

**THE IMPACT OF FINANCIAL SECTOR DEVELOPMENT
ON INVESTMENT IN THE MANUFACTURING SECTOR
OF ZIMBABWE**

Master of Arts (Economics) Thesis

BY

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fulfillment of the requirements of the Master of Arts Degree in Economics**

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DECLARATION

I declare that this thesis is my original work and has not been submitted to any university for an award of a degree before.

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DEDICATION

To those who consciously or unconsciously made me to be what I am today.

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I also want to pass my deep gratitude to my family members especially to my mother Mai Shoorai Mazvimba I love you mama, my late father Mr Ndoziya Mazvimba you are my hero, to my brother Venganai you are more than a brother, a friend and a father, may the good Lord bless you. Special mention also goes to my late sister Shoorai, thank you for your determination; I also want to thank my sister Enia, my brother Muchinazvo and my uncle Christopher Munapo for their undying support for me to be what I am today.

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ABSTRACT

This study seeks to examine the impact of financial development on investment and output in the manufacturing sector of Zimbabwe during the 1965-2003 period. The role of finance in the process of economic growth has been recognized more than a century ago and of late there has been a built up of literature on the same. In promoting investment and output growth financial systems play a number of functions, which include mobilization of savings, efficient allocation of resources, exerting corporate control and pooling of risk. The role of finance is more pronounced in sectors, which depend heavily on external finance than those, which depend on internal finance. The study used a Two Stage Least Squares approach to estimate the investment and output equation in order to circumvent the simultaneity bias problem. Cointegration and Error correction modeling was adopted to analyse the short and long run behaviour of investment and output in the manufacturing sector. The results of the two equations support the view that financial development positively impacts on investment and output in the manufacturing sector of Zimbabwe. Other major determinants of investment and output were found to be foreign currency earnings and inflation. The findings imply that policy makers should aim at promoting financial sector growth.

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LIST OF ABBREVIATIONS

AERC	African Economic Research Consortium
ESAP	Economic Structural Adjustment Programme
UDI	Unilateral Declaration of Independence
GDP	Gross Domestic Product
ISI	Import Substitution Industrialisation
IMF	International Monetary Fund
BLR	Base Lending Rate
ZSE	Zimbabwe Stock Exchange
OECD	Organisation of Economic Cooperation and Development

CHAPTER 1

Introduction

1.1 Background

Financial development plays a crucial role in the process of economic growth through the promotion of investment, productivity growth and technological change in all sectors of the economy. In this study financial development is defined as the establishment and expansion of financial institutions, instruments and markets that support investment and growth processes. The recognition of the role of finance in the process of economic growth dates back to 18th century with Bagehot (1847) and Schumpeter (1911) being the earlier proponents of the importance of finance in the process of economic growth. They conjectured that bankers help to identify entrepreneurs with good growth prospects, and therefore help to reallocate resources to their most productive uses. In the same vein Dornbusch and Reynso (1989) more than a century later concurred with the above conjectures that for investment to take place three conditions must be met: firm (and/or government) must be willing to invest; savings must be available and these savings must be channelled to those who plan to invest in the most attractive opportunities. The financial system of an economy can support or disrupt this process calling for the need for a well-developed financial system, which is in a better position to identify investment opportunities, mobilise savings and reduce investment in liquid and unproductive assets.

Views on the links between financial growth and economic growth focus on the key functions of financial systems in the saving-investment-growth nexus. Levine (1997 2004) points out a number of functions performed by the financial system, which promote the investment process. The functions identified include acting as an effective conduit for channelling funds from surplus to deficit units by mobilizing resources and ensuring an efficient transformation of funds into real productive capital. Secondly, financial intermediation transforms the maturity of the portfolios of savers and investors, while providing sufficient liquidity to the system as the need arises. Thirdly the financial system reduces risk through diversification sharing and pooling of various kinds of risk. By performing these functions a modern financial system spur economic growth by facilitating investment, technological change and productivity growth in the economy.

The importance of the role of financial development is more pronounced in sectors that heavily rely on external finance for capital expenditure purposes like the manufacturing sector. Rajan and Zingales (1998) argue that industries that are naturally heavy users of external finance (for example chemical and pharmaceuticals) should benefit disproportionately more from greater financial development than industries that are not naturally heavy users of external finance like tobacco. They noted that financial intermediaries and markets help overcome market frictions that drive a wedge between the price of external and internal finance. Better functioning financial systems lower the cost of external finance, which disproportionately fosters the growth of industries that rely heavily on external finance.

According to Dornbusch and Reynso (1989) financial factors in addition to being effective in sectors that are heavy users of external finance, they are also a dominant force when hyperinflation takes over and an exchange crisis disrupts the price system. In this scenario the economic horizon is shortened to a week or a month and normal economic development is suspended. In this line of argument Gupta (2004) states that financial development and liberalisation lead to price stabilisation and long-run growth through capital accumulation because (a) higher deposit rates would cause the households to substitute away from unproductive assets (foreign currency, cash, land, commodity stocks, and so on) in favor of bank deposits; (b) this in turn would raise the availability of deposits into the banking system, and would enhance the supply of bank credit to finance firms' capital requirements, and ; (c) This upsurge in investment would cause a strong supply side effect leading to higher output and lower inflation.

Taking from the foregoing discussion much of the poor industrialisation of the African economies can then be attributed to poor levels of financial intermediation due to financial repression. Financial repression is usually characterized by credit rationing, interest ceilings, unavailability of funds, poor monitoring and evaluation of projects factors which dampens investment demand hence low levels of industrial growth. The recognition of the role played by the financial system in fostering investment led to the liberalisation of the financial sector as a remedy to stagnant industrial growth.

The continent wide phenomena of poor industrialization and stagnant economic growth were also a cause of concern in Zimbabwe making the country to adopt an economic reform programme in 1991. Before the reform programme investment was greatly constrained by foreign currency shortages, a heavily controlled financial sector and uncertain economic environment. Narrowing down to the manufacturing sector an overview of investment in the sector shows a sluggish growth of 4.3% over the 1985-90 period and 5.8% over the 1990-95 period.

It is a cause of concern that African manufacturing sector growth has been stagnant over the past years and this has made Africa the least industrialized region in the world. This is alarming because the performance of the manufacturing sector impacts on the whole economy. The sector is an engine for economic growth because of its influence on the balance of payments, superior ability to generate technological advances, and ability to stimulate production more widely through its linkages with other sector of the economy. Given the great bearing that sector has on the economy investment in it is a welcome move by all standards.

It is against the background of poor economic performance that financial development can foster growth through encouraging investment, technological innovations and adoptions by making large external capital available at lower cost other things being equal such that Africa can catch up with the industrialized nations.

Turning to financial sector of Zimbabwe reveals that the sector has a relatively sophisticated range of financial instruments and institutions to its credit. The sector, which began to develop before the 1960s has undergone a number of transformations as political regime and political-economic ideologies changed which both negatively and positively, impacted on investment and output in the manufacturing sector. Notable changes include the attainment of independence, liberalisation of the sector and indigenisation of the banking sector. The liberalisation of the financial sector has witnessed the opening up of the stock market to foreign investors, increase in the number of players in the banking sector, lowering of reserve requirements, removal of directed lending and decontrolling of interest rates. Such positive developments encouraged savings and investment.

It is of much interest to establish empirically the impact that the financial sector's growth over time among other economic and sociopolitical factors had on the economic activity in the manufacturing sector. This study seeks then to confirm or falsify the acclaimed role of finance in investment and economic growth with evidence from the Zimbabwean economy.

1.2 Problem Statement

With the attainment of independence in 1980, end of the war and sanctions investment by the private sector was expected to increase as the country joined the international community. However, the investment boom that followed as expected was only short-lived. In addition to attainment of independence, the adoption of the Economic Structural Adjustment Programme (ESAP) in 1991 was also expected to boost economic activity as predicted by neoclassical theories but the performance was dismal as shown by massive deindustrialisation in the economy. Given the sophisticated nature of the Zimbabwean manufacturing sector (by African standards) greater performance was expected to follow after the implementation of ESAP¹ which was the never the case again. This poor performance and wide fluctuations of investment in the manufacturing sector is a cause of concern since investment is an engine of economic growth. This study seeks to address this worrisome condition by explaining why the increase in investment and output in the manufacturing sector which occurred after independence could not be sustained, why investment and output in the manufacturing sector has continued to decline despite much expected star performance after ESAP, why continued deindustrialisation well after the abandonment of ESAP and what role does financial development play if any in the industrialisation of an economy. All in all, the motivation of this study is to understand the impact of financial development on capital accumulation and output growth using Zimbabwean manufacturing sector data.

1.3 Significance of the study

This study establishes the role of financial development among other factors in fostering or disrupting the process of capital accumulation in Zimbabwe. It seeks to

¹ Investment in the sector severely declined attaining an all time low growth rate of -28.3% in 1992. Gross domestic capital formation as a percentage of GDP declined from 25% in 1995 to 2% in 2000. This was translated into poor performance by the sector as measured by manufacturing output as a percentage of GDP. The share of the manufacturing sector in GDP declined from a high of 27% in 1992 to 19.2% by 1995 and 7.2% by 2002

establish the seemingly elusive key (which could be possibly financial development) to unlock the investment potential and arrest the current poor investment performance. The study improves the understanding of economic variables to target if economic turnaround programmes are to be successful and avoiding guesswork. The findings of this study add to the existing body empirical literature on the determinants of investment in Zimbabwe but specifically in the manufacturing sector from which policy recommendations to transform the Zimbabwean economy and possibly the whole region from being agro-based to industrialized economies can be drawn.

1.4 Objectives of the study

The overall objective of the study is to assess the impact of the level of financial development on investment in the manufacturing sector of Zimbabwe. To achieve the broad objective of the proposed study specifically seeks to

- i. Determine the impact of financial development on investment in the manufacturing sector of Zimbabwe
- ii. Determine the impact of financial development on real manufacturing output.

1.5 Hypotheses

The following hypotheses are going to be tested:

- i. Financial development has no positive impact on investment in the manufacturing sector
- ii. Financial development has no positive impact on manufacturing sector output.

1.6 Organisation of the study

The study is organized into five chapters with Chapter 1 giving the general introduction to the study. Chapter 2 gives an overview of the Zimbabwean economy paying particular attention the developments in the manufacturing and financial sectors. Chapter 3 is a review of both theoretical and empirical relationship between investment and financial development and this constitutes the guidelines of this study. Chapter 4 presents the econometric model used in the study and chapter 5 presents the empirical results obtained and their interpretation. Chapter 6 gives the conclusion and policy implications of the study.

