bank's activities is on site bank examinations. The supervisory authorities in Zimbabwe (Chapter 6) indicated that one of the major instruments of their supervisory system will in future focus on bank examinations. In terms of loan management, the examiner should focus on the bank's credit policy, credit processing and review systems to ensure effective management. The examiner should also assess the projects financed, and that banks observe the required lending limits. In this regard, the skills and competence of bank management are necessary for effective bank management. Supervisory authorities might have to determine the professional qualification of senior management. This implies that supervisory authorities would have to be skilled and experienced themselves to be able to asses management capabilities.

Besides analysing the quality of bank assets, bank inspections should ensure adequacy of internal control, rigorous accounting, auditing and reporting standards by the institutions. The

examination process should also focus on revealing fraud. Bank examination should also be directed towards verifying reported information. In order to check effectively for risks in the institutions, there is need for adequate staff when reliance on on-site examinations is considered.

10.2.4.3 Capital adequacy: targets and instruments

It has been established that capital adequacy is the major quantitative constraint in supervision in both developed and developing countries. It has also been suggested that, with the rapidly changing financial structure and increase in potential risks and uncertainty, emphasis should be directed towards strenghthening capital ratios as a means of instilling discipline in bank management in terms of risk assessment, management and control. The empirical evidence has confirmed that capital adequacy ratios affect bankers attitudes towards risk and thus can improve the performance and condition of banks if appropriate capital adequacy systems are used.

While banks, like other business organisations, need capital as a base for their on-going operations and for financing fixed assets, their direct financing needs are less (as a balance sheet proportion) than for industrial firms due to banking's role in intermediating third party funds. However, banks are subject to reserve requirements, liquidity constraints, credit limits and other regulations. In view of this, a bank with higher capital adequacy may be in a better position to attract business. A high capital ratio is also evidence ceteris paribus of good earnings and management.

In a supervisory sense, it has been established that bank capital acts as a buffer against unanticipated losses. In this context capital is related to future bank planning. Thus managements' planned future activities should consider the adequacy of capital resources to cover any contingencies arising. Bank's planned activities should consider the related implications for potential earnings and any calls for capital.

In so far as adequate capital can ensure that unanticipated losses will be met and thus reduce the probability of failure, capital is the principal yardstick with which the market can assess the solidity and safety of institutions. Thus the market can use capital adequacy to assess the banks' capacity to withstand any adverse changes in the economy and institutions and managements ability to control risks. The survey results (Chapter 6) indicated that the use of capital adequacy ratios is to compare different banks' performance. Thus in as far as capital adequacy is an indicator of bank strength, capital becomes a reference basis for classifying different institutions.

With regard to bank safety, the major purpose of capital is to instill discipline in bank management. In this regard, bank supervisors have powers to set capital requirements in relation to either total business operations or in relation to the composition of bank portfolios. Capital thus constrains bank operations in line with prudence. Appropriate capital adequacy rules can thus improve efficiency of banks in as far as it can determine managements' assets and liability policies. Empirical evidence (Chapter 9) indicated that appropriate capital adequacy systems, that is risk

based capital requirements, can improve bank performance and condition.

Chapter 9 indicated that implementing gearing ratios increased risk in the banking system by forcing banks to adopt a riskier portfolio composition. In Zimbabwe the supervisory authorities required all banks to observe a 5 per cent capital/public liabilities ratio. The limitations of the gearing ratio (Chapter 7) and the empirical evidence (Chapter 8 and 9) suggest that the adoption of a risk-based capital adequacy system would improve the efficiency of the banking system. In this regard, requiring the level of capital to be commensurate with a bank's risk is a more direct way to encourage 'rational' risk-taking. The survey evidence (Chapter 6) indicated that the Zimbabwean authorities also considered that a risk-based capital system was a more meaningful way of assessing bank strength.

It was shown (empirical evidence, Chapter 9) that the composition of the asset portfolio should be assessed in relation to capital. The risk assets ratio, by assessing the riskiness in different classes of assets, is the preferred capital adequacy system. A gearing ratio, on the other hand, assumes that all assets are equal. Gearing ratios cannot permit a differentiation of one bank from another because of the differences in risk exposures between banks. In this regard, it is not appropriate to set the same ratio for all banks. Thus, capital adequacy should be determined on a bank-by-bank basis. The implication is that banks with higher risk should hold additional capital compared to others.

The survey evidence (Chapter 6) indicated that one of the likely effects of the present supervisory system in Zimbabwe is that banks may concentrate on off balance sheet activities. In this regard, adopting a risk-based capital adequacy system which has a capacity to incorporate off balance sheet risk will be a more appropriate method. However, besides considering risk factors, capital adequacy should be related to the increasing business volumes of the bank. In view of the increasing range of banking activities, capital adequacy must be able to extend its scope in terms of coverage. Also, in terms of new risks arising, policies should adapt to the new measurement techniques.

Because the increase in capital ratios may induce some bankers who are less risk averse to adopt risker assets, supervisory authorities should consider bankers' attitudes towards risk when imposing capital adequacy ratios. In so far as risk-based capital ratio requirements force banks to select their strategies wisely, this would encourage banks to analyse carefully costs and pricing services (the higher the risk, the greater the rate charged).

10.3 SIMULATION AND EXPERIMENTAL METHODOLOGY

10.3.1 General objectives

In Section 10.2 above, the main conclusions of the study were analysed and the main findings and policy proposals suggested. The aim of the following simulations is to evaluate various policy proposals that have emerged in relation to capital adequacy in order to confirm their feasibility in Zimbabwe. This will be done by running several simulation experiments using Zimbabwean banking data.

One of the major findings was that appropriate capital adequacy systems should help to ensure the financial health of banks. Thus the main aim is to test experimentally the effects of different capital ratios on banking performance and condition in Zimbabwe. The results may help to substantiate further the finding that risk-based capital ratios help to reduce risk in the system. A simulation experiment will be conducted where two different types of bank (a more risk averse and a risk seeking bank) will be tested under different scenarios, and different types of performance and other condition ratios monitored.

It was also suggested that capital resources should be related to the volume of the bank's operations in addition to relating capital resources to the composition of the portfolio. In this regard it was suggested that the banks' future plans should take into consideration the adequacy of capital resources. A series of general experiments will be run where different types of capital ratios and other performance and condition measures will be observed as the bank's operating environment is altered.

These simulations will help us to determine whether the present supervisory capital-adequacy ratios employed in Zimbabwe are adequate to meet any changes in the banking system and environment. The major aim is to determine whether the type of capital ratio currently imposed on the Zimbabwean banking system is appropriate. Is it capable of monitoring increased risk levels? The latter is one of the fundamental questions addressed in these simulation exercises.

10.3.2 The simulation model

The SOFI (Simulation of Financial Institutions) computer simulation model was used by the researcher. The SOFI model was developed by the Institute of European Finance at Bangor, and it is a general purpose computer model which can be used to explore the progress of a financial institution through any number of sets of economic conditions or management strategies.

SOFI has six main distinguishing features. One is that it is a descriptive model. With a given starting position, the model can describe the behaviour of a financial institution under different scenarios, comprising different environmental conditions or management strategies. The model has no built-in strategies; the experimenter makes decisions (strategies) using variables under his/her control guided by the way the model is reacting to the decisions and assumptions specified.

Another feature of SOFI is that it is deterministic. In this regard the simulation can be re-run using different assumptions to determine how the financial institution will perform under a set of different assumptions. It is possible with SOFI to produce assumptions which differ by only a few variables without having to respecify a whole new dataset each time.

Another feature of SOFI is that it is an interactive model. With this feature a user and the computer are in constant touch with the model as an interface. The user can input data and can control the simulations over the entire simulation period. At any decision period the user can request different kinds of reports which are produced instantaneously.

SOFI can also be described as a top-down model as it deals with the simulated process in aggregate form and thus looks at the overall operation of a financial institution. SOFI is also an absolute model as opposed to an empirical model. As Galitz (1979 p5) has explained, 'absolute models are built from strict theoretical relationships based on well accepted principles. Empirical models, by contrast, are behavioural in the sense that relationships embodied in the construction of the model are not indisputable laws but are observed or are intuitive'.

The SOFI model is an easy computer program to use. One of the main features contributing to this is the interface which enables the user to interact with the computer programs. Organisation of files are built into the program so that the user need not address the computer directly. In this regard the user need not know anything about command structures and operating systems. Commands are easy to use because SOFI explains each command as it is prompted and indicates the type of response required.

SOFI is modular in structure. This means that the user performs one task at a time, such as entry of data or a simulation. Each task is represented by a set of programs called 'modes'. SOFI has nine different modes which can be subdivided into: data accepting modes, simulation modes, data presentation modes and utility modes. The three data accepting modes are: IMODE (initialisation mode), AMODE (assumptions mode), and DMODE (decisions mode). IMODE contains the starting balance sheet and portfolio composition of a financial institution. IMODE also specifies the time structure of the simulation by describing the type of institution, period structure, balance sheet categories and ratios. The starting position

information is stored in a BAL (balance sheet) file. The IMODE can be used to create, copy, modify and list any part of the file.

Another of the data accepting modes is the AMODE, containing the constant and variable assumptions, and these characterise the scenario through which the financial institution is simulated. Variable assumptions (these change during a simulation) are stored in VAR files and the constant assumptions are stored in CON files. Like IMODE, AMODE can be used to create, copy, modify or list any part of the files. All the data accepting modes enable the user to prepare a sequence of complete files without having to enter the common data more than once.

The third of the data-accepting modes is DMODE and this holds the decision made by the user. Usually decisions are made during a simulation and stored in a DEC (decisions) file by the computer. DMODE can then be used to edit the DEC files created during a simulation.

The simulation mode SMODE (Figure 10.1) can be described as the heart of the SOFI model, where the BAL file, CON and VAR files and (optionally) the DEC files containing prespecified decisions are brought together, checked for compatibility and then simulated.

A decision period is the time spanned by 'decision points' in a simulation. Decision periods characterise the time structure of the simulation, and these decision periods may be of any length; they may also be of unequal time length within a single simulation run. A decision point is where the model collects and updates all the financial information for the preceding decision period(s). All balance sheet and related data are updated (by the constant and

Figure 10.1 SMODE

Source: SOFI, January 1979, page 4-2

variable assumptions) to reflect the progress to date within the simulation of the financial institution.

At each decision period the user can control the simulation and when the simulation horizon is reached a summary of the performance over the entire simulation can be obtained. At the end of the simulation, the user obtains end of simulation balance sheet and portfolio array, decisions, and generalised simulation results (balance sheet and profit and loss accounts). The main structure of SOFI, the IMODE, AMODE, DMODE and SMODE are shown in Figure 10.2.

The data presentation modes comprise QMODE (queries mode), LMODE (listing mode) and GMODE (graphics mode). The data presentation modes enable the user to obtain information contained in data files. QMODE enables the user to query any part of any file; it also has a deletion mechanism enabling any unwanted files to be deleted. The other data-presentation mode, LMODE, directs listing to a line printer and thus a user can obtain a fast listing of the entire data files. GMODE is the graphics mode which produces two or three dimensional pictures from the information contained in data files (BAL, CON, VAR, SIM or DEC files).

SOFI has four utility modes namely: UMODE (update mode), FMODE (faults mode), TMODE (transfer mode) and the SOFIX mode. UMODE contains an update of new features of SOFI. FMODE contains user's complaints and comments for the attention of the SOFI system administrators. The TMODE enables a user to transfer data files to/from the central SOFI library. The SOFIX mode can detect any faults developing on the computer system and repair any damage caused. SOFIX mode is able to 'repair' small faults that might materialise in the SOFI programme.

Figure 10.2 The main structure of SOFI

Source: SOFI, January 1979, page 1-12

10.3.3 The experimental method

Simulations are experiments conducted using a mathematical model resembling the situation being tested. Simulation techniques are beneficial especially where many variables are unknown and where there is need to use many variables. Also where the analysis involves complex interactions, a simulation technique is valuable since it allows disaggregation and analysis to be done in a more structured way.

The simulation model represents the environment being tested (in our case, the Zimbabwean banking system). Experiments are then simulated through the model where actual or synthetic data may be used. Sample or whole universe of data may be used. The simulation technique is useful because it is not always practical to conduct real world experiments. It may be too expensive or time consuming to analyse the whole universe of data. In our case requiring a real bank to undergo any kind of accelerated growth or assume a risky position to testing its balance sheet portfolio is too risky and generally impractical.

Where synthetic data are used, the data should have the broad characteristics of real data. In this research aggregate Zimbabwean commercial banking data are used where available and assumptions made where real data are not available. In other words, aggregate commercial banking data will be used in the simulation experiments rather than requesting an actual Zimbabwean bank to undergo the experiment. This is so because certain variables will be increased and certain assumptions made and this could be too risky for a real bank to attempt. The simulation technique allows controlled

experiments to be carried out without involving any corresponding 'real world costs'.

Simulation techniques can also be useful for analysing decision-making under uncertainty. Facts and assumptions can be explored by running different experiments under different scenarios.

One important factor to be considered when designing experiments is the experimental value of the research. In a simulation experiment the researcher alters the variables and values and examines the consequences of this manipulation process. The researcher asks what if ....? questions. Thus, when designing experiments a factor to be considered is validity.

Different types of validity are considered in this respect namely: internal validity, external validity, statistical conclusion validity and construct validity. Internal validity can be achieved if resulting changes are due to the experimental treatment. External validity is achieved when the results of the experiment can be generalised as representing population parameters. Where a simulation technique is performed rather than analysis of real world data, internal validity can be achieved if realistic assumptions are used. In the case where a representative bank is simulated through hypothesised scenarios, external validity can never be completely achieved because the representative bank can only be a proxy of a real bank and the scenarios chosen may only be temporary phenomenon. However, a synthetic bank can be constructed for simulation purposes to depict broadly real world banks. Actual data can be used in this modelling process.

The experimental design considerations analysed above should help us when designing the simulation experiments to be performed in Section 10.3.5. The researcher should be satisfied that the data represents real world data. In our case, the synthetic bank and its simulated reactions to the hypothesised scenarios should satisfy these requirements.

A related and important question in experimental design is the question of the scientific nature of the investigation. The kind of simulations to be performed (exploratory in nature), where the aim is only to answer the question 'what if.....?', can be considered as a very restricted kind of experiment. However, the measurements and results do relate to a specific question. The simulation technique will be able to show the effects of bank capital adequacy requirements on bank condition and performance and thus has a bearing on real world situations. A major advantage of the SOFI simulation model is that it is possible to hold as many variables as possible constant so that the researcher can be able to analyse more clearly specific variables of interest. In this regard when designing the experiments, there is need to keep as many variables constant when running the experiments.