CHAPTER 2

Overview of the Zimbabwean Economy

2.1 Introduction

The chapter seeks to review the major economic and political events and their impact on macroeconomic performance paying an in-depth attention to the manufacturing and financial sectors. The order of political events starts from the arrival of the early white settlers in the country through attainment of independence to the recent political unfolding. On the economic policy side the review will start by focusing on the import substitution industrialisation strategy through the economic reform programme to the recent myriad of economic blueprints. The objective is to shed light on the background against which investment decisions in the manufacturing sector were based.

The present day Zimbabwe's economic features are greatly owed to its colonial past. The arrival of the pioneer column led by Cecil John Rhodes in 1896 had high hopes of discovering vast deposits of gold and diamond as had happened in South Africa. However the non-existence of vast deposit of gold and diamond forced the early settlers to diversify into agriculture and manufacturing. This led to the development of the agricultural and manufacturing sector ahead of other sectors of the economy such that by 1940 the manufacturing sector accounted for 10% of GDP and 8% of total exports respectively. Developments on the political front also promoted the economic well being of Southern Rhodesia. Such key development includes the establishment of the Federation of Rhodesia and Nyasaland that had Salisbury as its capital, its subsequent breakdown in 1963 and the unilateral declaration of independence in 1965 by the Southern Rhodesia government.

2.1.1 Unilateral Declaration of Independence (UDI) 1965-1979)

The declaration of independence from Britain by the white minority government in 1965 after the breakdown of the federation attracted sanctions from the international community. To mitigate the effects of the sanctions the Ian Smith regime pursued an import substitution industrialization (ISI) strategy. The state played a pivotal role in resource allocation by forming state enterprises and using price controls. The early stages of the ISI strategy were very successful and this witnessed an improvement in

most economic indicators. The performance of investment and GDP is give in Table 1 below

Table 1 Investment and GDP growth rate

Indicator/Period	1960-64	1965-1969	1970-1974	1975-1979
Real GDP	3	21	28	-7.4
Investment	-3	40	84.6	-105

GDP and investment increased by all time high rates of 28% and 84% respectively in the 1970-74 period indicating that the ISI strategy was paying off. Investment almost doubled coming from a negative growth rate of -3%. The success of the ISI strategy was also buttressed by the 1964 bilateral agreement with South Africa that provided a basis of sanction busting and generation of foreign currency. However the intensification of the war of liberation between 1975 and 1979 caused an economic decline due to increased uncertainty and sabotage of infrastructure. In addition to effects of the war the ISI opportunities were now exhausted and the effects of the war were being felt.

2.1.2 Zimbabwe at Independence

With the birth of independence in 1980 there was not much policy shift as the new government continued with the ISI strategy, the state was still at the centre stage of economic activity, price controls and foreign currency rationing were still in force.

The period 1980-81 was a period of high economic growth of about 12% which can be attributed to a number of factors which include the country joining the international community, lifting of sanctions, favourable world market commodity prices, bumper agricultural harvest, buoyant consumer demand and post war reconstruction hence high levels of public expenditure

However, the increased economic activity was not sustainable as it lasted only for the first two years after independence as shown by a negative growth of 3.4% in the 1982-83 period. The poor economic performance was mainly due to foreign exchange shortages for the importation of inputs, the joining of the international community by the country, which led to the removal of sanctions, increased imports without a corresponding increase in exports putting pressure on the balance of payment position, shortage of skilled manpower, transport bottlenecks, world recession which

led to slow growth in exports and a severe drought which affected directly on agriculture and indirectly on other sectors of the economy.

In addition to bad harvests, increased domestic demand worsened the external balance of payment position that led to macroeconomic imbalances. According to Oshikoya (1997) the current account deficit increased from 2.5% in 1979 to 11% in 1981. Increased government expenditure financed by domestic credit resulted in increased inflation from 7.3% during the 1970-79 period 13.1% during the 1980-83 period.

Two years into independence it became crystal clear that a stabilization programme was inevitable if the macroeconomic imbalances were to be corrected. However in 1984 the economy showed signs of recovery by registering a 1.1% growth, which can be attributed to a world economic upturn, favourable agricultural conditions, stable international commodity prices, moderate inflation. Although the real rate of GDP growth slackened in 1986 to 2.1% and again as economic activity remained sluggish in 1987 posting a negative of 0.5% compared to 8% of 1985. The economy once again demonstrated its resilience by registering a positive growth of 7% in 1988, 4.5% in 1989 and 2% in 1990.

2.1.3 The Economic Reform Programme

The performance of the economy in the first decade of independence was not impressive calling for the World Bank/IMF economic reform programme. Amongst the poor performance indicators was the GDP growth rate that averaged 2.9% per annum thus lagging behind the population growth. Export growth was also disappointing increasing only by 3.4% per year and this was coupled by debt service payments that peaked to 34% of export earnings.

The main objective of the economic reform programme in the first five-year phase was to improve the living conditions especially of the poorest groups. This was supposed to be achieved by increasing real incomes and lowering unemployment levels through generation of sustained higher economic growth. The reform programme entailed transformation of the economy from being highly regulated to one where market forces are allowed to play a more decisive role thus making the economy more productive and competitive.

The specific objectives of the five-year reform programme were to: - (i) achieve an economic growth rate of 5% per annum by 1995. To achieve this objective in a sustainable way, industrial growth was supposed to be 5.8% per annum, agricultural growth 3% per year, service sector 5% per year and investment by 25% of GDP per annum. (ii) Reduction in the central government deficit from 10% of GDP to 5% by the fiscal year 1994/95 (iii) Domestic deregulation and investment promotion. This was going to be achieved by abolishing or modifying by laws and regulation that hamper investment. All price controls and subsidies were to be eliminated. (iv) trade and exchange market liberalisation to create a market based foreign exchange system and shift to a tariff based system of protection.

The Zimbabwean economy is currently facing a continued decline from 1997 as marked by high levels of inflation, declining GDP among other macroeconomic performance indicators. Focusing on real GDP growth rate, it declined from a high of 9.7% in 1996 to a low of 1.4 in 1997 and in the following years negative growth rates were experienced. The year 2003 experienced the highest level of economic decline of -10.4% with a further decline of 15% in 2004. The economy is also facing high levels of annual inflation that stood at 624% in 2004.

2.1.4 Agricultural Sector Overview

This subsection briefly review the agricultural sector since it is the mainstay of the economy contributing more than 20% of GDP depending on the rainfall pattern. The sector has strong forward and backward linkages with the manufacturing and service sectors. More than 60% of the local agricultural output finds its way in the manufacturing sector while 20% of the manufacturing sector is absorbed by agriculture. The performance of the sector heavily depends on the weather conditions making it suffer due to poor rainy seasons of 1982/83 and 1991/92. The 1991/92 period the agricultural sector posted a dismal performance of a negative growth rate of 23.2%. The land reform of 2000 has witnessed a decline in the contribution of agriculture to GDP from 25% in 1999 to 15% in 2003 that was also reflected in a negative growth rate of 22.1% in 2002 and the sector is yet to recover from the land reform shock.

2.2 Financial Sector Overview

The financial sector of the then Southern Rhodesia was initially foreign-owned and the dominant financial activity was commercial banking as elsewhere in Africa. A central bank was established in 1956 for the Federation of Rhodesia and Nyasaland, of which Zimbabwe (then Southern Rhodesia) was the dominant member. Subsequently two accepting houses were established in 1956 soon after the foundation of the central bank, two discount houses were opened in 1959. Treasury Bills were first issued in 1952, enabling banks to acquire local liquid assets and providing the government with budget finance from funds, which had previously been in foreign bank balances. When the Federation broke up in 1963, the central bank simply changed from being the Bank of Rhodesia and Nyasaland to become the Reserve Bank of Rhodesia.

By 1960, therefore, Zimbabwe had both a variety of financial institutions, and established markets in government paper and equities but this did not, however, result in financial deepening, as measured by the ratio of money supply to GDP. According to Harvey (1992) this ratio declined between 1954 and 1963 from 27% to 21%. On the other hand, commercial bank lending increased slightly as a percentage of GDP, from 9% to 11% Commercial banks were able to increase their lending, despite their failure to mobilise increased deposits this was achieved by running down their balances with overseas banks (mainly their own overseas head offices).

With the attainment of independence in 1980 the banking sector remained largely foreign owned and entrants of new player were witnessed in the non-banking financial sector. Although the government was pursuing socialist ideologies no financial institution was nationalized but government become a majority shareholder in Zimbank and subsequently in the Commercial Bank of Zimbabwe (CBZ) the then Bank of Commerce and Credit of Zimbabwe.

Prior to the introduction of the reforms, the sector was very heavily controlled by the state (both the colonial and black nationalist governments) Interest rates were fixed by government, for example, lending rates to be charged by banks, deposit rates to savers, there were credit ceilings, which channeled resources to specified sectors, and there were restrictions as to who could carry out banking business. The sector was

heavily segmented, with categories of institutions being confined to specified types of banking business, for example, that building societies could only engage in mortgage finance, commercial banks to provide short term funding for working capital, merchant banks for wholesale banking among other confinements. In addition to the above the sector was not competitive enough and lacked prudential controls on the part of the central bank. Thus the sector was repressed calling for need to liberalisation. The objective of the liberalization of the financial sector was to: - (i) adopt a more flexible interest rate policy by eliminating the administrative component of determining interest rate and abandoning the BLR. The interest rates were to be determined by the markets forces. Reduce part of the government deficit being financed and supported by the by the domestic banking system. (ii) Deregulate the sector to foster competition and eliminate opportunities for collusion. The Banking Companies Act was to be modernized to accommodate the entrance of new entrants. (iii) Develop new money market instruments (iv) Set up a Security Exchange Commission to monitor the Stock Exchange operations (v) Remove segmentation in the sector.

In 1991 the Economic Structural Adjustment Programme (ESAP) that encompassed financial liberalization was adopted. The table below shows the number of financial institution before and after liberalisation of the sector.

Table 2 Financial Institutions Overview 1991-2004

Type of Institutions	Before 1990	1997	2004
Commercial Banks	5	8	11
Merchant Banks (Accepting Houses)	4	9	5
Discount Houses	2	8	5
Finance Houses	6	8	4
Buildings Societies	3	4	6
Central Bank	1	1	1
Insurance/Asset Management Companies	-	80	20
Bureaux de Change		50	0
Unit Trusts	-	8	13

Post Office Savings Bank, Agribank, Zimbabwe Development Bank	3	3	3
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Source: Reserve Bank of Zimbabwe, Various Years

2.2.1 Interest Rate Policy.

Prior to the reforms the central bank used to fix the minimum lending rates and maximum deposit rates for banks and finance houses. Thus the level of and structure of interest rates used to remain unchanged while inflation rose resulting in negative real interest rates. This was not conducive for the rapid growth in financial savings needed for financing private sector investment or public sector deficit. In October 1989 the central bank replaced the minimum lending rate with a base lending rate (BLR) and fixed maximum lending rates for various sectors by stipulating a certain margin over the BLR. Basically the BLR is an indicative rate based on certain assessment of costs of funds in the market, rate of return on investment and the prevailing monetary stance.

In line with the reform programme the BLR for banks was raised in August 1990 with specified add-on maximum margin for productive and export sectors as before but the BLR was to be abandoned by the end of 1993. The abandonment of the BLR ushered in new era of interest rates without a maximum limit and a freedom for minimum deposits rates to changes in response to market conditions. However up to the present day not much liberalization has been done on the interest rate determination as the central bank still announce the range within which interest rates should vary.

2.2.2 The Stock Exchange

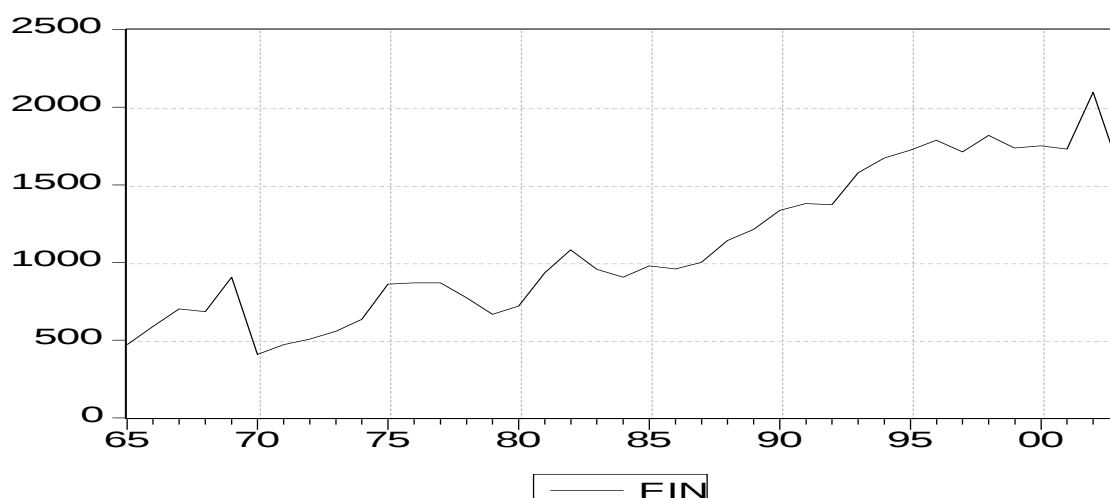
The first stock exchange opened its doors shortly after the arrival of the Pioneer Column in Bulawayo in 1896. It was however only operative for about 6 years. Other stock exchanges were established in Gwelo now Gweru and Umtali now Mutare. The latter, also founded in 1896, thrived on the success of local mining, but with the realisation that deposits in the area were not extensive, activity declined and it closed in 1924. After World War II a new exchange was founded in Bulawayo and dealing started in January 1946. A second floor was opened in Salisbury (Harare) in

December 1951 and is the one still in existence. Trading between the two centres was by telephone and by 1963 there were thirteen brokers, and 98 quoted shares. Financial liberalisation in the 1990s has witnessed increase in market capitalization and stock market activity as measured by stock turnover. Market turnover increased US\$2 million in 1989 to US\$36million in 1994 and the number of listed firms increased from 54 to 64 in the same period. In line with liberalization programme a number of reforms were proposed which includes: (i) Establishment of a Security Exchange Commission to monitor the Stock Exchange operations. (ii) Opening up of the stock exchange to enable foreign investors to participate on the market on the condition that they finance any purchase of shares through an injection of foreign currency through normal banking channels. However the purchase of shares was limited to 25% per counter with a single investor acquiring a maximum 5% of the share offer. (iii) Disinvestment was freely remittable (iv) Any amount representing capital appreciation and capita gains made on disposal of such investment were freely.

The volume of shares traded on the stock exchange increased steadily with the inception of the liberalisation programme in 1991 from a low of 5million in 1990 to attain a high of 700 million in 1997. The 1992/93 posted a poor performance due to the close link between the stock exchange and agricultural sector performance. The drought in the same period negatively affected the volume of shares traded on the stock exchange. According to Oyama (1997) in addition to poor harvests in the 1992/93 period the poor performance can also be attributed to increased interest rates brought about financial liberalisation. The dampened volume of trade in the1999/2000 is a result of the political uncertainties which the investors faced as the country embarked on the land reform programme. The volume of shares traded declined from a high of 245 million in November 1999 to a low of 79 million in October 2001 at the height of the uncertainties. However the prevailing hyperinflationary conditions in the country are fuelling speculative tendencies hence high levels of both volume and price indices and investors attempt to hedge themselves against inflation. This has witness the volume index attaining a high of one billion in July 2004.

An overview of the financial sector contribution to GDP is depicted in the graph below

Fig 1 Financial Sector Contribution to GDP in Z\$M (1965-2003) Constant 1990 Prices



The financial sector of Zimbabwe grew steadily overtime with by an average of 2% per annum. Major growth was experienced after the adoption of financial liberalisation, which witnessed an increase in the number of players in the sector. The effects of the liberalisation were manifested in the attainment of the highest growth rate of 4% the sector in 2002

2.3 Overview of the manufacturing sector

The process of industrialisation started in the early 1900 playing a supportive role for the agricultural and mining sectors. As early as 1940, the country already had a relatively developed industrial base, with the only integrated iron and steel plant in sub-Saharan Africa. Most of the early growth of the sector is mainly attributed to political developments, which include the Second World War, which resulted in transport problems and made it difficult to import industrial products thereby boosting local production of the same goods. This development was followed by ascension to power of the nationalist government in South Africa in 1948, this increased uncertainty in the country causing capital flight to Rhodesia.

When the Federation of Rhodesia and Nyasaland involving what is now Malawi, Zambia and Zimbabwe was established in 1953, this accelerated the process of

industrialisation, with much of the investment going to Rhodesia. It also more than doubled the size of the domestic market and was the only country in Southern Africa in a position to exploit this opportunity given its large manufacturing base. The collapse of the Federation in 1963 was followed by the Unilateral Declaration of Independence (UDI), which resulted in the imposition of sanctions by the international community. This ushered in a new era of inward looking Import Substitution Industrialisation (ISI) and an intensive process of industrialisation where the state played a central role in resource allocation.

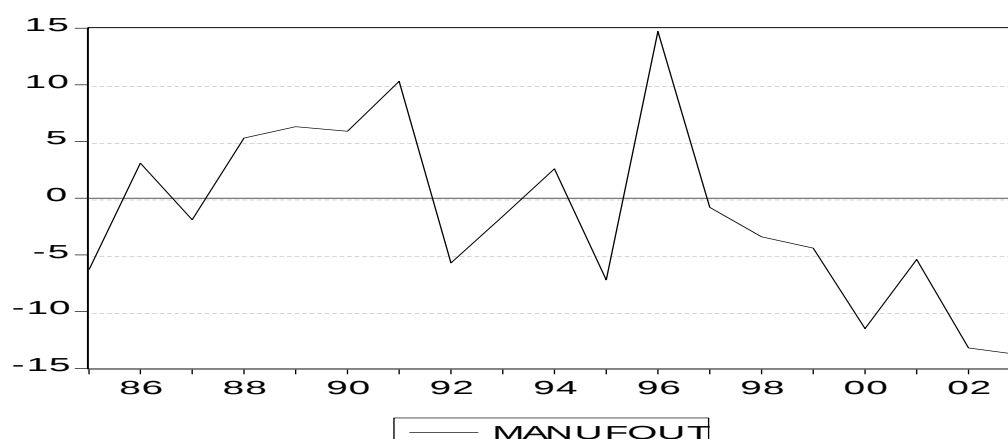
Kanyenze (2006) also indicates that whereas the manufacturing sector accounted for 17% of GDP in 1965, its share had grown to 25% by the advent of independence in 1980. This is exceptional by Sub-Saharan African standards. While the share of manufacturing output in GDP averaged 23.3% of GDP during the period 1980-89, the corresponding figure for Sub-Saharan Africa was only 10.4%. Apart from its relative size; the manufacturing sector was diversified since on the advent of independence, industry already consisted of some 1,260 separate units producing 7,000 different products.

However the import substitution industrialisation strategy, which had performed well during the sanctions period, (particularly during the fastest growth period of 1966-74), was already showing signs of severe stress by 1980. The effects of the sanctions started to be felt so as the effects of the war of liberation. The deliberate policy of compressing imports to contain the balance of payments situation left capital stock in an obsolete and depleted state and the manufacturing sector itself became a net user of foreign exchange.

With the dawn of the Economic Structural Adjustment Programme (ESAP) in the 1990's share of the manufacturing sector output in GDP declined from a high of 27% in 1992 to 19.2% by 1995 and 7.2% by 2002. The decline was mainly due to the influx of competing cheap imports, while the further decline after 1995 reflected both the liberalisation of trade and the current economic crisis. Thus, the opening up of the economy since 1991, exacerbated by the current political crisis, has resulted in marked de-industrialisation. The manufacturing sector dropped from an index of 100 in 1990 to 96 by 1995. This indicates that the manufacturing sector suffered de-

industrialisation following the liberalisation of trade since 1991. The sector's performance between 1986 and 2003 is depicted in the graph below

Fig 2 Manufacturing sector Performance (1986-2003)



Annual growth rate **Source** CSO 2003

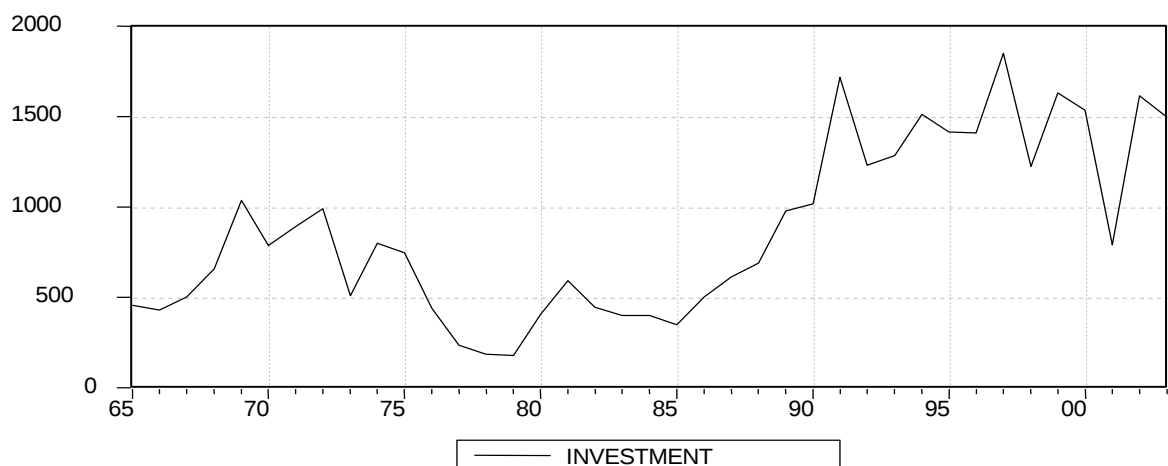
2.3 Investment in the Manufacturing Sector.