10.3.4 The test bank, starting position, initial simulation

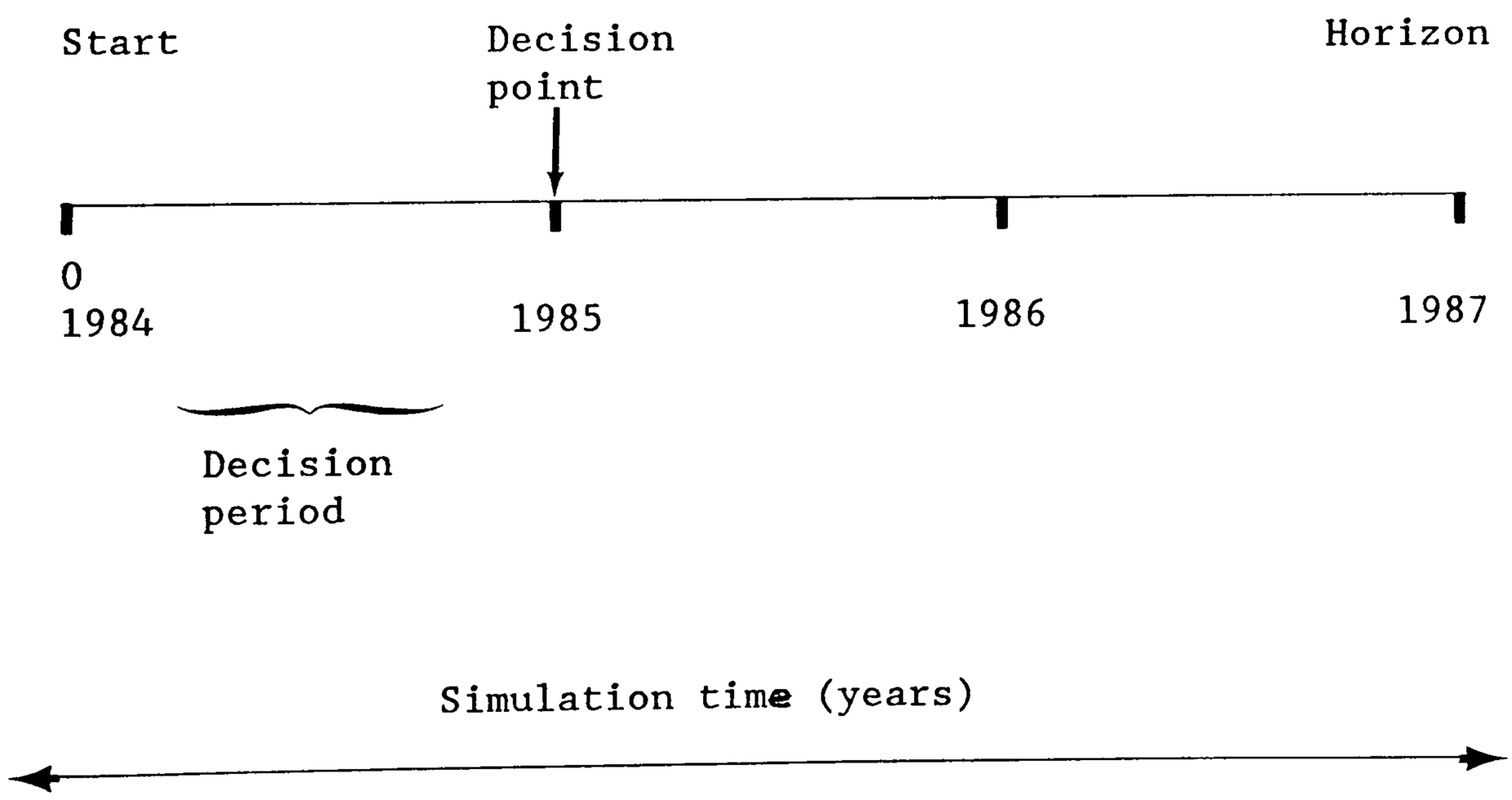
10.3.4 Test bank and starting position

In order to conduct the experiments as outlined above, a hypothetical Zimbabwean bank was created, a kind of 'synthetic bank'. The synthetic bank created was a close synthesis of the Zimbabwean commercial banking system at 1984. This was achieved by utilising aggregate commercial bank data for Zimbabwe wherever

possible. In this regard, published statistical reviews, individual bank annual reports, internal documents from the bank supervision department, economics department and the finance section of the central statistical office in Zimbabwe were used to create the synthetic bank. Since real commercial banking data was used, the synthetic bank represents a close analogue of the commercial banking system in Zimbabwe between 1984 and 1987. The Zimbabwean commercial banking functions were outlined in Chapter 3. Chapter 4 indicated the statutory liquidity and cash requirements which banks have to meet.

The time structure of the simulations is composed of three decision periods, each of one year duration (see Figure 10.3).

Figure 10.3 Period structure of the simulation



The starting position as represented by the assets and liabilities of combined commercial banks is shown in Table 10.1. Table 10.1 indicates the balance sheet whose structure has been made to conform with that of SOFI (see Appendix Table 10.1).

Table 10.1 Starting position of the simulation

Liabilities ($ million)		Assets ($ million)	
	1984		
Share capital	63.0	Cash[1]	157.4
Reserves	57.7	Call	114.1
Demand deposits (individual)	175.5	Treasury bills	23.9
Demand deposits (corporate)	418.8	Other bills	109.9
Savings deposits	351.7	Gvt. securities	195.1
Time deposits	418.1	Loans (public sector)	388.5
CDs	96.6	Loans (individuals)	54.4
Dividends	8.3	Loans (corporate)	405.3
Taxation[5]	0	Trade Investments[2]	216.9
Other liabilities	140.0	Fixed assets	40.4
		CDs[3]	0
		Other assets	52.7
Total[4]	1792.7		1792.7

Sources: Quarterly Economic and Statistical Review (Sept. 1988) Harare
Quarterly Digest of Statistics C.S.O. (June 1988) Harare

Notes:
1. The cash figure includes notes and coins and balance with the Reserve Bank
2. Trade investments include trade bills and agricultural marketing authorities bills
3. The figure for CDs will be supplied during the simulation
4. Total assets and liabilities are actual balance sheet totals for 1984
5. Taxation will be computed by the model

10.3.4.2 The assumptions

The operating period of the simulation experiments, 1984-1987, reflects the period during which supervision was implemented in Zimbabwe. The assumptions (operating environment) of the synthetic bank are indicated by the structure of interest rates, taxation rates, and assets and liabilities of the banks over the period 1984-1987. The assumptions or scenario are shown in Table 10.2.

The interest rates on certificates of deposit published relate to the minimum and maximum rates available among different institutions. The issue rates by different institutions vary and thus the average of maximum and minimum was used in the simulations. The rates on trade investments (bills) are not published and thus the rate applied in the simulation is that for agricultural marketing authority bills. The interest rates among different instruments in Zimbabwe do not vary widely since they all follow the bank rate closely (see Chapter 4). Only the minimum overdraft rate is published and since rates do not vary greatly, this rate is used for other types of loans.

10.3.4.3 The initial simulation

The initial simulation for the 3 decision periods forms the basis upon which the various experiments will be performed. The initial simulation is modelled as a replication of the Zimbabwean banking balance sheet position and operating environment for the period 1984-1987. This simulation of our 'synthetic bank' will form the 'test bed' for our later experiments. Thus the opening balance sheet (1984) shown in Table 10.1 is simulated under the operating environment (assumptions) shown in Table 10.2.

Table 10.2 Operating environment (the assumptions)

Variable assumptions Interest rates		1985	1986	1987
Treasury bills				
Maturity	1 month	8.40	8.42	8.26
	3 months	8.60	8.62	8.46
Government securities				
Maturity	1 year	8.87	8.87	8.87
	3 years	9.07	9.07	9.07
	10 years	12.80	12.80	12.80
	25 years	13.00	13.00	13.00
Certificate of deposit				
Maturities	6 months	12.25	9.75	10.00
	1 year	10.35	10.75	10.00
	3 years	11.25	12.25	11.25
	5 years	9.94	12.45	11.45
Other interest rates				
Money at call		8.25	8.00	7.75
Loans (overdraft rate)		13.00	13.00	13.00
Trade investments (bills)		9.25	9.25	9.25
Time deposits (fixed)		9.75	9.75	9.76
Time deposits (variable)		7.00	7.00	7.00
Loan levels				
Loans to individuals		48.6	61.1	88.0
Loans to corporate sector		508.6	473.7	662.4
Loans to public sector		410.4	620.0	458.5
Deposit levels				
Depsoits from individuals		227.2	222.4	297.0
Deposits from corporate sector		444.1	520.6	547.4
Time deposits (variable rate)		382.6	420.6	432.0
Time deposits (fixed rate)		600.1	591.2	911.7
Other balance sheet levels				
Trade investments (bills)		268.9	304.2	397.7
Fixed assets		42.4	48.7	57.1
Dividends		13.5	15.2	8.6
Other assets		156.7	178.9	189.4
Other liabilities		144.0	165.2	182.8
Income/Expense level				
Miscellaneous expenses		81.7	85.0	87.3
Miscellaneous income		14.7	16.6	33.1
Constant assumptions				
Taxation rates				
Corporation tax		51.75		
Capital		51.75		
Turnover rates				
Time deposits		91.9		

Sources: Reserve Bank of Zimbabwe, Quarterly Economic and Statistical Review (various issues); Statistical Yearbook 1979 (CSO Harare); Annual Report and Accounts (various issues); Quarterly Digest of Statistics June 1988, CSO Harare.

At each of the three decision periods, relevant decisions are made to ensure that the resultant simulated balance sheet series approximately resembles the Zimbabwean banking position for this review period. Table 10.3 shows the simulated balance sheet series produced by the simulation through the decision processes outlined.

Table 10.3 Simulated balance sheets of 'testbed' simulation

	1984	1985	1986	1987
Liabilities				
Shared capital	63	71	71	71
Reserves	58	60	68	92
Taxation	0	17	42	77
Dividends	8	22	37	46
Demand deposits (individuals)	176	227	222	297
Demand deposits (corporate)	419	444	521	547
Savings deposits	352	383	421	432
Fixed deposits	481	600	591	912
CDs	97	131	176	57
Other liabilities	140	144	165	183
TOTAL	1793	2098	2314	2713
Assets				
Cash	147	196	205	226
Call	114	87	70	107
Treasury bills	23	6	6	41
Other bills	105	119	80	156
CDs	49	27	37	75
Government securities	195	227	230	255
Loans (individuals)	54	49	61	88
Loans (corporate)	405	509	474	662
Loans (public sector)	389	410	620	459
Other assets	53	157	179	189
Trade bills	217	269	304	398
Fixed assets	40	42	49	57
TOTAL	1793	2098	2314	2713

It was indicated earlier that the banks are required to maintain a liquidity ratio of 40 per cent. Thus at each decision period, the researcher ensured that this level of liquidity was maintained. It was shown in Chapter 4 that banks in Zimbabwe have always held excess liquidity and thus the simulated liquidity ratios were in line with the actual liquidity ratios maintained during the review period.

The maturity distribution of the portfolio structure is shown in Appendix 10.2. The maturity profile of government securities resulted from the researcher's analysis of the maturity structure for the years 1982-1985, which confirmed that most government securities held by Zimbabwean commercial banks are six years or less to maturity. The maturity structure of the portfolio items remains the same throughout the simulation period as is the case in Zimbabwe. Most treasury bills are of three months duration and other bills are issued every six months. In the simulations it is assumed that the initial par value of the portfolio categories when initialised in the dataset is the same as the book values.

In order to maintain the required liquidity levels, at each decision period, excess cash was invested in treasury bills, government securities and certificates of deposit. In other cases there was a transfer of funds between cash and money at call to maintain the cash ratio. Each time the aim was to ensure that the resultant position reflected the Zimbabwean position during this period.

The aim of this study has already been defined as the evaluation of performance and condition of banks after the implementation of supervision. Performance and condition were

defined in Chapter 7 and the performance and condition measures summarised in the form of a basic performance and condition matrix (BPCM) in that Chapter. The empirical analysis of Chapters 8 and 9 tracked these performance and condition measures. In this chapter key performance and condition measures are selected from the BPCM and tracked throughout the simulations. Since the main aim of the simulation is to evaluate the effects of different capital adequacy constraints, the main focus will be on different capital ratios. In this regard two additional measures of capital adequacy (representing free capital ratios) are added to the analysis. The ratios tracked in the simulations are shown in Table 10.4. These ratio components (numerators and denominators) are prespecified in the initial balance sheet file and they are summarised in Figure 10.4. At each decision period these ratios are tracked in SOFI ratios report (RAT) and the analysis report (ANA). It will be noticed that the value of the ratios in Table 10.4 are in line with actual experiences during the period 1984-1987 (see Chapter 8). All the ratios in Table 10.4 will be monitored throughout the simulation experiments. It will be recalled that our experimental objective is to test the impact on these (and other) results of altering variables (like scenario variables) under the simulator's control.

10.4 SIMULATION EXPERIMENTS

10.4.1 Experiment 1: Balance sheet growth, higher interest rates, passive bank

In Section 10.4 the testbed was set up as the basis of the experiments to be performed in this section. The bank balance sheet

and performance and condition measures between 1984-1987 conform to the Zimbabwean position during that period. The capital ratios show an increasing trend during that period. It was suggested in Section 10.2 that the capital position of a bank should be related to the changing volume and nature of the banking environment. Thus capital adequacy ratios should be strengthened to meet any unanticipated changes.

Table 10.4 Performance and condition of banks

	1984	1985	1986	1987
Capital/assets	6.0	6.0	6.2	6.7
Capital/deposits	7.5	7.9	7.9	8.5
Capital/risky assets	7.3	7.4	7.8	8.5
Cap-fixed ass/assets	3.9	3.9	4.2	4.5
Cap-fixed ass/risky assets	4.7	4.8	5.3	5.5
Loans/deposits	59.4	58.5	65.8	55.2
Loans/assets	47.3	46.1	49.9	44.6
ROC		12.8	18.1	23.4
ROA		0.7	1.0	1.2

Source: Initial simulation results

In order to confirm the importance of capital adequacy as a measure of prudential strength of banks and thus the adequacy of the Zimbabwean banking capital resources (in case of any changes) the present banking environment in Zimbabwe is altered by expanding the balance sheet and increasing the present level of interest rates for the years 1985-1987. This is done by adjusting the initial SOFI variable assumptions file. In particular, only the balance sheet categories and the interest rate structure are altered, while the rest of the assumptions remain unaltered.