This section seeks to pay particular attention to the investment pattern in the manufacturing sector. As noted from previous discussions investment in the manufacturing sector of Zimbabwe started in the early 20th century with the failure by the early settlers to discover gold and diamond deposits turning their efforts to there manufacturing sector. Investment in the manufacturing sector is marked by wide fluctuations in line with developments in the economy that include drought, macroeconomic policy shifts and other events on the domestic political scene. The ISI strategy adopted by the settler regime boosted investment in the manufacturing sector as they attempted to produce all previously imported commodities. The dawn of independence brought about a surge in investment which was however short lived. During the first decade of independence investment by the public sector dominated the capital formation scene especially mainly in infrastructure as the government pursued more of socialist objectives and growth with equity. However the private sector investment dominated in the goods-producing sector such that in the 1980-84 period the manufacturing and mining sectors accounted for over half of total private investment. Manufacturing sector investment recovered between 1986-89 period as the country pursued agriculture led growth.

Owing to poor macroeconomic performance posted by the economy including investment in the manufacturing sector, the government of Zimbabwe adopted an Economic Reform programme. The low levels of growth were mainly attributed to low levels of investment in the productive sectors of the economy including the manufacturing sector. Investment was barely adequate to maintain the capital stock and let alone to increase and raise productivity. The decline in investment was attributed to risk associated with (i) unsustainable fiscal deficits, high costs of doing business due to highly regulated business environment as a result of price controls labour market restrictions and investment control procedures (iii) uncertainties and high costs associated with foreign exchange allocation system affecting access to investment, intermediate goods and spares parts.

The overall picture of investment in manufacturing sector is shown in diagram below

Fig 3 Investment in the Manufacturing Sector Z\$M (1965-2003)



The period between 1965 and 1970 experienced a surge in investment followed by a dip in 1975 as the effects of war and sanctions began to be felt. The coming of independence and structural adjustment witnessed another boom, which was not sustainable and this was followed by wide fluctuations. The picture of investment is not impressive.

To redress low levels of investment the government of Zimbabwe adopted market led reform programme that sought to reduce the fiscal deficit, introduce new investment guidelines, more flexible price and wage setting systems among other measures. Specific policy measures to facilitate investment included (i) Establishment of

investment promotion agency (Zimbabwe Investment Centre) to streamline the investment approval process (ii) Narrowed the definition of a foreign company thus reducing the number of firms subjected to the additional controls applied to foreign firms (iii) Allowed selected new firm to repatriate up to 100% of profits: Source: Government of Zimbabwe (1991)

In addition to the above measures the government adopted tax and export incentives to boost investment and export in the manufacturing sector. On tax incentives; income tax was reduced from 45% to 42.5%, in designated growth point areas and certain high priority investment the government introduced concession providing either duty free imports or refund of duty and import tax on certain imported raw materials, components and capital goods. In some instances refunds were made for domestic sales tax effectively yielding zero rates of duty, import tax and sales tax.

On export incentives and export revolving fund was established with the assistance of the World Bank but administered by the Reserve Bank of Zimbabwe in consultation with the Ministry of Industry and Commerce. Its purpose was to guarantee manufacturing firms producing for the export market automatic access to foreign exchange in order to finance investment and any confirmed export orders.

Currently the government is pursuing the 'Look East' policy of which actively promotes investment from Asia and particularly China due to sour diplomatic relations with the western countries resulting in an influx of cheap, poor quality imports from Asia, and especially China. This has witnessed a massive decline in manufacturing output and is experiencing negative growth rates as from 1997, output declined by 3.4% in 1998, 11.5 in 2000 and 13.8 in 2003 (CSO)

CHAPTER 3

Literature Review

This chapter seeks to review both empirical and literature which explains the relationship between financial development and investment in the whole economy but also paying particular attention to investment in the manufacturing sector. The theoretical review starts by focusing on the theories of investment and subsequently seeks to incorporate financial development into these theories. The review concentrates on two competing schools of thought namely the accelerator and the neoclassical schools. It also devotes space to establish how the role of financial institutions and instruments in fostering economic growth through the facilitation of investment and improvement of investment efficiency in the economy.

3.1 Theoretical Review

3.1.0 Theories of Investment

This subsection reviews various theories of investment that are broadly categorised into the accelerator and neoclassical theories of investment. Specifically the accelerator theory flexible accelerator theory and Q-theory following theory are reviewed

3.1.1 Accelerator theory of Investment

According to Clark (1917) the demand for maintenance and replacement of existing capital is positively related to the amount of the demand for the finished product while the demand for new construction or enlargement of stocks depends on whether or not the sales of the finished product are growing, thus investment expenditure is a function of growth in output. The model assumes that there is no excess capacity, there is a ready supply of capital goods and the funds to finance the capital expenditure is readily available and there is no accumulated stock of finished good to meet increase in demand. The model also assumes that there is a stable relationship between the stock of capital that a firm desires to and the firm's level of output that is

$$K^* = h(Q) \dots\dots\dots (3.1)$$

where K^* is the desired amount of capital and h is a constant fraction of output Q . If a firm can invest without delay to keep actual investment to the desired level then

$$I = K^* - K \dots\dots\dots (3.2)$$

$$= h(Y^* - Y) \dots\dots\dots (3.3)$$

K is actual investment and I is net investment equal to the change in capital stock and is proportional to change in output rather than the level of output hence the name accelerator theory.

The accelerator theory suffers from a number of limitations due to the unrealistic assumptions upon which it is based. It assumes that there is no excess capacity; however in real situation firms do have excess capacity putting them in a position to adequately respond to increases in demand without necessarily making new investment.

It also assumes that firms instantly respond to increases in demand but investment can take years to build up and not an overnight thing as assumed by the theory. Firm faces a number of constraints like shortage of funds, foreign currency and spare parts among other factors.

3.1.2 The flexible accelerator theory

Chenery (1952) and Koyck (1954) came up with the flexible accelerator theory of investment as an alternative to the Clark to accelerator theory. The accelerator theory is based on unrealistic assumptions, which the flexible accelerator theory seeks to improve on. The flexible accelerator theory of investment focuses on the time structure of the investment process. In this model the desired level of capital is determined by long run considerations. Thus changes in the desired level of investment are transformed into actual investment by a geometric distributed lag function. The desired level of capital is adjusted towards its desired level by a constant proportion of the difference between the two. Thus

$$K_t - K_{t-1} = (1-\lambda) (K_t^+ - K_{t-1}) \dots \dots \dots (3.4)$$

Where K_t is the actual level of capital, K_t^+ is the desired level of capital and $1-\lambda$ is the constant adjustment factor.

The flexible accelerator theory is an improvement on the accelerator because it takes into consideration the cost of capital adjustment costs and the response of investment to changes in demand is not instantaneous by responds with a lag. However it is only suitable for describing a single firm behaviour.

3.1.3 Neoclassical theory of investment

In the neoclassical theory of investment Jorgenson (1971) proposed that investment by firms is aimed at maximizing the present value of the firm. The present value of the firm is the discounted net future earnings of the firm. The present value of the firm is maximized subject to a revenue and output constraint. The firm seeks to maximize

$$\text{the value of the firm } V = \int_0^{\infty} e^{-rt} (R - D) dt \dots\dots\dots (3.5)$$

The revenue constraint that the firm faces is given
 $R = pQ - sL - qI \dots\dots\dots (3.6)$

$$Q = F(L, K, Q) \dots\dots\dots (3.7)$$

Where R is the total revenue, p is the price of output; s is the price of labour and q is the cost of capital. D is the tax revenue, L is labour, K capital and Q is the output. The firm will undertake investment as long as the net present value of the firm V is positive.

3.1.4 Q theory

The Q-theory is a neoclassical theory of investment based on the assumption that management seeks to maximize the present net worth of the company that is the value of the outstanding common shares. This implies that an investment project should be undertaken if and only if it increases the value of the shares. The securities markets appraise the project's expected contribution to the future earnings of the company and its risks. If the value of the project as appraised by securities markets exceeds the cost then the company's shares will appreciate to the benefit of existing shareholders. The q variable is defined as the stock market value of the firm divided by the replacement cost of capital. The replacement cost of capital refers to the cost one would pay to purchase the plant and equipment in the output market.

$$q = \frac{\text{market value of the stock of the firm}}{\text{replacement cost of capital}}$$

q is the value of the firm which can be represented as the discounted cashflow of the firm.

$$q = D_0 + \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} + \frac{D_n}{(1+r)^n} \dots\dots\dots (3.9)$$

Assuming that the dividend/cashflow is constant over the entire period

$$q = \frac{D}{(1+r)} \dots\dots\dots$$

(3.10)

In equilibrium $D = (1+r)$ if $D > (1+r)$ this is a signal to the firm to undertake more capital expenditure by issuing shares but if $D < (1+r)$ the firm should disinvest. Financial development goes a long way in enabling investors to gather information about a project at reduced cost facilitating an informed decision making process which bolster investment. The q-theory of investment is similar to the neoclassical theory of investment by Jorgenson (1971) but only differs in the aspect of recognizing the role of the stock exchange in valuing the firm.

In traditional models of investment above financial factors play a limited role. For example, in the neoclassical model, firms choose inputs of (capital and labour) so as to maximise the present discounted value of their income streams and no mention of finance is done. It is assumed implicitly that the firms have an unlimited access to finance to fund their investment projects.

However, since the 1980s a number of studies have emerged, most of them at the firm level, suggesting that the potential investors may face credit rationing due to asymmetric information in financial markets, thus demonstrating the importance of financial variables in determining private investment. In most cases financial factors enter only through the cost of capital, which, in turn, is independent of the way, the firm finances itself. This independence arises because capital markets are assumed to be perfect. Thus, firms are able to secure external finance for a project if its expected marginal return exceeds its cost of capital.

However in the real world there exist imperfect capital markets giving rise to transaction and information costs. The existence of these costs gives rise to the emergence of financial markets and institutions to mitigate the costs. Different kinds of transaction costs and frictions give rise to different financial institutions, contracts and markets. Basically the financial system is there to mitigate the costs brought about by moral hazard and adverse selection brought about by information asymmetry.

3.2 Finance-investment-growth literature.

This section marks a departure from traditional understanding of the process of investment and economic growth to a strand of thought which recognize the role of finance in economic growth and investment. The finance-growth debate has occupied economists and policy makers for over a century now, starting with the proposition by John Schumpeter in 1911.

Presently a large body of research from cross-country studies, industry-level studies, firm-level studies, and time-series evaluations, which shows that financial development exerts a large positive impact on economic growth, has greatly accumulated. The positive link between financial development and economic growth holds even after controlling for other growth determinants and possible endogeneity. Despite the overwhelming evidence there are some dissenting voices on the impact of financial development on economic growth; some economists have expressed downright skepticism on the role of financial development on economic growth by viewing it as a sideshow of economic development. The various views on the relationship between financial development and economic growth can be categorized as supply-leading and demand-following schools of thought.

3.2.1 Demand following hypothesis

This school of thought asserts that demand creates its own supply and advocates that the creation of financial institutions, markets, assets and liabilities is a result of economic development, which stimulates demand for these financial services. Robinson (1952) postulates that where enterprise goes finance follows and if the strong impulses to invest are fettered by lack of finance devices are invented to release it. The emphasis of this understanding is on the demand side of financial services. In the same line of thought Patrick (1977) elaborates saying the rapid the growth rate of national income the greater will be the demand by entrepreneurs for external funds.

3.2.2 The Supply following hypothesis

This is that understanding that finance lead to enterprise formation hence economic growth. The financial institutions play a leading role in economic development by performing five basic functions which include (i) producing information ex ante about

possible investments and allocate capital (ii) monitor investments and exert corporate governance after providing finance (iii) facilitate the trading, diversification, (iv) management of risk mobilize and pool savings (v) ease the exchange of goods and services. This is the school of thought whose vast literature will be reviewed in detail and it is upon which this study is found.

Some economists like Lucas (1988), argue that the role of financial development has been overemphasized. This is evidenced by the conspicuous absence of the discussion of the role of finance in some leading works of development economics. However for more than half a century of this debate no attention was paid to study the channels through which financial development causes economic growth except mentioning them in passing. The departure from the traditional way was done by Patrick (1966), Levine (1997) and Ndikumana (2003) who adopted a functional approach to establish how financial development cause economic growth. They identified a number of functions performed by the financial systems to facilitate investment and these functions include mobilisation of savings, identification of investment opportunities, and efficient allocation of investment resources and facilitation of exchange. This study also adopts a functional approach to review literature of the finance-investment-growth relationship.

Mobilising (pooling) of savings- this involves agglomeration of capital from disparate savers for investment. Mobilising savings of many disparate savings is costly since it involves overcoming transactions costs of collecting savings from different individuals and information asymmetries associated with making savers feel comfortable in relinquishing control of their savings. According to Sirri and Tufanno (1995) well-developed financial systems are in a position to mitigate these frictions making them effective at pooling savings of individuals. This has a direct effect of capital accumulation, improvement in resource allocation and technological innovation and is a crucial for investment in the manufacturing sector since the sector relies heavily on external finance.

Facilitating risk amelioration- In the presence of specific information and transactions costs financial markets and institutions may arise to ease the trading, hedging and pooling of risk. Risk takes the form of idiosyncratic and liquidity risk.

The link between liquidity risk and investment arise because some high return projects require a long-term commitment of capital but savers do not like to relinquish control of their savings for long periods. According to Levine (1991, 1997 and 2004) the existence of long and short term projects implies that agents will have to choose how much to invest in firms that take a long time to produce and how much to invest in less profitable but liquid assets that pays off quickly. After making this decision some individuals may receive liquidity shocks and discover that they want to consume their wealth before the firms in which they have invested in create new technologies, sell goods and distribute profits. Thus the risk of receiving a liquidity shock and a very low premature liquidation may discourage firm investment. If the financial system is well developed it means it can augment liquidity of long-term projects hence facilitating investment in long term high return projects. Financial intermediaries especially banks by providing demand deposits, choosing an appropriate mixture of liquid and illiquid investments they provide insurance to savers against liquidity risk while simultaneously facilitating long-term investment in high return projects.

Financial intermediaries can also mitigate the effects of premature withdrawal of capital from investment projects by providing access to credit during the production process, which may reduce premature liquidity of projects and thereby foster investment in longer gestation, higher-return projects. Some firms may receive shocks after receiving outside financing and need additional injections of capital to complete the project to which financial intermediaries respond by providing a credit facility during the initial financing of the firm that entitles the firm to access additional credit at an intermediate stage in certain states of nature.

Stock markets can also mitigate liquidity risk since equity holders can readily sell their shares while firm have a permanent access to capital invested by initial shareholders. Capital market improvements, which mitigate liquidity risk, were primarily the cause of industrial revolution in England. According to Hicks (1969) the products manufactured during the first decades of industrial revolution have been invented much earlier but because it required large commitments of capital for long period they had to wait for financial revolution.

Idiosyncratic risk is the risk associated with individual projects, firms, industries, regions and countries. The existence of such kind of risk implies that agents who are risk averse tend to hold their wealth in non-risk liquid assets that are unproductive. Well developed stock markets allow agents to invest in a large number of firms and diversify away the idiosyncratic risk. Banks and mutual funds provide vehicles for trading, pooling and diversifying risk thus doing away with idiosyncratic risk. The ability to hold a diversified portfolio increases savings and capital accumulation.

By reducing both liquidity and idiosyncratic risk well developed stock markets and financial intermediaries can boost investment in the economy including the manufacturing sector because of its reliance on external finance, long-term nature of the investment projects.

Acquiring information about investment and allocating resources.

According to Carroso (1970) individual savers may not have time, capacity or means to collect and process information on a wide array of enterprises, managers and economic conditions so savers will be reluctant to invest in activities which there is little reliable information and as a result high information costs may keep capital from flowing to its highest value use

In light of prohibitive cost financial markets are in a position to economise on the costs of acquiring and processing information about investment opportunities thereby improving on resource allocation. According to Diamond (1984) financial intermediaries especially banks achieve the acquisition of information and allocation of resources through delegated monitoring. A bank is delegated the task of monitoring of loans contracts entered into with firms that borrow from it. The delegated monitoring task minimise cost by avoiding the duplication by each depositor to monitor the lender directly. In addition to monitoring loan contracts the banker before extending credit to a borrower acquires information about the project to be financed, the riskness of the project, project returns and repayment ability of the borrower. This screening process ensures that depositors' funds are safe and that resources are allocated where they yield the best returns.

Stock markets may also influence the acquisition and dissemination of information about firms. According to Grossman and Stiglitz (1980) as the stock market becomes large and more liquid market participants may have greater incentives to acquire information about firms and as the amount of information about a firm/investment opportunity increase the greater the willingness of savers to commit their savings in such an investment. However critics have contested that the aggregation and dissemination of information through published prices makes the acquisition of information a public good. Agents who do not undertake the costly process of evaluating firm, managers and market conditions can observe stock prices that reflect information obtained by others. This free rider consequence result in society devoting few resources to information gathering hence small gain from large and liquid stock markets.

Monitoring managers and exerting corporate control the entrusting of savers' funds to investors give rise to the principal agent problem calling for the need of savers to monitor and control the activities of managers who run the firm's day-to-day activities. However the monitoring of managers is without costs and is prone to the free-rider problem by saver thus inhibiting the mobilisation of savings for investment. According to Stiglitz and Weiss (1983) the absence of financial arrangements that enhance corporate control may impede the mobilization of savings from disparate agents and thereby keep capital from flowing to profitable investment. Consider for example a situation where investors seeks to verify the returns of a project in all circumstances and is costly it implies that these verification costs will impede investment decision and economic efficiency by constraining firms from borrowing to expand investment. Financial systems through the use of collateral and financial contracts can lower monitoring and enforcement costs thereby facilitating efficient investment.

According to Diamond (1984) financial intermediaries however can also economise on monitoring and verification costs thus fostering efficient investment but the big question is how? Financial intermediaries mobilize savings of individuals and lend these resources to project owners and it implies that the borrowers are monitored by the intermediary and not by all individual savers. The delegated monitoring creates its own problem as who will monitor the monitor.

According to Diamond and Verrechia (1982) stock markets can also promote corporate control because public trading of shares in stock markets that efficiently reflect information about firms allows owners to link managerial compensation to stock prices and this helps to align the interests of managers to those of owners. In addition to these well-developed stock markets facilitate easy takeovers of underperforming firms and if the underperforming managers are fired this promote better corporate control and facilitating the alignment of incentives with those of the owners.

McKinnon and Shaw Hypothesis

In the 1970s the discussion on financial development and growth concentrated on the phenomenon of financial repression, a policy conducted by many governments to generate growth and revenue through artificially low interest rates and inflationary monetary policies. McKinnon and Shaw coincidentally raised arguments against policies of financial repression. They argued that liberalisation of financial markets allows financial deepening which reflects an increasing use of financial intermediation by savers and investors and the monetisation of the economy, and allows efficient flow of resources among people and institutions over time. They argue that liberalization of interest rates will mobilize saving that can be used to finance investment. Fry (1995) also postulates liberalisation encourages savings and reduces constraint on capital accumulation and improves allocative efficiency of investment by transferring capital from less productive to more productive sectors. In addition, financial liberalisation benefits include a decrease in firms' in self-financing at low and even negative rates of return, allocation of credit by capital markets rather than by public authorities and commercial banks, a shift away from capital-intensive investments due to the higher cost of capital reflecting its scarcity, the lengthening of financial maturities, and the elimination of fragmented and inefficient markets.