Figure 10.4 Components of ratios tracked in each simulation

Ratio	Numerator	Denominator
Capital/assets	SHAR RRES	TOTL[1]
Capital/deposits	SHAR RRES	DDIN DDCP TDUR TDFX
Capital/risky assets	SHAR RRES	TOTL[1] -CASH -IGOV
Capital-fixed asets/risky assets	SHAR RRES -AFIX	TOTL[1] -CASH -IGOV
Capital-fixed assets/assets	SHAR RRES -AFIX	TOTL[1]
Loans/deposits	LIFX LCFX	DDIN DDCP TDUR TDFX
Loans/assets	LIFX LCFX	TOTL[1]
Return on capital[2]	Net income	SHAR RRES
Return on assets[2]	Net capital	SHAR RRES

Notes: 1. All assets
2. These two performance ratios are not prespecified in the initial balance sheet file

The initial balance sheet (1984) as indicated in Table 10.1 and the decisions used during the simulation to set up the initial 'test bed' also remain unaltered: we have labelled these decisions 'passive'. The balance sheet levels and interest rates are increased as follows in these six simulation experiments:

Scenario	Balance sheet levels per cent per annum	Interest rates per cent per annum
1	5	1
2	10	2
3	20	3
4	30	4
5	40	5
6	50	6

As already stated, one factor that needs to be considered in experimental design is to make realistic assumptions which relate to real world phenomenon in order for the results to be useful. It was shown that the Zimbabwean banking balance sheet has been expanding over the years and Chapter 6 (survey evidence) confirmed that one of the important structural changes occurring in the recent past was increasing volume of business. Chapter 4 showed that in Zimbabwe the bank rate has been increased since independence, and all other rates moved up with the bank rate. In this regard, it is useful and realistic to test the consequences of an expanded and riskier banking environment on the adequacy of capital resources. It has been suggested earlier that the role of capital adequacy is to act as a buffer against unanticipated changes.

The initial, testbed simulation will now be run under the above six scenarios. The type of bank in Experiment 1 is defined as a 'passive bank' in that it does not on its own accord indulge in risk-taking decisions. The decision rules (implemented at each decision point in the simulation) are simple and consistent - these considerations (simplicity and consistency) are dictated by the experimental need, discussed earlier, to hold constant as many characteristics as possible. This enables us to see more clearly the impact on our synthetic bank of the key changes (higher growth and increased interest rates) being simulated. This bank disposes of its surplus liquidity in safe assets like treasury bills, government securities and call money. The bank meets liquidity deficits by issuing certificates of deposits.

10.4.2 Results of Experiment 1

The full range of simulation results showing the effects of an expanded banking environment and higher interest rates are shown in Appendices 10.3-10.8. The Appendix Tables show the trends in the performance and condition measures when the passive bank was simulated through the six scenarios. Since the main aim of the analysis is to track the capital ratios, Table 10.5 shows the trend in different capital ratios for the six scenarios.

Table 10.5 shows a general trend where all the capital ratios deteriorated as balance sheet levels expanded and interest rates increased. For example, under scenario one, the capital/assets ratio was 6.1% in 1985, fell to 4.8% in 1986 and was 3.4% in 1987. The capital/risky assets ratio was 7.6% in 1985, fell to 5.9% in 1986 and was 4.0% by 1987. One other important fact to note from the

results of Table 10.5 is that as the balance sheet levels and the interest rates increased by higher amounts, the capital ratios declined even further. For example, comparing capital ratios under scenario one and scenario six shows that the capital/assets ratios were 6.1% (1985), 4.8% (1986) and 3.4% (1987) under scenario one while the ratios were 5.6% (1985), 3.9% (1986) and 2.2% (1987) under scenario six.

Table 10.5 Effects of expanded banking operations on capital ratios

Sce-	Cap./Ass.			Cap./Dep.			Capital /Risky ass.			Cap-Fixed ass. /Risky ass.		
nario	1985	1986	1987	1985	1986	1987	1985	1986	1987	1985	1986	1987
1	6.1	4.8	3.4	7.8	6.3	4.2	7.6	5.9	4.0	5.0	3.2	1.4
2	6.0	4.7	3.3	7.7	6.3	4.1	7.4	5.8	3.9	4.8	3.0	1.2
3	5.9	4.5	3.0	7.7	6.1	3.8	7.2	5.5	3.5	4.4	2.5	0.7
4	5.8	4.3	2.7	7.6	5.8	3.5	7.0	5.1	3.1	3.9	1.9	0.1
5	5.7	4.1	2.4	7.5	5.6	3.1	6.8	4.8	2.7	3.6	1.5	-0.5
6	5.6	3.9	2.2	7.5	5.4	2.8	6.5	4.5	2.4	3.2	1.0	-0.9

Source: SOFI Simulation Experiment 1

Notes:
Scenario 1 5% + 1%
Scenario 2 10% + 2%
Scenario 3 20% + 3%
Scenario 4 30% + 4%
Scenario 5 40% + 5%
Scenario 6 50% + 6%

Thus, as growth increases, capital ratios fall. If banks are to grow and operate under a riskier environment in Zimbabwe, they will apparently need to strengthen their capital resources. It has

been suggested in Section 10.2 that capital resources should be related to banks' volume of operations. The importance of capital adequacy is thus confirmed in this experiment, although there is no presumption that particular ratios should be maintained. If capital ratios are to fall, it appears that countervailing banking risk management and supervision should be improved. Simply attempting to maintain crude capital ratios in the face of higher (and perhaps desirable from a development point of view) balance sheet growth may only exacerbate the problems of excessive risk-taking and regulation-avoidance behaviour by banks.

Whilst the above analysis concentrated on the effects of capital adequacy ratios, other performance and condition measures were also tracked in the Experiment 1 simulations. The other condition measures, liquidity ratios, indicate a decline in liquidity under all the six scenarios. This result confirms the wider pressures on bank prudential soundness during periods of high growth.

The two performance measures tracked in the simulations, return on capital (ROC) and return on assets (ROA), showed an upward trend (Appendices 10.3-10.8) under all the six scenarios. This upward trend indicates the potential of increased profitability due to higher growth. However, this increased profitability may not be sufficient to maintain capital ratio levels during periods of high growth.

10.4.3 Experiment 2: Experiment 1 scenario/'active bank'

It was shown in Experiment 1 how changes in the volume of bank operations and a more risky environment affect capital and liquidity

positions of banks, thereby confirming the importance of relating capital resources to volume of operations. This study indicated that in addition to the gearing considerations, capital resources should be related to the composition of bank portfolios. This is important because a high gearing ratio may not necessarily imply adequate capital if the bank adopts a riskier portfolio composition. It was suggested, therefore, that supervisors must also consider the quality and mix of banks assets. In this regard it was proposed that risk-based capital adequacy ratios should be emphasised as they take into consideration the riskiness of the bank's portfolio. The main aim of the experiment is to explore more formally this proposal.

Thus in Experiment 2, in order to create an environment where the composition of the portfolio exhibits a riskier position than that in Experiment 1, we assume a profit-maximising bank - the 'active bank' - which invests its surplus in higher yielding loans (riskier loans). This entailed setting up a new starting position (new balance sheet file for 1984). The researcher decided to simplify somewhat the structure of the simulation testbed in order to help improve the experimental value of this set of simulations. This is necessary in order to examine more clearly the important categories for this experiment (loans) and to be able to keep all other variables constant. Thus in this Experiment 2, different types of loans are distinguished, lower yielding (and less risky) and higher yielding (more risky) loans. The new starting position is shown in Table 10.6.

Thus one of the main features of this experiment is to show the differences in the two different types of loans by assuming that the corporate loan category has higher interest rates and higher loan

loss rates than the other loan category containing mostly loans to the public sector. The former loan category (loan 1) represents more risky loans than the loan 2 group (our second category). The related assumptions for Experiment 2 are shown in Table 10.7. These reflect the structural changes (simplified balance-sheet structure) discussed above, but the basic simulation objectives are the same.

Table 10.7 data are related to (and derived from) Table 10.2 - they are modelled on actual Zimbabwean banking data for 1984-1987. This is, once again, our 'testbed' - just as it was in Experiment 1.

Table 10.6 Initial balance sheet for Experiment 2

Liabilities		Assets	
1984			
Equity capital	63.0	Cash	157.4
Reserves	57.7	Treasury bills[1]	347.6
Provisions	0.0	CDs	203.9
Demand deposits	594.3	Gvt securities	195.1
Time deposits[4]	832.8	Loans 1[2]	442.9
CDs	244.9	Loans 2[3]	405.3
		Fixed assets	40.4
Total[5]	1792.7	Total	1792.7

Source: Quarterly Economic and Statistical Review, Reserve Bank (various issues)

Notes:
1. The treasury bill category includes trade and other bills
2. The loan 1 category includes loans to public sector and industries and is assumed to have lower risk
3. The loan 2 category is the higher yielding and is composed of corporate loans and is the higher risk category
4. The time deposits category includes all interest paying deposits
5. The balance sheet totals are the actual values achieved in 1984.

Table 10.7 The environment for Experiment 2

Interest rate structure				
Treasury bills		1985	1986	1987
Maturity	1 month	8.4	8.42	8.26
	3 months	8.6	8.62	8.46
Government securities				
Maturity	1 year	8.87	8.87	8.87
	3 yrs	9.07	9.07	9.07
	10 yrs	12.8	12.8	12.8
	30 yrs	13.0	13.0	13.0
Certificates of deposit				
Maturity	6 months	10.25	10.25	10.25
	1 yr	10.35	10.35	10.0
	3 yrs	11.25	12.25	11.25
	5 yrs	9.94	12.45	11.45
Other interest rates				
Loans (individual)		13.0	13.0	13.0
Loans (corporate)		13.39	13.39	13.39
Deposits		7.0	7.0	7.0
Loan levels				
Loans (individual)		459	681.1	546.5
Loans (corporate)		508.6	473.7	662.4
Deposit levels				
Demand deposits		671.3	743	844.4
Time deposits		982.7	1011.8	1143.7
Income/Expenses				
Expenses		78.7	96.5	96.3
Income		14.5	16.6	25.2
Loan loss rates				
Loans (individual)		0.3	0.3	0.3
Loans (corporate)		0.5	0.5	0.5

Source: Modelled from Table 10.2

As in the previous experiment, in setting up the initial simulation (1984-1987), that is the 'test bed' for Experiment 2, the balance sheet and ratios achieved should conform to what was actually achieved in Zimbabwe during that period. In this regard, the balance sheet series and ratios report are shown in Tables 10.8 and 10.9.

Table 10.8 The 'test bed' for Experiment 2

	1984	1985	1986	1987
Liabilities				
Capital	63	63	63	63
Reserves	58	71	88	121
Provisions	0	4	8	13
Demand deposits	594	671	743	844
Time deposits	833	983	1012	1144
CDs	245	275	363	495
Total	1793	2068	2278	2680
Assets				
Cash	157	191	243	280
Treasury bills	348	354	372	535
CDs	204	285	226	416
Gvt stock	195	227	233	184
Loans (individuals)	443	459	681	547
Loans (corporate)	405	509	474	662
Fixed assets	40	42	49	57
Total	1793	2068	2278	2680

The bank in Experiment 2, then, is a profit-maximising bank which invests wherever possible its surplus into higher risk assets. It differs from the bank in Experiment 1 in its portfolio composition which is now potentially higher in risk. As in

Experiment 1, liquidity shortages are met by issuing CDs and the bank is subject to a statutory liquidity ratio of 40 per cent. Using these decision rules, the active bank is simulated under the same six scenarios as in Experiment 1.

Table 10.9 Ratios results for initial simulations for Experiment 2

	1984	1985	1986	1987
Liquidity	41.9	40.0	40.0	40.2
Capital/assets	6.7	6.5	6.6	6.9
Capital/deposits	8.6	8.1	8.6	9.3
Capital/risky assets	8.4	8.1	8.4	8.3
Capital-fixed ass./assets	4.5	4.5	4.5	4.7
Capital-fixed ass./risky ass.	5.6	5.6	5.7	5.7
Loans/deposits	59.4	58.5	65.8	60.8
Loans/assets	47.3	46.8	50.7	45.1
ROC		11.4	12.5	21.9
ROA		0.7	0.7	0.7

10.4.4 Results of Experiment 2

The overall results of Experiment 2 - showing the trends in all performance and condition measures when the active bank is simulated under an expanded and risker banking environment - are shown in Appendices 10.9-10.14. Table 10.10 shows the behaviour of all the capital ratios under the six scenarios. As Table 10.10 shows, all the capital ratios show an increasing trend in all the six scenarios: in these simulations more profitable 'opportunities' (but with higher, associated risks) are now available to our synthetic bank. Under scenario one, for example, the capital/assets ratios

were 6.5% in 1985, increased to 6.7% in 1986 and were 6.9% by 1987. The capital/risky assets ratios were 8.2% in 1985, increased to 8.4% in 1986 and were still 8.4% in 1987. All other capital ratios followed the same trend. These experiments were deliberately set up to show a riskier environment and it would be expected that a good capital ratio should detect this by declining as risk increases. It was suggested earlier that as risk increases, there is need for higher capital ratios. Thus since in this experiment we created an environment in which risk was increased but we did not increase the capital resources, at least the risk-based capital ratios should have declined.