3.3 Empirical Literature Review

This section seeks to review the empirical evidence which both supports and refutes the played by financial development in promoting investment and economic growth. The empirical review is largely cross-country; industry and firm level studies although some are purely time series studies. The review will go through the methodologies used and the various measures of financial development, investment

and economic growth. The results obtained are mixed calling for the need for further studies using various approaches. Most empirical studies of the role of finance on the economic activity have concentrated on the finance- growth nexus at macro level. However, studies are now narrowing down on the impact of financial development on investment and growth of firms and industries.

3.3.1 Country level studies

Goldsmith (1969) engaged on ground breaking study of the relationship between finance and economic growth for 35 countries over the period 1860 to 1963. He assumed that the size of the financial intermediary sector is positively correlated with the quality of financial functions provided by the financial sector. He found a rough parallelism between the size of the financial sector and the level of economic growth but was reluctant to conclude on the direction of causality.

The most celebrated study on the role of finance in economic growth after the ground breaking one by Goldsmith 1969 is the one by King and Levine (1993) which was an attempt to empirically refute or confirm the assertion made by Schumpeter in 1911. They used pure and pooled cross country time series data for 80 countries to investigate whether higher levels of financial development are significantly and robustly correlated with faster current and future rates of economic growth, physical capital accumulation and economic efficiency improvements. To achieve their objective they decomposed growth into rate of physical capital accumulation and efficiency with which a society allocates capital. They found that higher levels of financial development are positively associated with faster rates of economic growth, physical capital accumulation and economic efficiency both before and after controlling for numerous country and policy characteristics. This evidence upheld the Schumpeterian view that financial intermediaries make possible technological innovation through creative destruction a process by which invention and innovation replace old production technology and goods with better procedures, commodities and services. The financial system makes this possible by performing the services discussed in the theoretical review.

Beck, Levine and Loayza (1997) examined the causal impact of financial development on growth and its sources. The study used two econometric methods

namely the Generalised Method of Moments (GMM) and the instrumental variable approach to deal with simultaneity bias. To assess the long-run impact of the exogenous component of financial development on economic growth and its sources they used a cross-country sample with data averaged over the period 1960-95 and the legal origin of countries as instruments. They found a significantly positive causal impact of financial development on real per capita growth and productivity growth. However the picture was ambiguous in regressions with physical capital per capita growth and saving. Different measures of financial development yielded conflicting results. Private credit as a measure of bank development exhibits a significant and positive relationship with capital growth. Other measures of financial/banking development like liquid liabilities and commercial central bank exhibit no significant relationships with capital growth. In totality the results indicate a positive link between banking sector development and both physical capital accumulation and private saving rates, which are however sensitive to alterations in estimation techniques and measures of banking sector development.

A study by Ndikumana (2003) based on a sample of 99 countries including developing and developed countries on the impact of financial structure and development on domestic investment. He found that there is a positive and significant effect of financial development indicators on domestic investment and that financial structure has no impact on domestic investment. He went further to investigate whether the overall level of financial development enhances the response of domestic investment to an increase in the demand for output as measured by the growth rate of real per capita GDP. This effect is the accelerator-enhancing effect of financial development. The ability of investors to meet such an increase in demand for output depends in part on the availability of finance so the response to output will be larger in countries whose financial systems are more efficient in mobilizing resources and responding to the financing needs of investors. He found that the overall level of financial development exerts a positive and significant impact on investment via the accelerator enhancing effect.

Oshikoya (1994) studied the macroeconomic determinants of domestic investment in Africa for a period from 1970 to 1989 for 8 countries. He identified five macroeconomic factors impacting on private investment, which included financial

development as measured by amount of credit to the private sector, inflation terms of trade, real exchange rate and external debt. He however found mixed results on the impact of financial development on private investment behaviour. For both country groupings that domestic credit availability to the private sector is a major determinant of private investment in low-income countries as well as middle-income countries. The above results were also confirmed by individual country estimates, which suggested that credit availability has a strong positive impact on private investment in Malawi, Tunisia Cameroon and Kenya. However for Zimbabwe Morocco and Tanzania credit availability shows a negative relationship despite being insignificant. He also found that inflation rates have a strong and ambiguously negative impact on investment in the low-income countries. The negative impact of inflation rate on private investment is more pronounced in Cameroon, Malawi and Tanzania but weak in Kenya Morocco and Tanzania. In contrast the estimated impact of domestic inflation rate in middle income countries is positive and insignificant for Tunisia and Mauritius.

In a time series study by Quatara (2004) on the determinants of private investment in Senegal from 1970 to 2000, he identified four determinants of investment which included real GDP, aid flows, financial development (as measured by the amount of credit to the private sector) and terms of trade. Using a cointegration approach to determine the long run relationship he found that the coefficient of credit to the private sector is negative and significant implying that increase in credit to the private sector will not boost private investment as suggested by theory. He also found that terms of trade have a negative and significant impact on private investment implying that private investment is sensitive to external shocks. However foreign aid flows showed a positive and significant impact on private investment.

In another study by Rioja and Vale (2002) they investigated the channels through which financial development influences economic growth in a panel of 74 countries during 1961-1995. They applied the generalized method of moments (GMM) dynamic panel techniques in order to deal with the possible simultaneity of financial development and economic growth and to control for country-specific effects. The objective was to determine whether financial development affects capital accumulation and productivity growth more in developed countries than industrialized

countries. So they divided the countries into three categories; low income, middle income and high-income countries to assess the magnitude of the impact of financial development in these three different groups. They found that in low income countries finance affects economic growth predominantly through capital accumulation. In middle and especially in high-income economies they found that, financial development mainly enhances productivity growth although it contributes to physical capital growth the effect is rather smaller than in the low-income group.

Luintel and Mavrotas (2005) investigated the determinants of domestic private investment behaviour in a panel of 24 low-income and middle-income countries spanning a period of 1981-2000. They found a positive and significant relationship between investment and financial development. In this study financial development was measured using the amount of credit flows to private sector and the ratio of M2 to GDP. The significance of credit flows to private sector in this case indicates that private investment maybe credit rationed in these economies hence low levels of investment.

A study by Jenkins (1998) on the determinants of investment in Zimbabwe using data from 1969 to 1989 he identified ten determinants of private investment in the country which include interest rate, availability of credit, foreign exchange availability, output and input prices national income, public sector investment and external debt. He found that many Zimbabwean firms have limited access to bank loans and this is supported by a coefficient of gross profits close to unity meaning that the main form of investment finance is retained profits. Other explanatory variables had expected signs though capital inflows and national income were very significant.

3.3.2 Industry and Firm level studies.

In another study by Billsborrow (1977) on the determinants of fixed investment by 27 manufacturing firms in India he found that availability of internal funds is crucial for investment by foreign owned firms. He alluded to the fact that Columbia like any developing country lacks well developed capital markets and access to loans and equity markets is thus limited hence heavy reliance on internal funds. However for locally owned firms the internal funds variable was insignificant which showed that

they have access to external sources of finance. Other factors he identified as determinants of investment by firms include growth in company sales (accelerator theory), availability of foreign exchange in United States dollars and the liquidity ratio of the firm. He found a significant relationship between foreign currency earnings and investment since most of the equipment used in the Colombian manufacturing sector is imported.

Papaioannou (1995) using manufacturing data in 65 non-socialist countries over the period 1963-2002, to determine the impact of financial development on intersectoral investment responsiveness and whether this is conditional on other various country characteristics. He found that countries with larger capital markets display greater intersectoral investment responsiveness to value added and increase in intersectoral production

In a four country study which consisted of Zimbabwe, Ghana, Cameroon and Kenya by Bigstern et al (1997) on the determinants of investment in the manufacturing sectors of Africa they found that African firms are financially constrained to undertake investment and the cost of capital is very high as shown by the high rates of required return on capital and high responsiveness of firm investment to retained profits. If firms have limited access to financial markets profitability affects the capability to finance investment. The more financially constrained the firms the less able they are to adjust to its desired capital stock. They also found a common factor across all the four African countries, which is poor macroeconomic policy environment characterized by high and variable rates of inflation, rapid and variable rates of exchange rate depreciation.

Neuser and Kugler (1988) conducted a cross-country study on the impact of financial development on manufacturing output (GDP) growth and total factor productivity (TFP) for 14 countries from the Organisation of Economic Cooperation and Development (OECD). They argued that the role of finance in economic growth should be apparent in the manufacturing sector because the productivity enhancing investment projects are likely to face the principal agent problems that financial intermediaries help to mitigate. To test the assertion they investigated the dynamic relationship of logged manufacturing output as well as logged manufacturing total

factor productivity (TFP) with logged financial sector GDP within a VAR framework and used a co-integration approach to establish whether there is a long run relationship between financial sector GDP and manufacturing sector output and/or manufacturing sector total factor productivity. Using the Johansen $\lambda_{\max}$ test and Stock-Watson test they found that for the majority of the countries there is evidence of a long run relationship between financial sector GDP and manufacturing sector output. They also found a long run relationship between financial sector GDP and total factor productivity. Conclusively, they found that the financial sector grew at least as fast as the manufacturing sector in all countries with the exception of Canada, Denmark and Sweden.

Rajan and Zingales (1998) studied the impact of financial development and dependence on industrial growth. They examined the channels through which financial development causes growth by decomposing industrial growth into growth of new number of firms and in the average size of existing firms. They found that the new firms are ones that depend heavily on external finance than existing ones such that the growth in the number of establishments in industries that are heavily dependent on external finance should be particularly sensitive to financial development. They also found that financial development has almost twice the economic effect on the growth of the number of new firms as it has on the average growth of existing establishments.

In a study similar to that of Rajan and Zingales (1998) Beck et al (2000) using a sample of 35 countries explored whether: (a) countries with bank based financial systems grows faster than countries with market based financial systems or is financial structure unrelated to the pace of economic growth (b) industries that depend heavily on external finance grow faster and/or is new firm formation more likely in bank based or market based financial systems. They investigated the impact of financial structure and development at country level, industry level and firm level. To achieve objective number (b) they decomposed industrial growth into two components that is growth in the number of firms and growth in the average size of firms. They found that industries that depend heavily on external finance grow relatively faster in terms of average in countries with better-developed financial systems. They also found that economies grow faster, new firms form more easily in

countries with high levels of overall financial sector development. They found that financial system structure does not help in explaining cross-country differences in the level of long run GDP growth, industrial performance, new firm formation, use of external funds and growth.

In another cross-country study by Wurgler (2000) of a sample of 65 countries he found that countries with well-developed financial sectors increased their investment more in growing industries and decreased their investment in declining industries than did countries with underdeveloped financial sectors. He also found that investment would increase by more than 7% if the industry were in the USA but only by 1% if the industry was in India. This supports the role of financial development in improving allocation of resources to their best use.

Carlin and Mayer (2003) conducted a cross-country study of 18 OECD countries using 27 manufacturing firms to test the influence of a country's financial systems characteristics on types of investment, characteristics of industries, growth and investment of industries in 27 countries. To achieve this they conducted cross-sectional regressions of growth and investment of industries in particular countries on the institutions of the countries and the characteristics of the industries. They found that there is a positive relationship between investment, growth and financial development as measured by bank credit to the private sector but they found no significant relationship between investment and the size or liquidity of the stock market as measured by market capitalisation. In the same study they found a strong positive correlation between financial development and investment by bank dependent firms. This shows that financial institutions are more important for bank dependent industries in the lower GDP per capita countries than in the advanced OECD countries

Overallly it can be seen that financial development has a positive impact on economic activity including investment in the manufacturing sector. It is pathetic that most of the studies reviewed do not pay particular attention to the nature of African financial and industrial sectors. Specifically most of the studies concentrate on the industrial sector of the OECD countries of which we cannot just adopt policy implications based on OECD studies.

This study will follow in the footsteps of similar studies done in Zimbabwe by Bigstern et al (1997) and Jenkins (1998). However, it differs from the study done by Bigstern et al (1997) and Jenkins because their study doesn't take into consideration the impact of economic structural adjustment programme, and land reform programme. These developments had an impact the investment climate and markets both real and financial which this study seeks to establish for policy recommendations. These studies also do not seek to establish the determinants of manufacturing output so the study will seek to close these gaps.

CHAPTER 4

Methodology

The model used in this study draws much from the flexible accelerator theory of investment that predicts a positive relationship between output growth and investment. Specifically the study will follow a modified version of the flexible accelerator theory of investment used by Ndikumana (2003) to capture institutional and structural characteristics of the economy of Zimbabwe. The basic accelerator model is presented below.

4.1 Accelerator model of investment.

Assuming a stable relationship between stock of capital that a firm desires and the firm's level of output that is

$$K^* = h(q) \dots \dots \dots (4.1)$$

Where K^* is the desired level amount of capital and h is a constant fraction of output.

If firms can invest without delay then

$$I = K^* - K_t \dots \dots \dots (4.2a)$$

$$= h(Y^* - Y) \dots \dots \dots (4.2b)$$

Where I is net investment, Y^* is the desired level of output K_t and Y_t are the actual levels of capital and output respectively. From the above equation it is shown that the desired level of capital stock is a function of growth of output hence the accelerator theory.

However in reality the desired levels of capital are transformed into actual capital by a geometrically distributed lag function. Chenery (1952) and Koyck (1954) modified the simple accelerator theory to take into account the lagged response of investment to changes in output. They also incorporated adjustment cost and other factors that determine the ability of firms to respond to changes in output.

$$I_t = \sum_{i=0}^i \beta_i \Delta K^*_{t-1} \dots \dots \dots (43)$$

Substituting 1 into 3, net investment I_t becomes a function of output and other factors which determine the ability of firms to adjust to their desired levels of investment, which are represented by β . The equation can now be written as follows

$$I_t = \sum_{i=0}^i \beta_i \Delta h(q_{t-1}) \dots \dots \dots (4.4)$$

β Consists of factors like inflation, financial development, foreign currency earnings, openness of economy to trade, political and economic events. The coefficient β lies between zero and 1.

The investment function to be estimated is given as follows

$$\ln I_t = \beta_1 + \beta_2 \ln Fin_t + \beta_3 Trade_t + \beta_4 \ln Forex_t + \beta_5 \ln Output_t + \beta_6 Inf_t + \beta_7 D_s + \beta_8 D_L + D_I + u_{1t} \dots \dots \dots (4.5)$$

To determine the impact of financial development on output implies that we have to estimate an output equation given as follows

$$\ln Output_t = \lambda_1 + \lambda_2 \ln Fin_t + \lambda_3 \ln Trade_t + \lambda_4 Inf_t + \lambda_5 \ln Agric_t + \lambda_6 \ln Inv_t + \lambda_7 D_s + \lambda_8 D_L + \lambda_9 D_I + u_{2t} \dots \dots \dots (4.6)$$

Where I_t is net private investment in the manufacturing sector hand I will just refer to it as investment in the following discussions.

$\ln$ is the natural logarithm of the variable under study.

Fin is an indicator of financial development

$Trade$ is a measure of openness of the economy to trade

$Forex$ is foreign currency earnings

$Output$ is manufacturing sector output

Inf is the annual rate of inflation

$Agric$ is the agricultural sector output

u_t is the random error term which satisfies the OLS assumptions.

D_s is a dummy variable to capture economic structural adjustment programme. D_s takes the value of 1 if the observation is in the post adjustment era that is 1991 and zero otherwise.

D_L is a dummy variable to capture the effects of land reform D_L takes the value of 1 if the observation is in the post land reform period and zero otherwise.

D_I is a dummy variable to capture the effects of independence of the country from the colonial rule. It will take the value of 1 for the post 1980 period and zero otherwise.

4.1.1 Simultaneous Equations

The estimation of two equations leads into a system of simultaneous equations. Investment depends on the growth in output as predicted by the accelerator theory and at the same time the level of output produced also depends on the level of capital as predicted by endogenous growth theories. However the estimation of simultaneous equations violates the OLS assumptions that each explanatory should not be correlated with the error term. The endogenous variable that appears as an explanatory variable in another equation is usually correlated with the disturbance term of that equation. For example I_t is correlated with the error term u_{2t} in equation 6. To avoid the pitfall of getting biased results obtained through the use of OLS in the presence of correlation Theil (1952) and Baseman (1957) came up with the Two Stage Least Squares (2SLS) method. The use of the method depends on the condition that the equations have been identified which bring into consideration the Identification Problem

The Identification Problem.

The problem of establishing whether numerical value of the parameters of the structural equations can be obtained from estimated reduced equations is termed the identification problem. If there are no ways the parameters can be established then the equation is unidentified and cannot be estimated. However if it is possible to obtain values of the structural equations parameters from the reduced form equations then the equation is identified and can be estimated. An equation is exactly identified if unique parameters values exists and is over identified if more than one value can be obtained for some of the parameters.

Rules of Identification

Order Condition of Identifiability. This condition states that if an equation is to be identified the number of predetermined variables excluded from the equations must be greater than or equal endogenous variables included minus one. Gujarati (1995) give an outline of notation used for the purposes of identifying equations that is given as follows: -

$K - k \geq m - 1$ Identified

$K - k = m - 1$ Just identified

$K - k > m - 1$ Over identified

where m is the number of endogenous variables in a given equation

K is number of predetermined variables in the model including the intercept

k is the number of predetermined variables in the equation

Using the order of identifiability to identify the above system of equations it yield that both equations are just identified implying that they can be estimated by instrumental variables approach including the 2SLS.

The Two –Stage- Least Squares.

As implied by the name it is a two-step procedure, which involves the application of the least squares method in both stages.

Stage I

The first stage involves expressing the dependent variable solely in terms of predetermined/exogenous variables in the whole system of equations as shown below

$$\ln I_t = \Pi_1 + \Pi_2 \ln Fin_t + \Pi_3 Trade_t + \Pi_4 \ln Forex_t + \Pi_5 Inf_t + \Pi_7 D_S + \Pi_8 D_L + \Pi D_I + v_t \dots \dots \dots (4.7)$$

$$\ln Output_t = \Pi_1 + \Pi_2 \ln Fin_{t \ i} + \Pi_4 \ln Trade_{t \ i} + \Pi_5 Inf_{t \ i} + \Pi_6 \ln Agric + \Pi_7 D_S + \Pi_8 D_L + w_t \dots \dots \dots (4.8)$$

Equation 7 and 8 are reduced form equations and their coefficients Π are impact multipliers. The reduced form equations have no inherent simultaneous bias and this implies that OLS can be applied without violating the OLS assumptions. Applying OLS to the reduced form equation yield estimates of I and Output that is $\hat{I}$ and $\hat{Output}$ respectively.

Stage II

The second stage involves replacing the endogenous explanatory variables I and $Output$ with their estimates $\hat{I}$ and $\hat{Output}$ respectively in the structural equation 5 and 6. The estimates are instrumental variables that are independent of the error term but are good proxies of the endogenous variables. The E-views Two Stage Least Squares package is applied to the original equations and these yield consistent and unbiased estimators.

4.1.2 Explanation of explanatory variable and expected signs

Fin measures of the level of financial development in the country. The Gross Domestic Product of the financial sector (total values of services offered by the financial sector) will be used to measure financial development. This seeks to capture all the services that sector provide to the economy. The advantage of using this measure over the traditional measures of financial development is that it captures the economic activity of the whole financial system unlike the traditional measure of M2 over GDP, which captures mainly the banking sector development. According to Nuesser and Kugler (1998) this measure captures the activities of security brokers, dealers, investment funds, insurance companies and the stock exchange and is not biased toward a certain financial structure. It is assumed that as the financial sector grows it becomes more efficient in performing its functions. The variable is expected to have a positive coefficient in both the investment and output equations.

Inf measures annual changes in the price level. The expected sign of the coefficient is negative since inflation increases uncertainty and as inflation increases less investment is undertaken hence a negative relationship. Reduced levels of investment in the manufacturing sector lead to reduced levels of manufacturing output. High levels of inflation especially cost push will reduce the level of output produced.

Trade measures the country's openness to trade and is a sum of total value of imports and exports divided by GDP. The expected sign for the coefficient is positive since as the country opens up to external trade we expect investment to increase in export oriented sectors of the economy. The relationship between manufacturing and a country's openness is expected to be positive as increased openness increases the market for the firm's output.

Output is manufacturing sector output. The expected sign of the coefficient is positive due to the accelerator theory of investment so as output increase investment should also increase. According to endogenous theories of growth postulates that as investment increase output is supposed to grow.

Forex measures foreign currency earnings. The coefficient is expected to have a positive sign since the firms rely on importing investment equipment and spare parts.

Foreign currency shortages are likely to impact negatively on the investment plans of the firms. An increase in foreign currency earnings is expected to relieve investment constraints and subsequently increase output in the manufacturing sector.