Table 10.10 Effects on capital ratios when risky loans are increased

Sce-	Cap./Ass.			Cap./Dep.			Cap./ Risky ass.			Cap-fixed ass. /Risky ass.		
nario	1985	1986	1987	1985	1986	1987	1985	1986	1987	1985	1986	1987
1	6.5	6.7	6.9	8.2	8.7	9.4	8.2	8.4	8.4	5.5	5.6	5.7
2	6.5	6.7	7.0	8.2	8.7	9.4	8.2	8.5	8.4	5.4	5.5	5.6
3	6.5	6.7	7.1	8.2	8.8	9.5	8.2	8.5	8.5	5.2	5.3	5.4
4	6.6	6.8	7.1	8.3	8.9	9.6	8.2	9.6	8.6	4.9	5.1	5.3
5	6.6	6.8	7.2	8.3	9.0	9.8	8.2	8.7	8.7	4.5	4.6	4.9

Source: SOFI Simulation Experiment 2

Notes: Scenario 1 5% + 1%
Scenario 2 10% + 2%
Scenario 3 20% + 3%
Scenario 4 30% + 4%
Scenario 5 40% + 5%
Scenario 6 50% + 6%

The general implication of this set of results is that the capital ratios used are not good indicators of bank riskiness. This is so because even the risk based capital ratios used (capital/risky assets ratio and capital minus fixed assets/risky assets ratio) showed an increasing trend in general. However, it should be noted that the results in Table 10.10 indicate that the capital/risky assets ratios increased at a decreasing rate than the gearing ratios. For example, under scenario three, both the capital/deposits ratio and capital/risky assets ratios were 8.2% in 1985 but by 1986 the capital/deposits ratio had risen to 8.8% while the capital/risky assets ratio rose only to 8.5%. By 1987 (still under scenario three), the capital/deposits ratio had risen to 9.5% while the capital/risky assets ratio remained at 8.5%. This comparison indicates the relative superiority of the risk based capital ratio over the gearing ratios in their ability to consider risk in bank portfolios. However, the general increasing trend in the capital/risky assets ratios indicate that these ratios are only crude measures of risk-based capital adequacy measures and that a more detailed risk based capital ratio is required. This study proposed the use of the risk assets ratio (RAR) and these simulation results confirm indirectly that such a detailed capital ratio system would be more appropriate. This is so because the risk assets ratio takes into consideration the riskiness of each category of a bank's asset portfolio.

10.5 CONCLUSIONS

The foregoing analysis of the simulation results confirms the importance of adequate capital resources as banks' operations expand and the operating environment becomes riskier. This supports our proposal that capital resources and capital adequacy analysis should be strengthened in order to enable banks to undertake any expansion or structural changes.

The results also indicate the suitability of adopting a more detailed, risk-based capital ratio system. The proposed ratio is the RAR which distinguishes riskiness in different categories of a bank's assets. Whilst gearing ratios are useful to ensure that any expansion is related to capital strength, such ratios, used alone, cannot distinguish the differences in risk between a bank's assets, nor differences between two banks' riskiness, for example.

This study, however, suggested that capital ratios used alone, are inadequate to ensure a bank's financial strength. This proposal was confirmed in these simulation experiments. In both experiments and at each decision period, liquidity fell. Other aspects of bank condition were almost certainly adversely affected under the scenarios we simulated. As a result, extreme care must be exercised in any proposal that simple capital ratios used alone are a good monitor of bank prudential soundness.

CHAPTER 11

LIMITATIONS AND CONCLUSIONS

11.1 LIMITATIONS

In this study, certain limitations were noted. Firstly, the supervisory system in Zimbabwe is new and it was considered that its effects may not yet be apparent since the supervisory authorities are still in the process of establishing and implementing a supervisory system. In this regard a comparative study of other developing countries, supervisory experiences was undertaken (Chapters 8 and 9). Serious data problems were encountered. Due to the fact that only a few countries provided a reasonable amount of data, it was not possible to select countries which perfectly matched the Zimbabwean economic, financial and supervisory system. With these problems in mind, six countries were included in the sample although there were some country variations in several key financial characteristics. However, these countries followed the same development path as Zimbabwe.

Also, the data used in the comparative study were too aggregated to permit a full investigation of all the factors affecting bank performance and condition. In this regard it was not possible to conclude whether supervision had reduced risk in the system or otherwise. However the study indicated how supervision can affect bank performance and the condition of banks.

The lack of adequate data was also a factor in the decision not to carry out a regression analysis which could have improved our analysis of supervisory effects by isolating the effects of different capital adequacy measures. It was considered that the

sample size could not add any further explanation to the results we had already obtained. Our parametric hypotheses tests were supported by non-parametric tests.

Although an analysis of the effects of different capital adequacy ratios was performed in Chapter 9, and it was concluded that using risk-based capital ratios resulted in superior performance, the use of small samples is again not satisfactory and thus the result should be treated with caution. However, the simulation experiments helped alleviate this problem by showing that a detailed risk-based capital adequacy system would detect risk comparatively better in the banks' portfolios. The simulations helped support the rather weak empirical results of Chapters 8 and 9 by showing that a more sophisticated risk-assets ratio (RAR) was more appropriate as a measure of capital adequacy than a gearing ratio. However, our simulation results also confirmed the inadequacy of the RAR in capturing the full picture of bank prudential condition under different, risky scenarios.

One limitation of the simulation experiments was that it was not possible to incorporate the behavioural aspects of actual Zimbabwean bank management. To do this would have entailed obtaining this information from Zimbabwean bank managers when performing the simulations. However, the profit-maximisation assumption and other decisions made (mostly based on Chapter 4) were broadly realistic, and thus enabled us to obtain useful results.

11.2 CONCLUSIONS

A detailed analysis and evaluation of bank prudential supervision for Zimbabwe was undertaken in this study. A

strengthening of supervisory policies is considered necessary due to the important role the banking system plays and the consequences of its failure in the economy and the whole system of exchange of goods and services. A central element in this strengthening process is the improvement of capital adequacy analysis. The viability of banking was found to depend on public confidence, and supervision should help to achieve this by helping to preserve the solvency and soundness of the institutions.

The study has shown that regulation and supervision have increased recently both in developed and developing countries: almost all LDCs now operate some kind of supervision of banks. The increasing concern with supervision arises out of the increasing risks and uncertainty in banking. Factors that have been found to increase banking risks include internationalisation of banks, integration of financial markets and the breaking down of traditional barriers to entry. Also, measures of financial liberalisation aimed at increasing competition and innovation carry the risk of instability and in some LDCs resulted in bank crises and failures. It has been suggested (Fry 1988) that for structural reforms to be successful, there is need for an adequately supervised system.

Another reason for the need for supervision concerns the type of LDCs economies. The existing rules and portfolio restrictions in these countries, for example, often remove or limit incentives and opportunities for banks to extend loans to profitable projects or to deny loans to unprofitable projects. The role of supervision becomes even more important under these circumstances in order to help emphasise the risk and return aspects of all bank lending and

investment decisions. Added to this is the existence of lender of last resort facilities which can affect the banks' concern with the quality of monitoring their portfolios. This creates a need for adoption of an effective supervisory machinery to help encourage sound prudential management in banks. Supervision may discourage institutions from taking excessive risks. Inadequate supervision leaves undetected a weakening of the portfolios of institutions, and this can have potentially serious consequences. An unexpected failure of an individual institution can lead to systemic crises due to asymmetric information.

In view of the increased banking risks and bank failures and the need to maintain the integrity and viability of the banking system, bank capital adequacy has grown in importance. Supervisory policy worldwide considers capital adequacy to be the key supervisory instrument in ensuring discipline on bank management and strengthening prudential safeguards. It has been shown (Chapter 7) that capital acts as buffer against unexpected losses, that capital is the principal yardstick used when measuring bank strength. Empirical evidence (Chapter 9) and simulation results (Chapter 10) showed that capital adequacy influences the behaviour of banks in their portfolio choices, and that capital resources should be matched with structural and balance sheet changes in banks in order to maintain bank financial health.

Our main concern in this study was to evaluate whether supervision could foster efficiency, that is improve bank performance and condition. The ultimate aim was to identify the best instruments, targets and forms of supervision that can best meet supervisory objectives.

In this regard the study showed that different capital-adequacy systems have different effects on banking performance. It was shown that capital resources should not only be related to balance sheet magnitudes, but also that the quality of the bank portfolio is an important consideration. Thus supervisors should not only satisfy themselves with high capital ratios but should also and more importantly consider the risk in the bank's portfolio (the major aim of supervision is to curb excessive risk-taking). Imposing higher gearing ratios could force banks to take on higher risk assets and/or induce banks to avoid the regulation by concentrating on off-balance-sheet business. In order to take into consideration banking risks, this study proposed risk-based capital ratios, to complement the gearing ratios which are currently used. It was shown (simulation experiments) that risk assets ratios (RAR) would be more appropriate than other crude forms of risk measures, like capital/risky assets ratios, for example.

Although it has been suggested that supervisory policies should emphasise capital adequacy in order to ensure the solvency and soundness of banks, this study has also shown that concentrating on capital ratios alone is not enough to judge a bank's soundness, and may not be an adequate supervisory method to ensure complete financial health of banks. The limitations of the RAR (Chapter 7) indicate that not all banking risks can be included in the ratios.

The simulation experiments (Chapter 10) showed that inter alia liquidity falls as the balance sheet expands and risk increases. This suggests that bank managers and supervisors should also be concerned with liquidity adequacy in relation to bank operations and risk.

In order to ensure bank soundness and safety, other monitoring aspects of supervision should be undertaken. For example, banking failures in Latin American countries indicated that bad banking practices such as general mismangement, lack of clear rules on delinquency and default, bad loans not written off systematically, inadequate diversification and window dressing, just to mention a few, that ratios alone cannot ensure soundness in banks. In this regard, it is important for supervisors to help ensure sound bank management, internal controls and procedures. Bank inspections are important to detect the quality of management policies, fraud, quality of assets and general operational procedures.

The overall conclusion is that prudential supervision of banks is a system problem and all factors both quantitative and qualitative which affects a bank's solidity should be taken into consideration in order to ensure complete financial stability.

Finally, an additional 'externality' of the research methodology used has been to suggest the potentials of simulation exercises in helping supervisors to explore key prudential issues like supervision. We have emphasised the 'system character' of bank prudential analysis. Even a comparatively sophisticated technique like RAR is incapable of capturing liquidity and other important risk aspects of banking. The kind of simulation model and approach used in Chapter 10 might be a powerful policy aid in testing the impact of different potential ratios on banks and in evaluating the condition of individual banks. In this respect, the simulation technique can be used to emphasise a core finding of this thesis: it is essential that supervisors in a developing country, like Zimbabwe, assess the full risk and return implications of any

supervisory technique for appraising capital adequacy. Simple balance sheet ratios by themselves are not fully equipped to fulfil this important task.

APPENDICES

APPENDIX 1

For Chapter 6

Appendix 6.1

Interview Survey Questionnaire for the Reserve Bank

on

Bank Regulation and Supervision in Zimbabwe

Section A

Please answer these questions as fully as you feel able to do.

1 What were the main presures which led to the introduction of bank supervision in Zimbabwe?

2 Why do banks seemingly require more regulation than other financial institutions?

3 What are the objectives of bank supervision in Zimbabwe?

4 What are the most important factors do you take into consideration when appraising a bank's prudential soundness?

5 What are the uses of capital adequacy ratios in bank supervision?

Appendix 6.1 (continued)

6 What kind of information would you look for when conducting bank inspection?

7 How would you describe (briefly) the style of supervision adopted in Zimbabwe on the following:

. range of allowable business

. restrictions on banks' operations

. entry of new banks?

8 What is/are the most important area/s of prudential regulation you stress on Zimbabwe?

9 What is the Bank's view on structural deregulation (liberalising the banking system, for example, relaxing certain restrictions)?

10 What is the **ultimate** goal of bank supervision? How does it fit in with other micro-economic and central bank policy objectives (eg environmental development)?

Appendix 6.1 (continued)

Section B

In the following questions possible answers are given and you are asked to assign a rank ordering on the following scale:

1 Very important
2 Important
3 Moderately important

11 Please indicate how you rank the importance of the following roles of banks

Score

. mobilisation of savings

. operating the payments mechanism

. financing international trade

. conduct of monetary policy

. source of liquidity to the economy

. others (please specify)

12 Please indicate how you would rank the importance of the following pressures necessitating the introduction of bank supervision in Zimbabwe

Score

. increased risk in the system

. problems of conflicts of interest

. pressures to limit competition

. unsound banking practices

. advance of technology which have made finance more complicated

. occasional pranks, crises in the financial system

. increased co-ordination between banking supervisors internationally

. others (please specify)

Appendix 6.1 (continued)

13 Please indicate how you rank the importance of the following objectives of bank supervision

Score

. to protect depositors

. to protect individual banks

. to maintain stability of the banking system as a whole

. to bolster confidence of the depositing public

. to lessen the probability of bank failures

. others (please specify)

14 In assessing a bank's prudential soundness, how would you rank the following qualities?

Score

. the adequacy of a bank's capital

. the structure and quality of its assets

. the quality of its management

. its earnings performance

. the liqudity of its assets

. others (please specify)

Appendix 6.1 (continued)

15 Which of the following options of utilising capital adequacy ratios comes nearest to your own. Please indicate with tick.

Score

. set a minimum capital adequacy ratio and, where breaches of the requirement appear likely to occur, require banks either to increase their capital or readjust their asset portfolio within a set time to ensure maintenance of the desired ratio

. establish a capital adequacy ratio as a referral point for prudential supervision, a breach of this ratio would act as a trigger for further, closer analysis of the bank

If neither of the above options approximates your system, please explain in you own words how you use capital adequacy ratios.

16 How would you rank the following factors shaping the structure of the banking system?

Score

. liberalisation of the banking system

. increase in technology

. financial innovations

. liability management

. others (please specify)

Appendix 6.1 (continued)

17 Would you please rank the following areas of regulation in order of importance

Score

. functional - where the types of permitted activity of different activity of different institutions are prescribed

. ownership - where restrictions are placed on the extent of amalgamated ownership of different financial as, for instance between banks and insurance companies

. business operations - where regulations apply to the conduct of business such as the imposition of capital and liquidity requirements on banks

. entry and establishment - where there are restrictions on the entry of new institutions

. others (please specify)

18 Which of the following styles of supervision comes nearest to your own. Please indicate with a tick.

. where explicit regulations relate to the detailed business operations and allowable range of activities of banks

. related, for instance, to general liquidity and capital requirements

Please, if you feel it necessary, describe in your own words the Bank's style of supervision

Appendix 6.1 (continued)

19 Please indicate how you rank the importance of the following functions of bank examinations

Score

. appraisal of the management

. appraisal of the system of operations, procedures and control

. assessment of the adequacy or otherwise of the capital structure in relation to the size of business

. to evaluate the quality of the loan portfolio

. others (please specify)

20 How would you rank the following as the ultimate goal of bank regulation

Score

. enable the government to promote structural deregulation

. to ensure that banks contribute more to the developing economy

. safe banking

. good customer service

. others (please specify)

Appendix 6.2

Interview Survey Questionnaire for Banks

on

Bank Regulation and Supervision in Zimbabwe

Section A

1 What are the main operational differences between banking in Zimbabwe and banking

. in other developing countries?

. in other African countries?

. in other developed countries?

2 What factors would you say have significantly shaped the structure of the banking system in Zimbabwe?

3 Would you say bank supervision is a good thing for banks? Why?

4 In your opinion, what are the objectives of bank supervision in Zimbabwe?

5 Do you think other financial institutions should be brought under the same supervision as banks? Why?

Appendix 6.2 (continued)

6 In your opinion how suitable are the present supervisory instruments in Zimbabwe (please give reasons)?

7 What are your views on structural deregulation (liberalisation of the banking system, for example, relaxing certain controls)?

8 What would you say are the effects of capital adequacy requirements on banks?

9 How are you influenced (if any) by the capital adequacy criteria used by banks outside this country?

10 In what way do you think the structure and operation of banking in Zimbabwe are going to be changed by more bank supervision?

Appendix 6.2 (continued)

Section B

In the following questions, possible answers are given and you are asked to assign a rank ordering on the following scale:

1 Very important
2 Important
3 Moderately important

11 Please indicate how you would rank the following roles of banks in Zimbabwe

	Score
. mobilisation of savings	
. operating the payments mechanism	
. financing international trade	
. conduct of monetary policy	
. source of liquidity to the economy	
. others (please specify)	

12 Which of the following structural changes have you experienced (please tick)

	over the past 5 years	over the past 10 years
. increased variety of products		
. more capital devoted to business		
. increased volume of business		
. increase in financial innovation		
. increase in technology		
. others (please specify)		

Appendix 6.2 (continued)

13 Please indicate how you rank the importance of the following objectives of bank supervision

Score

. to protect depositors

. to protect individual banks

. to maintain stability of the banking system as a whole

. to promote a more competitive banking system

. to bolster confidence of the depositing public

. to lesen the probability of bank failures

. others (please specify)

14 Which of the following styles of supervision would you prefer. Please indicate with a tick.

. where explicit regulations relate to the detailed business operations and allowable range of activities of banks

. where regulations relate to the general liquidity and capital adequacy requirements of banks

. other (please specify

15 Please indicate how you rank the following as stimuli to changes which have occurred in the banking system

Score

. integration of financial markets

. more competition between banks and other financial institutions

. relaxations of some monetary policy restrictions

. more government involvement

. others (please specify)

Appendix 6.2 (continued)

16 Please indicate how you rank the following effects of capital adequacy requirements

Score

. leads to lower return on capital

. may lead to excessive risk taking

. reduces diversification of assets

. reduces incentive to compete

. increases financial innovation

. others (please specify)

17 Please indicate how you rank the following effects of prudential regulation in general

Score

. reduces competition with other financial insitutions

. prevents diversification into new areas

. reduces competition with other banks

. increases stability of the banking system

. others (please specify)

Appendix 6.3

25th September 1987

Dear Sir

Re: Letter of Request for an Interview

I am currently conducting a study of prudential regulation and supervision in Zimbabwe as a main part of my PhD programme. An important part of this study is a field survey that I wish to conduct on bank regulators and regulated banks in Zimbabwe. This field survey will take the form of an interview by myself with each participant in the survey.

The general purpose of this survey is to try and establish the rationale and objectives of bank regulation and supervision in Zimbabwe, and also to obtain an update of the practical methods of supervision adopted. In this regard, I would appreciate your views on a number of related topics. I enclose a questionnaire that indicates the kind of ground I would like to cover in an interview with you.

I would be most grateful if you would assist my research by participating in the survey. I do appreciate that you are busy, but your participation will be crucial to the success of my study. I should be happy to come and talk with you at a date and time of your convenience. I am in Zimbabwe until November. I can assure you that full confidentiality will be maintained.

A stamped addressed envelope is enclosed for your reply. I look forward to hearing from you and wish to apologise for any inconvenience.

Yours faithfully

Mrs Charity Lindile Mudimu (surname now changed to Dhliwayo)

Enc

Appendix 6.4

To whom it may concern

Ms Charity Lindile Mudimu

Mrs Mudimu is a full-time PhD student at this University College, and she is researching into the role played by regulation in banking and development. An important part of her research involves surveying and interviewing practitioners in the field. I should be most grateful if you would give her full co-operation. We can assure you that confidentiality will be maintained.

Professor E.P.M. Gardener

Appendix 6.5

4th December 1987

Dr K.J. Moyana
Governor
Reserve Bank of Zimbabwe
PO Box 1283
Harare

Dear Sir

Re: Letter of Request for an Interview

I am currently conducting a study of prudential regulation and supervision in Zimbabwe as a main part of my PhD programme. An important part of this study is a field survey that I am conducting on bank regulators and regulated banks in Zimbabwe. The general purpose of this study is to try and establish the rationale and objectives of bank regulation and supervision in Zimbabwe, and also to obtain an update of the practical methods of supervision adopted.

To this end I have already discussed the attached questionnaire with the Bank Supervision Department of the Reserve Bank who have kindly given me their views on the subject under study.

In this regard, I would appreciate your views on a number of related topics. I enclose a questionnaire that indicates the kind of ground I would like to cover in an interview with you.

However, there are one or two questions on the attached questionnaire which they suggested that I discuss with a higher authority in the Bank. In this regard, I would appreciate if you would assist my research by participating in the survey. I do appreciate you are busy, but your participation will be crucial to the success of my stucy. I should be happy to come and talk with you

Appendix 6.5 (continued)

at a date and time of your convenience. I am in Zimbabwe until December 1987. I can assure you that full confidentiality will be maintained.

A stamped addressed envelope is enclosed for your reply. I look forward to hearing from you and wish to apologise for any inconvenience.

Yours faithfully

Mrs Charity Lindile Mudimu (surname now changed to Dhliwayo)

Enc

Appendix 6.6

Private and confidential

Form B.5.

Analysis of shareholders' funds and certain other miscellaneous information

Third Party Material excluded from digitised copy.
Please refer to original text to see this material.

Appendix 6.7

FORM B1

Private and confidential

Maturity analysis of liabilities and assets

Appendix 6.8

RESERVE BANK OF ZIMBABWE
HARARE

FORM B.6

Private and Confidential

ANALYSIS OF LARGE EXPOSURES

Third Party material excluded from digitised copy.
Please refer to original text to see this material.

Appendix 6.9

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Dear Sir

Bank Regulation and Supervision in Zimbabwe

I write to say thank you very much for the interview you gave me on the above subject recently. I appreciate your willingness, patience and time taken to inform me on this subject of my study and related banking issues.

Your assistance will definitely make a good contribution to the success of my research. I hope I can always count on your support in the future.

Yours faithfully

Mrs Charity Lindile Mudimu (surname now changed to Dhliwayo)

APPENDIX 2

For Chapter 8

Appendix 8.1

17 January 1989

Dear Sir

I am currently reading for a PhD degree within the School of Accounting, Banking and Economics at the University College of North Wales, Bangor (address above).

My research is concerne d with evaluating the costs, benefits and practical policy problems of implementing a system of banking supervision (prudential regulation) in Zimbabwe. An important part of this research involves comparing the systems and experiences of other developing countries with banking supervision.

I am employed by the Reserve Bank of Zimbabwe and I was involved in setting up a bank supervision department in 1985. The Bank of England has suggested that you might be able to help me by sending me some details about your system of bank supervision.

I am especially interested in the following:

- When did you implement supervision?
- What banks are covered?
- What kind of system/techniques have you used?
- How did you go about selecting the system/techniques to use?
- How successful has your supervisory system been?

I would be most grateful for any information on these questions and any other relevant information that you can provide. I look forward to hearing from you.

Yours faithfully

Mrs Charity Lindile Mudimu (surname now changed to Dhliwayo)

Appendix 8.2

Our ref: CLM/EAE

21 June 1989

Dear Sir

Thank you very much for the information on bank supervision, which you sent me in response to my letter dated 17 January 1989. This information will greatly assist me in my endeavour to analyse the effects of supervision on the banking system. However, there is some statistical data which is crucial to my analysis and is not found in published statistics. In this regard, I would be grateful if you could be in a position to fill in the enclosed table (commercial bank data).

In addition to the statistical data, I also wish to ask for the following information:

- When did you start imposing capital adequacy ratios on banks?
- Which capital adequacy ratios do you use?
- How are these ratios calculated?
- What are the components of capital for prudential purposes?

I look forward to hearing from you as soon as you possibly can.

Yours faithfully

Mrs C.L. Mudimu (surname now changed to Dhliwayo)

Appendix 8.2 (continued) Aggregate commercial bank data

Year	Profit before tax	Profit after tax total	Off-balance sheet assets	Gross operating expenses	Loan loss reserves	Number of bank failures	Wholesale deposits
1970							
1971							
1972							
1973							
1974							
1975							
1976							
1977							
1978							
1979							
1980							
1981							
1982							
1983							
1984							
1985							
1986							
1987							

Appendix 8.3

Our ref: CLM/EAE

5 October 1989

Dear Sir

I write with reference to my letter dated 21 June 1989 and wish to ask you please to send me the requested information as soon as you possibly can in order for me to complete my comparative study. the commercial bank profit figures and dates when capital adequacy ratios were implemented in particular are very crucial to my study.

Yours faithfully

Mrs C.L. Mudimu (surname now changed to Dhliwayo)

Appendix 8.4 Return on capital

Year	Commercial banks			Merchant banks		
	Barclays	Zimbank	BCCZ	MCBA	Std Merchant	RAL
1979	70.6	17.4	*	*	*	16.6
1980	73.3	18.5	*	*	*	16.9
1981	*	20.1	0.06	*	*	15.0
1982	17.1	15.2	6.1	*	*	15.4
1983	16.1	18.3	2.9	*	11.8	15.6
1984	26.2	15.5	2.8	*	13.9	16.9
1985	26.2	18.8	4.1	8.3	26.0	14.6
1986	42.6	18.0	6.3	11.5	25.7	15.4
1987	31.7	19.2	10.0	13.6	25.4	16.3

Year	Commercial banks	Merchant banks
1975	43.6	*
1976	6.1	*
1977	6.4	*
1978	6.0	*
1979	8.9	6.4
1980	12.6	10.5
1981	18.9	3.0
1982	14.7	6.8
1983	17.2	7.2
1984	14.1	8.2
1985	10.9	12.6
1986	10.7	11.3
1987	16.9	14.5

Sources:
1. Reserve Bank of Zimbabwe, Quarterly Economic and Statistical Review, various issues
2. CSO Zimbabwe 1988
3. Individual bank annual reports, various
4. Researcher's calculations

Appendix 8.5 Return on assets

Year	Commercial banks			Merchant banks		
	Barclays	Zimbank	BCCZ	MCBA	Std Merchant	RAL
1979	0.8	1.7	*	*	*	1.3
1980	0.8	1.5	*	*	*	1.2
1981	*	1.8	0.01	*	*	1.1
1982	0.6	1.2	0.4	*	*	0.8
1983	0.6	1.4	0.2	*	0.5	0.9
1984	1.1	1.0	0.1	*	0.7	0.9
1985	1.2	1.2	0.1	0.5	1.7	0.9
1986	1.3	1.2	0.2	1.0	1.4	1.2
1987	1.3	1.2	0.3	1.2	1.5	1.2

Year	Commercial banks	Merchant banks
1975	0.7	*
1976	0.2	*
1977	0.3	*
1978	0.3	*
1979	0.6	0.7
1980	0.8	1.0
1981	1.2	0.4
1982	0.9	0.8
1983	1.1	1.0
1984	0.9	1.1
1985	0.7	1.9
1986	0.7	2.2
1987	1.2	2.1

Sources:
1. Reserve Bank of Zimbabwe, Quarterly Economic and Statistical Review, various issues
2. CSO Zimbabwe 1988
3. Individual bank annual reports, various
4. Researcher's calculations

Appendix 8.6 Profit margin

Year	Barclays	Commercial banks Zimbank	BCCZ
1979	85.7	*	*
1980	86.8	*	*
1981	*	*	100.0
1982	46.6	*	44.4
1983	40.2	*	22.2
1984	44.3	*	16.6
1985	46.0	*	23.0
1986	49.7	21.8	20.0
1987	48.3	21.4	23.6

Year	Commercial banks	Merchant banks
1979	7.7	8.8
1980	11.5	12.9
1981	14.4	4.7
1982	8.7	5.0
1983	9.1	4.9
1984	8.1	5.5
1985	6.0	9.5
1986	6.0	11.3
1987	10.4	11.8

Sources: 1 Individual bank annual reports, various
2 CSO Zimbabwe 1988
3 Researcher's calculations

Appendix 8.7 Operating expenses/total income

Year	Commercial banks	Merchant banks
1979	57.2	14.7
1980	54.1	12.9
1981	46.1	12.4
1982	35.8	9.5
1983	33.3	9.9
1984	32.1	10.0
1985	33.4	10.3
1986	33.7	11.9
1987	33.1	13.9

Sources:
1. Reserve Bank of Zimbabwe, Bank Supervision Department, 1988
2. Individual bank annual reports, various issues
3. Quarterly and Statistical Review, Reserve Bank of Zimbabwe, various issues
4. Quarterly Digest of Statistics, CSO, various issues
5. Statistical Yearbook, SCO, 1987, 1988
6. Central Statistical Office, Zimbabwe 1988
7. Researcher's calculations

Appendix 8.8 Capital/deposits

Year	Commercial banks			Merchant banks		
	Barclays	Zimbank	BCCZ	MCBA	Std Merchant	RAL
1979	1.5	15.0	*	5.1	*	17.0
1980	1.5	11.0	*	5.5	*	12.8
1981	*	12.5	25.6	14.4	*	18.5
1982	4.1	10.2	8.8	12.2	*	11.5
1983	5.0	9.7	8.5	13.0	11.7	12.9
1984	5.2	8.5	6.9	13.8	15.3	14.0
1985	5.5	8.6	5.0	14.3	22.3	18.6
1986	3.6	9.2	4.0	26.0	21.3	30.0
1987	4.7	7.6	3.6	27.2	23.2	30.1

Year	Commercial banks	Merchant banks
1975	1.8	10.1
1976	3.4	10.6
1977	6.0	12.0
1978	6.1	12.1
1979	7.1	10.8
1980	6.6	9.9
1981	6.4	13.5
1982	6.5	11.8
1983	6.6	13.9
1984	6.7	13.7
1985	6.5	15.3
1986	6.8	19.4
1987	8.6	14.8

Sources: 1 Reserve Bank of Zimbabwe, Quarterly Economic and Statistical Review, various issues
2 Researcher's calculations

Appendix 8.9 Capital/assets

Year	Commercial banks			Merchant banks		
	Barclays	Zimbank	BCCZ	MCBA	Std Merchant	RAL
1979	1.2	9.8	*	2.6	*	8.3
1980	1.2	8.2	*	2.9	*	7.3
1981	*	9.1	19.6	7.4	*	7.4
1982	3.7	8.0	7.4	6.4	*	5.7
1983	4.3	7.6	7.5	7.0	4.2	6.0
1984	4.5	6.9	5.8	6.3	5.0	5.7
1985	4.9	6.8	4.5	6.1	6.5	6.4
1986	3.2	6.9	4.0	9.1	5.7	7.9
1987	4.2	6.4	3.4	9.2	6.0	7.5

Year	Commercial banks	Merchant banks
1975	1.8	10.1
1976	3.4	10.6
1977	6.0	12.0
1978	6.1	12.1
1979	7.1	10.8
1980	6.6	9.9
1981	6.4	13.5
1982	6.5	11.8
1983	6.6	13.9
1984	6.7	13.7
1985	6.5	15.3
1986	6.8	19.4
1987	7.5	14.8

Sources: 1 Reserve Bank of Zimbabwe, Quarterly Economic and Statistical Review, various issues
2 Researcher's calculations

Appendix 8.10 Zimbabwe aggregate commercial banks

Year	Capital/risky assets ratio	Increase in loans	Increase in assets	Increase in deposits
1975	2.0			
1976	4.3	2.8	0.6	9.2
1977	7.3	4.9	5.2	3.9
1978	7.4	-1.8	3.1	3.4
1979	9.0	-9.2	4.9	9.1
1980	9.3	19.1	15.2	27.1
1981	8.1	58.8	39.2	23.0
1982	8.2	23.2	19.1	20.4
1983	8.4	9.6	2.9	3.7
1984	8.5	1.3	19.7	16.1
1985	8.3	16.3	13.9	17.1
1986	8.6	19.8	11.4	8.2
1987	9.4	3.4	15.7	16.2

Sources: 1 Quarterly Economic and Statistical Review, Reserve Bank of Zimbabwe, various issues
2 Researcher's calculations

Appendix 8.11 Provision for bad debts/total loans

Year	Commercial banks	Merchant banks
1979	0.06	0.05
1980	0.1	0.6
1981	0.00	0.06
1982	0.06	0.4
1983	012	0.4
1984	0.1	0.2
1985	0.1	0.1
1986	0.1	0.05
1987	0.1	0.04

Sources:
1 Reserve Bank of Zimbabwe, Bank Supervision Department, 1988
2 CSO Zimbabwe 1988
3 Reserve Bank of Zimbabwe Economic and Statistical Review, various issues
4 Researcher's calculations

Appendix 8.12 Cyprus commercial banks' ratios

Year	Capital/ assets	Capital/ deposits	Capital/ risky assets	Loans/ assets	Loans/ deposits	Increase in capital /capital	Increase in capital /assets	Increase in loans	Increase in assets	Increase in deposits
1970	9.2	12.3	11.9	59.5	78.9	*	*			
1971	8.8	11.3	12.3	56.1	72.0	11.4	1.0	11.9	18.7	22.7
1972	8.2	10.3	11.6	58.0	72.7	8.9	0.7	21.6	17.5	20.4
1973	9.3	11.9	12.1	63.7	80.9	21.9	2.0	24.0	13.1	11.8
1974	10.3	13.1	13.1	64.6	82.3	20.9	2.1	16.7	15.0	14.7
1975	10.7	13.4	13.3	66.9	83.8	3.0	0.3	2.8	-0.7	0.9
1976	10.8	13.7	14.6	60.9	77.6	18.8	2.0	11.3	22.1	20.2
1977	10.8	13.6	13.7	67.0	84.5	14.0	1.5	27.6	16.2	17.1
1978	11.5	14.5	14.2	67.9	86.0	18.7	2.1	17.4	15.6	15.3
1979	10.2	12.9	10.7	68.5	87.0	5.9	0.6	20.7	19.7	19.4
1980	9.8	12.8	12.5	64.4	84.1	13.6	1.3	12.9	19.9	16.7
1981	9.7	12.4	12.7	62.2	78.9	15.2	1.4	14.9	19.0	22.5
1982	9.7	12.4	12.8	59.6	76.5	18.0	1.7	17.7	22.8	21.5
1983	9.3	12.2	12.2	56.9	74.8	11.6	1.0	12.7	18.2	15.2
1984	8.9	11.7	10.9	54.7	71.8	11.7	1.0	13.3	17.8	18.0
1985	8.4	11.2	11.2	56.6	75.2	5.1	0.4	15.3	11.2	9.9
1986	8.1	10.8	10.8	55.9	74.5	7.9	0.6	11.2	12.8	12.3
1987	8.5	11.3	11.5	54.9	73.6	15.8	1.3	12.2	14.1	13.5

Sources: 1 Central Bank of Cyprus Bulletin, June 1988
2 Researcher's calculations

Appendix 8.13 Kenya commercial banks' ratios

Year	Capital/ assets	Capital/ deposits	Capital/ risky assets	Loans/ deposits	Loans/ assets	Increase in capital	Increase in deposits	Increase in loans	Increase in assets
1970	6.4	6.3	7.9	59.4	60.2				
1971	6.6	6.6	7.9	75.1	75.8	12.9	9.3	38.2	9.8
1972	7.6	7.7	8.8	68.4	67.8	22.3	10.9	1.0	12.8
1973	6.6	6.7	7.5	70.8	69.9	11.0	28.6	32.9	29.0
1974	6.9	7.5	7.8	84.0	77.5	17.7	8.6	28.9	16.2
1975	7.2	7.4	7.8	80.1	78.1	13.7	17.9	12.5	11.7
1976	7.1	7.5	7.6	74.2	70.9	19.3	22.6	13.5	24.9
1977	6.9	7.1	7.8	68.7	67.3	28.4	46.8	35.9	43.2
1978	7.9	8.1	8.5	76.4	75.0	23.7	15.5	28.4	15.2
1979	7.2	7.6	7.9	77.5	72.7	6.9	13.0	14.7	18.;3
1980	8.7	9.7	9.5	87.3	78.5	22.3	2.1	14.9	6.5
1981	9.9	10.9	10.5	84.1	76.1	20.8	12.0	7.9	11.2
1982	9.6	10.6	10.6	79.5	71.8	12.5	17.3	10.9	17.6
1983	9.8	10.7	10.5	83.4	76.2	6.4	5.8	10.9	4.6
1984	10.0	11.0	10.8	82.1	74.5	14.4	13.9	12.1	14.7
1985	10.3	11.4	11.3	84.9	77.0	12.5	10.9	14.8	11.1
1986	9.7	10.9	10.8	79.3	70.4	17.1	25.9	17.5	28.6
1987	8.9	9.5	9.4	82.9	77.2	-5.4	8.6	13.4	3.4

Sources: 1 Central Bank of Kenya Annual Report
2 Researcher's calculations

Appendix 8.14 Malawi commercial banks' ratios

Year	Capital/ assets	Capital/ deposits	Capital/ risky assets	Loans/ deposits	Loans/ assets	Profit/ capital	Profit/ assets	Increase in assets	Increase in loans	Increase in deposits
1970				63.3	55.2					
1971	3.9	4.8	4.6	69.4	56.5			29.3	32.4	20.8
1972	3.9	4.7	4.8	76.1	62.7	9.7	0.3	9.1	21.1	10.3
1973	3.6	4.2	6.4	50.0	43.2	37.5	1.3	38.3	-4.7	44.9
1974	4.8	5.7	8.0	59.3	49.7	38.6	1.8	32.1	52.1	28.4
1975	5.2	6.3	8.0	66.7	55.2	47.1	2.4	12.6	25.1	11.2
1976	6.8	9.0	8.5	91.1	69.0	38.8	2.6	8.9	41.7	3.7
1977	9.6	12.8	12.9	83.0	62.1	18.1	1.7	27.7	14.9	26.2
1978	9.8	13.1	12.7	89.1	66.5	23.9	2.3	2.8	30.5	21.6
1979	8.6	14.8	9.9	132.5	76.9	14.4	1.2	23.3	42.5	-4.2
1980	9.2	15.5	10.9	117.5	69.8	-0.8	-0.07	9.2	-0.9	12.1
1981	8.2	11.8	10.1	99.8	69.4	11.1	0.9	8.3	7.6	26.4
1982	9.1	13.6	10.9	103.6	69.2	1.0	0.09	17.7	17.5	13.2
1983	9.1	14.7	10.8	112.8	69.7	3.6	0.3	12.1	12.9	3.7
1984	8.4	12.4	13.3	78.5	53.2	1.9	0.1	22.7	-6.4	34.4
1985	9.1	14.1	14.9	78.6	50.9	9.7	0.8	3.1	-1.3	-1.3
1986	9.3	14.4	17.1	68.2	44.0	11.2	1.0	24.9	7.9	24.3
1987	8.5	11.4	18.6	47.4	35.2	11.4	0.9	16.5	-6.7	34.4

Sources: 1 Reserve Bank of Malawi, Financial and Economic Review, vol. xx, no. 1, 1988
2 Researcher's calculations

Appendix 8.15 Belize commercial banks' ratios

Year	Capital/ assets	Capital/ deposits	Capital/ risky assets	Loans/ deposits	Loans/ assets	Return on capital	Return on assets	Increase in assets	Increase in loans	Increase in deposits
1977	6.0	8.6	6.7	95.8	66.2	32.6	7.9			
1978	4.6	6.6	5.4	82.9	57.7	29.9	4.7	25.3	9.2	26.2
1979	5.4	8.7	5.8	104.6	65.1	34.6	7.8	18.1	33.2	5.6
1980	5.0	8.1	5.6	98.4	60.4	38.3	7.6	14.3	6.2	12.8
1981	4.8	7.8	5.3	103.6	63.8	40.6	6.8	12.2	11.9	12.7
1982	4.3	7.3	4.5	116.0	68.6	20.1	3.3	13.1	21.5	8.5
1983	4.8	7.5	5.6	103.5	66.1	20.6	3.7	10.8	6.9	19.8
1984	4.7	7.4	5.4	107.7	68.6	21.8	2.7	4.4	8.2	3.9
1985	5.1	7.5	6.2	94.2	64.6	12.3	1.5	-1.9	-7.6	5.7
1986	5.7	6.9	6.8	77.7	57.2	16.1	1.7	7.7	-4.6	15.8
1987	4.9	6.3	6.5	77.3	60.6	15.9	1.6	14.7	21.5	21.9

Sources: 1 Central Bank of Belize Statistical Digest 1988, 1989
2 Researcher's calculations

Appendix 8.16 Malaysia commercial banks' ratios

Year	Capital/ deposits	Capital/ assets	Capital/ risky assets	Loans/ deposits	Loans/ assets	Increase in capital /capital	Increase in capital /assets	Increase in loans	Increase in assets	Increase in deposits
1975	4.1	3.1	4.2	79.8	59.8	11.0	0.3			
1976	3.5	2.6	3.6	76.7	57.5	9.9	0.2	24.6	29.6	29.7
1977	4.5	3.4	4.6	78.2	59.0	32.6	1.1	18.6	15.5	16.3
1978	4.1	3.2	4.1	83.5	64.2	9.3	0.2	28.6	18.1	20.3
1979	3.7	2.8	3.5	80.3	61.0	14.2	0.4	25.2	21.8	30.2
1980	4.1	2.9	3.6	90.1	65.3	25.9	0.7	36.7	27.7	21.9
1981	5.6	3.9	4.7	90.8	62.6	39.4	1.5	21.4	26.5	20.5
1982	6.0	4.0	4.8	89.7	60.6	20.1	0.8	16.2	20.2	17.6
1983	8.0	4.9	5.8	99.0	61.1	33.3	1.6	23.9	22.9	12.4
1984	8.4	5.3	6.3	102.1	65.1	16.5	0.8	18.3	10.9	14.7
1985	9.0	5.5	6.4	106.7	65.9	12.2	0.7	12.6	11.2	7.7
1986	9.0	5.5	6.3	107.4	65.9	6.5	0.3	6.8	6.8	6.2
1987	10.6	6.3	7.3	103.7	61.5	17.0	1.0	-0.3	6.8	3.3

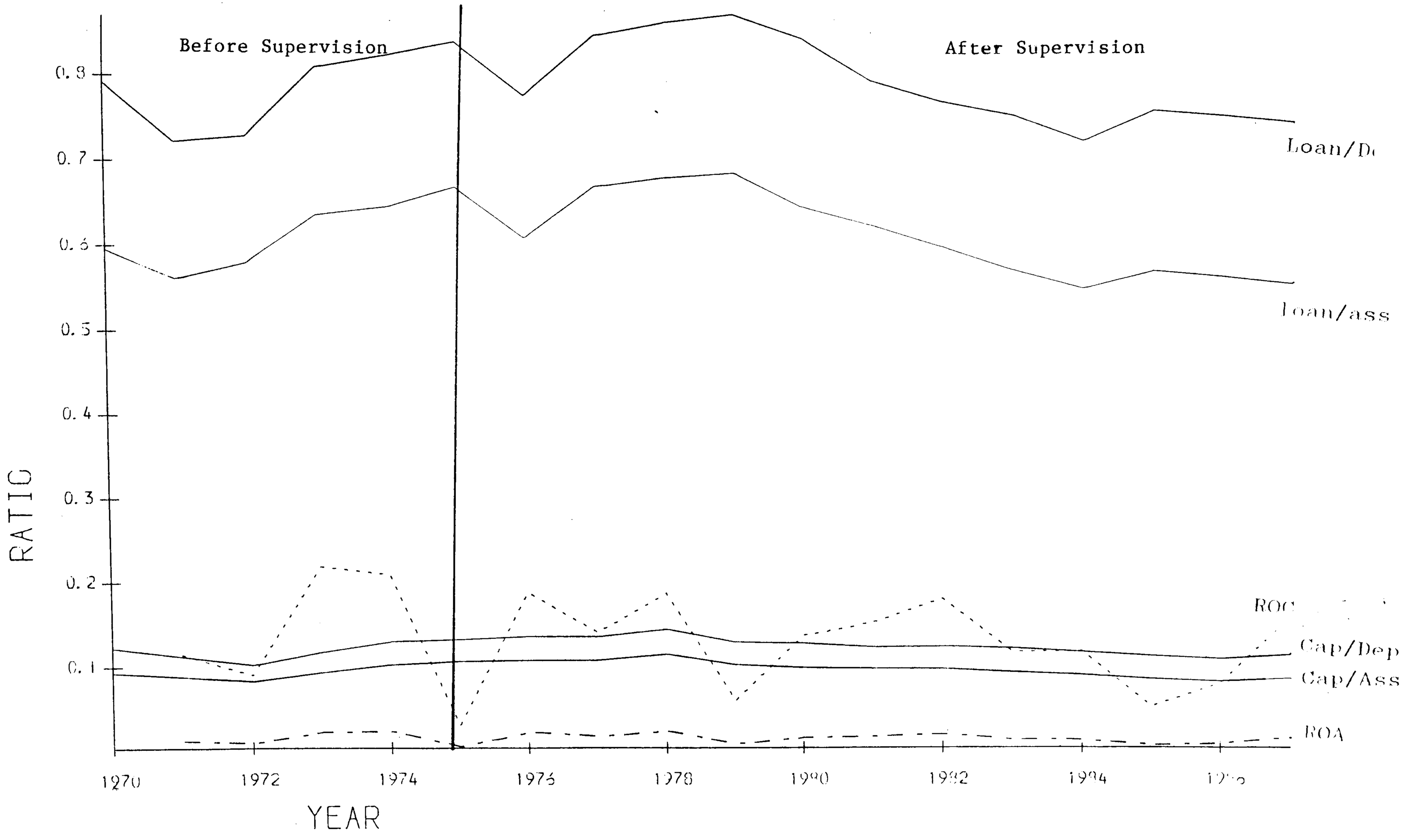
Sources: 1 Money and Banking in Malaysia 1989
2 Researcher's calculationsd

Appendix 8.17 Nigerian commercial banks' ratios

Year	Capital/ assets	Capital/ deposits	Capital/ risky assets	Loans/ assets	Loans/ deposits	Increase in capital /capital	Increase in capital /assets	Increase in loans	Increase in assets	Increase in deposits
1978	2.9	5.0		45.1	77.5					
1979	2.9	4.7	3.9	41.0	66.2	18.1	0.5	12.4	23.4	31.4
1980	2.3	3.8	3.1	39.0	63.7	15.7	0.3	38.1	45.4	43.6
1981	2.5	4.6	3.0	44.1	80.5	21.7	0.5	34.8	19.2	6.7
1982	2.9	5.5	3.7	45.3	85.5	25.5	0.7	19.4	16.3	12.6
1983	3.1	6.0	4.1	41.5	79.6	20.9	0.6	8.0	17.8	15.9
1984	3.2	6.1	4.7	38.2	73.1	12.5	0.4	3.6	12.6	12.9
1985	3.5	6.4	5.3	38.0	69.1	14.3	0.5	5.7	6.4	11.8
1986	3.4	6.6	4.5	40.0	78.4	6.6	0.2	16.3	10.4	2.6

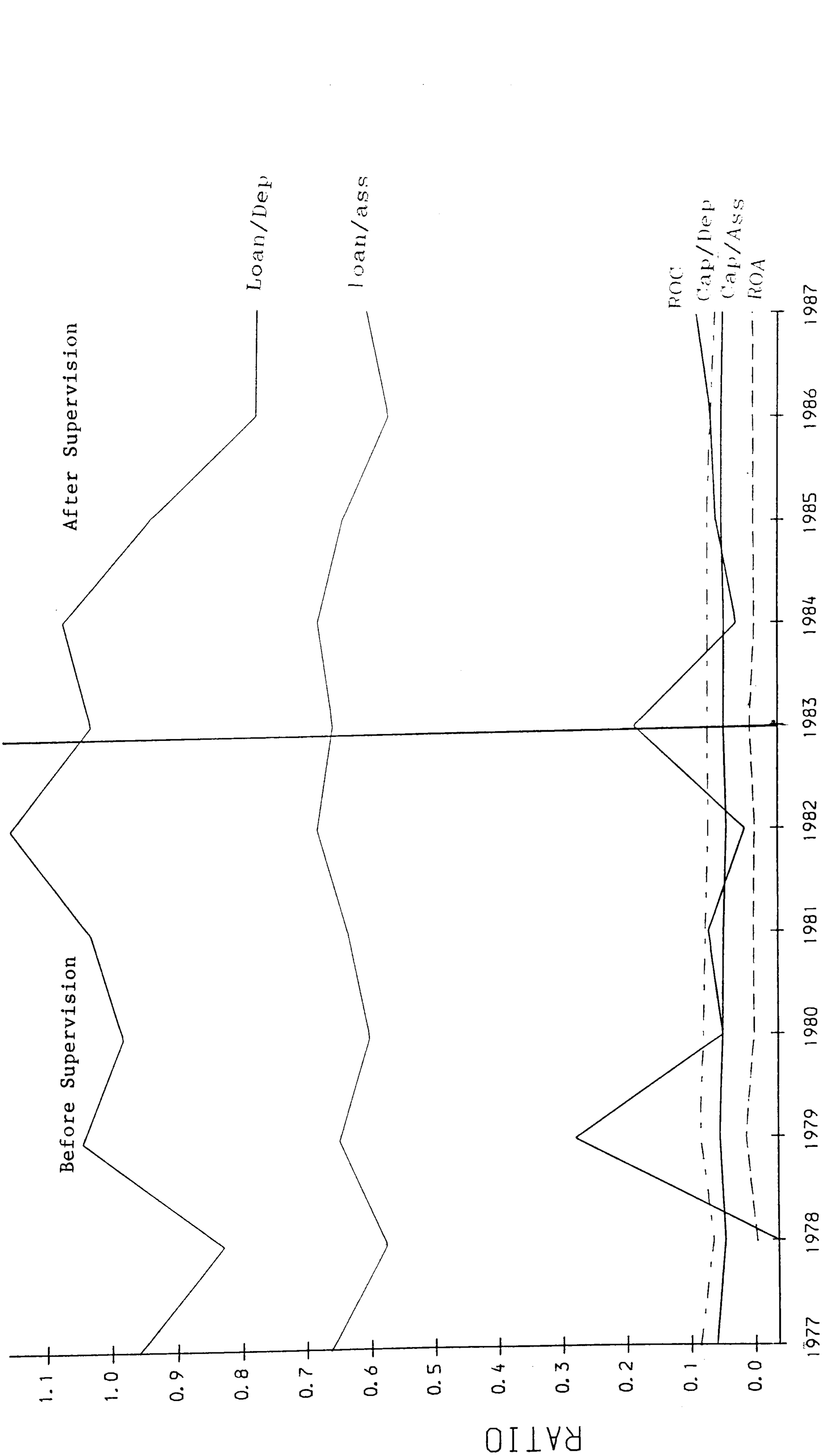
Sources: 1 Central Bank of Nigeria Economic and Financial Review, September 1986
2 Researcher's calculations

Appendix 8.18 Cyprus Ratios



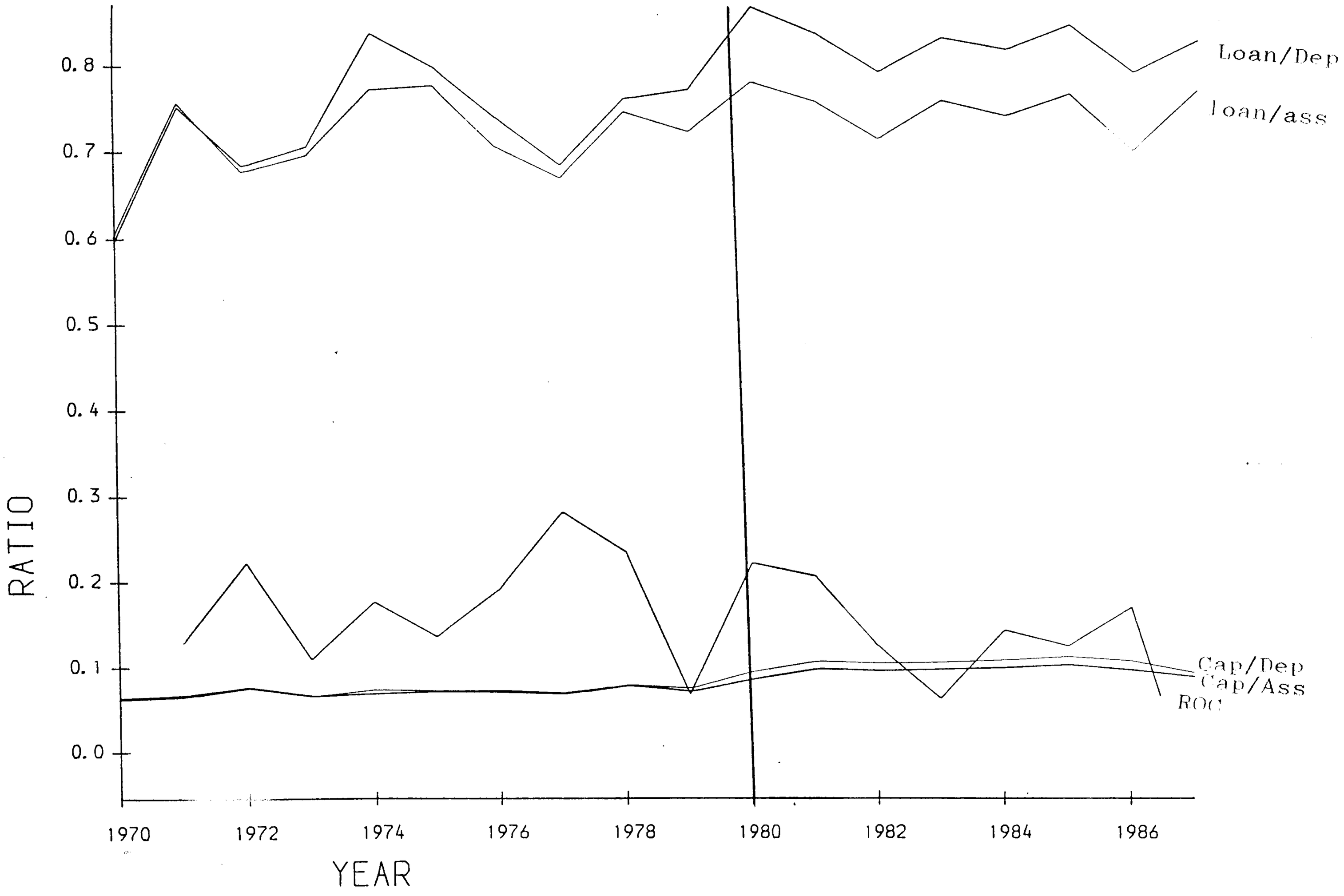
Appendix 8.19

Belize Ratios

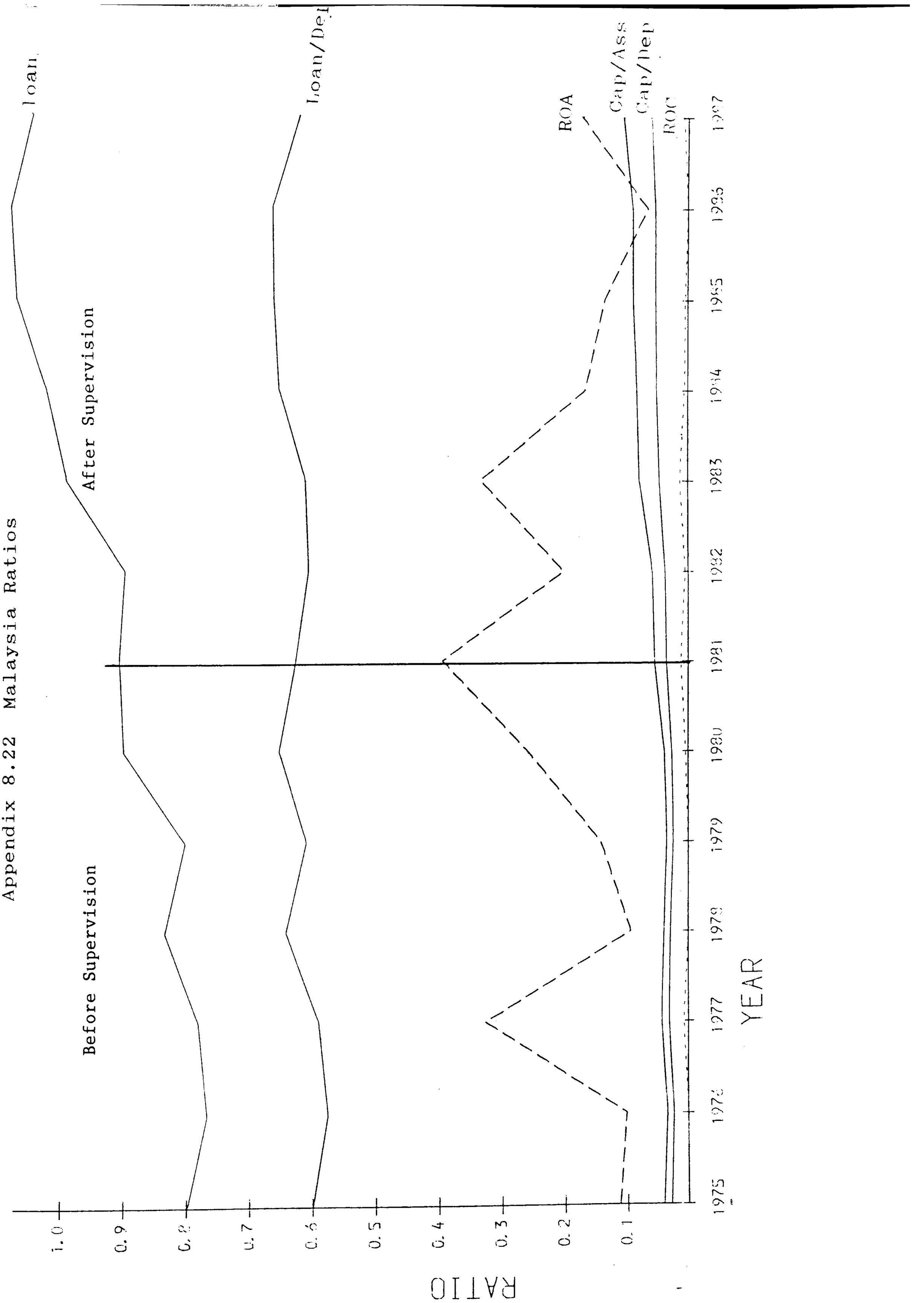


Appendix 8.20 Nigeria Ratios

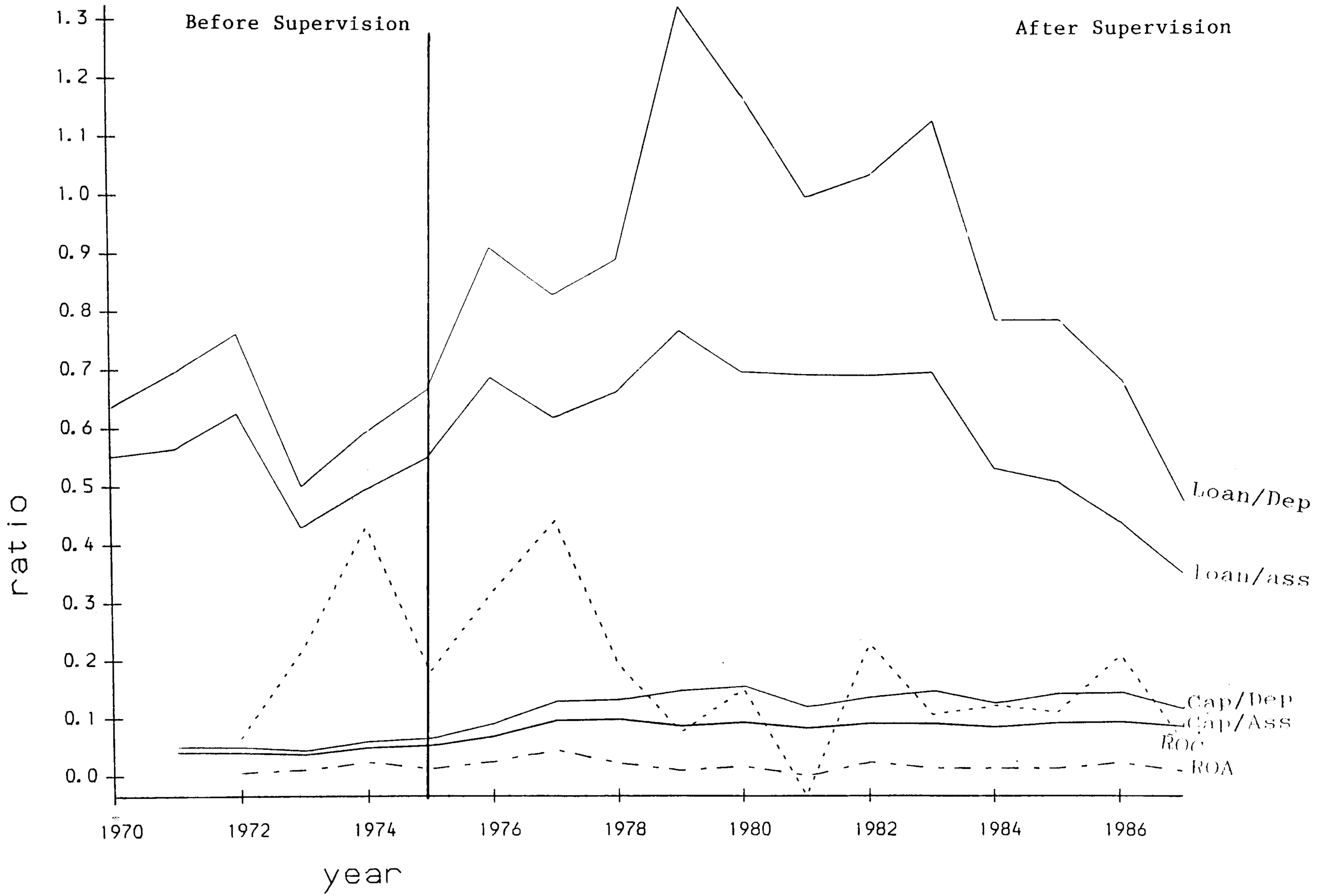
Appendix 8.21 Kenya Ratios



Appendix 8.22 Malaysia Ratios



Appendix 8.23 Malawi Ratios



APPENDIX 3

For Chapter 9

Appendix 9.1 Identification of a control group of developing countries

List of Embassies contacted

1. Uganda
2. Swaziland
3. Tanzania
4. Zimbabwe (enquiries on list of African Embassies in London)

APPENDIX 4

For Chapter 10

Appendix 10.1 Balance sheet categories

Mnemonic	Transfer category	Portfolio category	Description
Liabilities			
SHAR	YES		Paid up share capital
CRES	YES		Capital reserves
RRES	YES		Revenues reserves
PROV	YES		Provisions
DEPN	YES		Depreciation of fixed assets
CDBT		YES	Debt capital
TAXN	YES		Taxation payable
DIVI	YES		Dividends payable
DDIN			Demand deposits - individuals
DDCP			Demand deposits - corporate
TDVR			Time deposits - variable rate
TDFX			Time deposits - fixed rate
CDFX		YES	CDs issues - fixed rate
CDTR			Creditors
OTLI			Other liabilities
LIFE	YES		Life fund net liability
GENL	YES		General insurance liability
CONL			Contingent liabilities*
Assets			
CASH	YES		Cash
CALL	YES		Money at call
TBIL		YES	Treasury bills
OBIL		YES	Other bills
ASCD		YES	CDs purchased - fixed rate
IGOV		YES	Government securities
IMKT		YES	Marketable securities
INMK		YES	Non-marketable securities
LAMT	YES	YES	Amortised loans
LIFX	YES		Loans - ind. - fixed rate
LCFX	YES		Loans - corp.- fixed rate
LIVR	YES		Loans - ind. - variable rate
LCVR	YES		Loans - corp. - variable rate
OVER	YES		Overdrafts
COLL			Items in course of collection
DBR			Debtors
SDEP			Special deposits
OTAS			Other assets
TRAD			Trade investments
AFIX	YES		Fixed assets
CONA			Contingent assets*
LONO-LON9			Individual large loans

Note: * footnote to balance sheet only

Appendix 10.2 Portfolio array

Government stock

Maturity (Yr)	Par	Yield
2	51.5	10.1
3	94.2	10.4
4	2.3	12.30
5	104.7	11.0
7	2.0	11.6
22	0.3	13.4

Treasury Bills

Maturity (days)	Par	Yield
90	41.9	8.4

Other bills

Maturity (days)	Par	Yield
180	163.5	9.25

Certificates of deposits

Maturity (days)	Par	Yield
90	56.8	9.30

Source: Initial balance sheet file

Appendix 10.3 Experiment 1: 5% balance sheet growth and 1% increase in interest rates

Ratio	Simulation results for Experiment 1 1984	1985	1986	1987
Liquidity	44.9	44.5	44.0	44.9
Capital/assets	6.7	6.1	4.8	3.4
Capital/deposits	8.5	7.8	6.3	4.2
Loans/deposits	59.4	58.5	65.8	55.2
Loans/assets	47.3	45.6	49.7	44.5
Capital/risky assets	8.2	7.6	5.9	4.0
Capital-fixed assets /assets	4.5	4.0	2.6	1.2
Capital-fixed assets /risky assets	5.5	5.0	3.2	1.4
ROC		11.5	16.6	21.2
ROA		0.7	0.9	1.2

Appendix 10.4 Experiment 1: 10% balance sheet growth and 2% increase in interest rates

Ratios	Simulation results for Experiment 1 1984	1985	1986	1987
Liquidity	44.8	44.5	44.1	44.8
Capital/assets	6.7	6.0	4.7	3.3
Capital/deposits	8.5	7.7	6.3	4.1
Loans/deposits	59.4	58.5	65.8	55.2
Loans/assets	47.3	45.4	49.4	44.2
Capital/risky assets	8.2	7.4	5.8	3.9
Capital-fixed assets /assets	4.5	3.8	2.4	1.0
Capital-fixed assets /risky assets	5.5	4.8	3.0	1.2
ROC		12.1	17.9	27.4
ROA		0.7	1.0	1.1

Appendix 10.5 Experiment 1: 20% balance sheet growth and 3% increase in interest rates

Ratios	Simulation results for Experiment 1 1984	1985	1986	1987
Liquidity	44.4	44.9	44.3	44.9
Capital/assets	6.7	5.9	4.5	3.0
Capital/deposits	8.5	7.7	6.1	3.8
Loans/deposits	59.4	58.5	65.8	55.2
Loans/assets	47.3	45.1	48.9	43.8
Capital/risky assets	8.2	7.2	5.5	3.5
Capital-fixed assets /assets	4.5	3.6	2.0	0.6
Capital-fixed assets /risky assets	5.5	4.4	2.5	0.7
ROC		12.9	19.4	29.9
ROA		0.7	1.0	1.2

Appendix 10.6 **Experiment 1: 30% balance sheet growth and 4% increase in interest rates**

Ratios	Simulation results for Experiment 1 1984	1985	1986	1987
Liquidity	44.7	44.7	44.5	44.6
Capital/assets	6.7	5.8	4.3	2.7
Capital/deposits	8.5	7.6	5.8	3.5
Loans/deposits	59.4	58.5	65.8	55.2
Loans/assets	47.3	44.8	48.6	43.4
Capital/risky assets	8.2	7.0	5.1	3.1
Capital-fixed assets /assets	4.5	3.3	1.6	0.1
Capital-fixed assets /risky assets	5.5	3.9	1.9	0.1
ROC		13.7	19.5	33.1
ROA		0.8	1.0	1.2

Appendix 10.7 Experiment 1: 40% balance sheet growth and 5% increase in interest rates

Ratios	Simulation results for Experiment 1 1984	1985	1986	1987
Liquidity	44.0	44.9	44.3	44.9
Capital/assets	6.7	5.7	4.1	2.4
Capital/deposits	8.5	7.5	5.6	3.1
Loans/deposits	59.4	58.5	65.8	55.2
Loans/assets	47.3	44.4	48.2	43.1
Capital/risky assets	8.2	6.8	4.8	2.7
Capital-fixed assets /assets	4.5	3.0	1.2	-0.4
Capital-fixed assets /risky assets	5.4	3.6	1.5	-0.5
ROC		14.6	20.7	34.4
ROA		0.8	1.1	1.2

Appendix 10.8 **Experiment 1: 50% balance sheet growth and 6% increase in interest rates**

Ratios	Simulation results for Experiment 1 1984	1985	1986	1987
Liquidity	44.7	44.6	44.5	44.4
Capital/assets	6.7	5.6	3.9	2.2
Capital/deposits	8.5	7.5	5.4	2.8
Loans/deposits	59.4	58.5	65.8	55.2
Loans/assets	47.3	44.1	47.7	42.7
Capital/risky assets	8.2	6.5	4.5	2.4
Capital-fixed assets /assets	4.5	2.7	0.9	-0.8
Capital-fixed assets /risky assets	5.5	3.2	1.0	-0.9
ROC		15.4	22.2	37.4
ROA		0.8	1.1	1.3

Appendix 10.9 Experiment 2: 5% balance sheet growth and 1% increase in interest rate

Ratios	Simulation results for Experiment 2 1985	1986	1987
Liquidity	40.0	44.0	40.2
Capital/assets	6.5	6.7	6.9
Capital/deposits	8.2	8.7	9.4
Loans/deposits	8.2	8.4	8.4
Loans/assets	58.5	65.8	60.8
Capital/risky assets	46.8	50.7	45.1
Capital-fixed assets /assets	4.4	4.4	4.7
Capital-fixed assets /risky assets	5.5	5.6	5.7
ROC	11.8	12.9	22.2
ROA	0.7	0.8	1.3

Appendix 10.10 **Experiment 2: 10% balance sheet growth and 2% increase in interest rate**

Ratios	Simulation results for Experiment 2 1985	1986	1987
Liquidity	40.4	44.3	40.1
Capital/assets	6.5	6.7	7.0
Capital/deposits	8.2	8.7	9.4
Loans/deposits	8.2	8.5	8.4
Loans/assets	58.5	65.8	60.8
Capital/risky assets	46.4	50.3	45.0
Capital-fixed assets /assets	4.3	4.3	4.7
Capital-fixed assets /risky assets	5.4	5.5	5.6
ROC	12.3	13.1	22.4
ROA	0.7	0.8	1.3

Appendix 10.11 **Experiment 2: 20% balance sheet growth and 3% increase in interest rate**

Ratios	Simulation results for Experiment 2 1985	1986	1987
Liquidity	40.2	40.2	40.0
Capital/assets	6.5	6.7	7.1
Capital/deposits	8.2	8.9	9.5
Capital/risky assets	8.2	8.5	8.5
Loans/deposits	58.5	65.8	60.8
Loans/assets	46.4	50.3	45.0
Capital-fixed assets /assets	4.1	4.2	4.5
Capital-fixed assets /risky assets	5.2	5.3	5.4
ROC	12.8	13.6	22.7
ROA	0.7	0.8	1.3

Appendix 10.12 **Experiment 2: 30% balance sheet growth and 4% increase in interest rate**

Ratios	Simulation results for Experiment 2 1985	1986	1987
Liquidity	40.0	40.0	40.2
Capital/assets	6.6	6.8	7.1
Capital/deposits	8.3	8.9	9.6
Capital/risky assets	8.2	8.6	8.6
Loans/deposits	58.5	65.8	60.8
Loans/assets	46.4	50.3	47.0
Capital-fixed assets /assets	3.9	4.0	4.4
Capital-fixed assets /risky assets	4.9	5.1	5.3
ROC	13.2	14.0	23.1
ROA	0.8	0.8	1.3

Appendix 10.13 Experiment 2: 40% balance sheet growth and 5% increase in interest rate

Ratios	Simulation results for Experiment 2 1985	1986	1987
Liquidity	40.0	40.1	40.1
Capital/assets	6.6	6.8	7.2
Capital/deposits	8.3	8.9	9.7
Capital/risky assets	8.2	8.6	8.6
Loans/deposits	58.5	65.8	60.8
Loans/assets	46.3	50.0	44.7
Capital-fixed assets /assets	3.7	3.8	4.2
Capital-fixed assets /risky assets	4.7	4.9	5.1
ROC	13.7	14.4	23.2
ROA	0.8	0.9	1.3

Appendix 10.14 Experiment 2: 50% balance sheet growth and 6% increase in interest rate

Ratios	Simulation results for Experiment 2 1985	1986	1987
Liquidity	40.1	40.1	40.0
Capital/assets	6.6	6.8	7.2
Capital/deposits	8.3	9.0	9.8
Capital/risky assets	8.2	8.7	8.7
Loans/deposits	58.5	65.8	60.8
Loans/assets	46.0	49.9	44.6
Capital-fixed assets /assets	3.6	3.7	4.0
Capital-fixed assets /risky assets	4.5	4.6	4.9
ROC	14.2	14.7	23.5
ROA	0.8	0.9	1.4

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