Agric measures agricultural sector output. The expected coefficient of the variable is expected to be positive. The manufacturing and agricultural sectors in Zimbabwe are closely interlinked. Confederation of Zimbabwe Industries (2006) revealed that 54% of inputs into agriculture came from the manufacturing sector and that 62% of the gross output from commercial agriculture was absorbed by the manufacturing sector. An increase in agricultural output definitely boosts manufacturing sector output especially the agro-processing units of the manufacturing sector.

D_s is a structural adjustment programme dummy variable. The coefficient is expected to have a positive sign because the major aim of economic liberalization was to boost economic activity including investment in all sectors of the economy.

D_L is a land reform dummy variable. The coefficient is expected to have a negative sign since the land reform disrupted economic activity in the agricultural sector, which has linkages with the manufacturing sector. The land reform also created an uncertain economic environment, which discourages investment.

D_I is the independence dummy variable. The coefficient is expected to be positive since attainment of independence enabled the new Zimbabwe to join the international community thus eliminating the constraints imposed by sanctions and, the disruptive and uncertainty effects of the war.

4.2 Testing time series properties

4.2.1 Unit root test

A unit root test is conducted to establish whether a data generating process is stationary or not. A time series or data generating process is non stationary if the current values of a variable y depend on the last period's value y_{t-1} plus a disturbance error term u_t this implies that the time series does not have a constant mean and variance over time. Conversely a series is stationary if it has a constant mean and variance over time that is the mean is zero and the variance is one. A series is said to

be non-stationary if it has a unit root and ignoring the existence of unit root lead to spurious regressions. The results of a spurious regression suggest that there is a statistically significant relationship between variables in the regression model when the only evidence available is the existence of a contemporaneous correlations and not causal relations.

The Test

To avoid the pitfall of spurious regressions a unit root test is conducted to establish whether the series are stationary are not and to establish the order of integration. The order of integration is the number of times a series has to be differenced to make it stationary. The Phillips-Perron Test will be used to test for the order of integration. The Phillips-Perron test is superior to the Dickey- Fuller test because it has more power of rejection and can be used in the presence of structural breaks.

4.2.2 Cointegration

Two variables are cointegrated if they are integrated of the same order. For example y_t and x_t are both integrated of order one $I(1)$ and $u_t \sim I(0)$, then these series are integrated of order 1 $CI(1,1)$. Alternatively if two series are integrated of the d and b that is $I(d)$ and $I(b)$ and there is a vector β such that the term from regressing $u_t = y_t - \beta x_t$ is of lower integration ($CI(d, b)$ where $d > b$) then the series are integrated of order (d,b) . Economically

cointegration implies that the two or more cointegrated variables have a long run equilibrium or these series trend together but they will converge in the long run and the difference between them is stationary even if the series themselves are not stationary

Cointegration and Two Stages Least Squares Method

In the context of the 2SLS the issue of cointegration is not a problem. According to Hsiao (1997) non-stationarity and cointegration do not call for new estimation methods or statistical inference but one need to worry about the issue of identification and simultaneity bias. This understanding implies that the structural equations can be estimated and interpreted with out worrying about spurious regressions.

Engle-Granger test

To determine whether two or more variables are cointegrated a unit root is performed using an Engle-Granger test on the residuals obtained from the cointegration equation. The Engle-Granger test is performed on the residuals of the long run static investment and output equations. The equation is presented as follows: -

$$\Delta \hat{u}_t = \rho \hat{u}_{t-1} + \sum_{i=1}^{p-1} \phi_i \Delta \hat{u}_{t-i} + \gamma + \delta t + w_t \dots \dots \dots (10)$$

where Δ represent change $\hat{u}_t$ is the estimated error term, γ is a constant

δt is the trend w_t is the error term that satisfies the OLS assumptions

If the residual series are stationary it implies that the variables in the static long run equation are cointegrated and that there is a long-term relationship among the variables. The error term can be viewed as an equilibrium error. The Error Correction Model (ECM) will be estimated to tie the short run and the long run behaviour of the variables under consideration. In this study an ECM for each equation is estimated. The dynamic short- run equations are given below.

$$d \ln investment_t = \beta_0 + \beta_1 d \ln Fin_{t-i} + \beta_2 d \ln Inf_{t-i} + \beta_3 d \ln Forex_{t-i} + \beta_4 d \ln Trade_{t-i} + \beta_5 d \ln Output_{t-i} + \beta_6 D_S + \beta_7 D_L + \beta_8 D_I + ecm3(-1) + u_t \dots \dots \dots (4.10)$$

$$d \ln output = \lambda_0 + \lambda_1 d \ln Fin_{t-i} + \lambda_2 d \ln Inf_{t-i} + \lambda_3 d \ln investment_{t-i} + \lambda_4 d \ln Trade_{t-i} + \lambda_5 d \ln Agric_{t-i} + \lambda_6 D_S + \lambda_7 D_L + \lambda_8 D_I + ecm1(-1) + w_t \dots \dots \dots (4.11)$$

where d is the first difference or Δ

Ecm(-1) is the error correction term lagged once

w_t and u_t are error terms for equation 4.11 and 4.10 respectively.

4.3 Data Sources

The proposed study used time series data from 1965 to 2003, sourced from the Central statistics of Zimbabwe (2003) and Reserve Bank of Zimbabwe (1997, 2004)

CHAPTER 5

Empirical Findings

The main focus of this chapter is to present empirical results of the econometric analysis of the equations presented in the previous chapter and provide their economic implications. The chapter will start by reporting the results of the simultaneity diagnostic tests and then the results of the equations.

5.1.1 Simultaneity Test

The Hausman Specification test was conducted on the long run investment and output equations. The test revealed that we could not reject the null hypothesis of no simultaneity bias.

Table 3 Hausman Specification Test

Equation	Residuals Name	Coefficient	Probability
Investment equation	Resid14	0.99	0.00
Output Equation	Resid15	0.85	0.00

5.1.2 Unit root Tests

The Phillips-Perron test was performed on the logged variables to determine their order of integration and the results are presented in Table 4 below

Table 4

Variable	Philips-Perron Statistics	Critical Values	Order of Integration
Lnagric	-4.176	-3.623	I (1)
Lnfin	-5.034	-4.25	I (1)
Lninvestment	-4.564	4.232	I (1)
Lnforex	-3.79	-3.649	I (1)
Inf	-5.264	-3.198	I (1)
Lntrade	-6.144	-4.232	I (1)
Lnoutput	-5.264	-4.222	I (1)

The Phillips-Perron test shows that all the variables are integrated of the same order warranting the estimation of the error correction models for each equation under study. An Augmented Engle-Granger test was also performed on the residuals of the

long run static investment and output equation and the results are presented in Table 5 below

Table 5: AEG test on output and investment equation residuals

Variable	AEG Statistic	Critical Values	Order of integration
Resid05 Investment Equ	-4.119	-3.617	I(0)
Resid06 Output Equation	-6.283	-4.338	I(0)

The result shows that the residuals are stationary since they are integrated of order zero I(0) indicating that the variables are cointegrated and it is possible to run an Error Correction Model (ECM) to tie the long run and short run behaviour of investment and output in the manufacturing sector. The short run and long run results of the investment equation are presented below.

5.3.1 Long run Investment Equation

The results of investment equation are presented in Table 6 below

Table 6 Long run Investment Equation

Dependent Variable: LNINVESTMENT				
Method: Two-Stage Least Squares				
Instrument list: C LNFIN INF LNFOREX LNTRADE DI DL DS LNAGRIC				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.582	0.77	5.88	0.0000
LNFIN	0.130	0.05	2.34**	0.0272
INF	-0.0008	0.0004	-2.08**	0.0472
LNOUTPUT	0.469	0.123	3.79*	0.0008
LNFOREX	0.0502	0.015	3.29**	0.0030
LNTRADE	0.052	0.041	1.28	0.2112
DI	0.037	0.038	0.96	0.3434
DL	0.0106	0.045	0.23	0.8178
DS	0.1262	0.036	3.44**	0.0020
R-squared	0.982	Mean dependent var		9.751141
Adjusted R ²	0.976	S.D. dependent var		0.286866
S.E. of regression	0.043929	Sum squared resid		0.048244
F-statistic	172.7797	Durbin-Watson stat		1.955818
BG test 2.32(011)	RAMSEY RESET 0.0027(0.958)		Arch 0.6707(0.441)	

NB * Implies significance at 1% ** 5% and *10% respectively

Before interpretation of the long run investment equation we look at the diagnostic tests. The model fits the data well as shown by an R^2 of 0.98 implying that 98% of the long run behaviour of investment in the manufacturing sector is explained by the model. The Breusch-Godfrey Serial Correlation test for high order serial correlation was conducted and the result indicated that the null hypothesis of no serial correlation could not be rejected. The White's Heteroskedasticity test was also performed on the residuals to establish the presence or absence of heteroskedasticity. The results also show that the null hypothesis of no heteroskedasticity could not be rejected. To test whether the model was correctly specified the Ramsey RESET test was conducted on the residuals and the null hypothesis of misspecification could not be rejected. The results of short run investment model are presented in Table 7

Table 7 Investment Error Correction Model

Dependent Variable: DLNINVESTMENT				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.0101	0.015	-0.654	0.5193
DLNFIN	0.1513	0.074	2.021**	0.0555
DINF(-1)	-0.0004	0.0007	-0.663	0.5141
DLNOUTPUT(-2)	0.151	0.0714	2.113**	0.0462
DLNFOREX(-1)	0.036	0.0157	2.325**	0.0297
DLNTRADE	-0.063	0.053	-1.174	0.2527
DI	0.0306	0.019	1.553	0.1345
DL	-0.109	0.050	-2.166**	0.0414
DS	0.002	0.019	0.111	0.9124
RESID05(-1)	-0.653	0.195	-3.375**	0.0027
R-squared	0.724	Mean dependent var		0.0167
Adjusted R-squared	0.6119	S.D. dependent var		0.063
S.E. of regression	0.039	Akaike info criterion		-3.374
Sum squared resid	0.034	Schwarz criterion		-2.916570
Log likelihood	63.993	F-statistic		6.431894
Durbin-Watson stat	1.755	Prob(F-statistic)		0.000181

NB *** denotes significance at 1% ** 5% and *10% respectively

Table 8 Diagnostic test on Investment ECM

Test	Test Statistic	Probability
BG Serial Correlation Test	0.304	0.586
Arch Test	1.56	0.221
White Heteroskedasticity test	0.497	0.907
Ramsey RESET Test	0.8	0.381
Jacque-Bera Test	1.7	0.42

The short run model of investment also passed the diagnostic tests as presented in Table 8 above. After concluding that the model satisfies most diagnostic tests it implies that any results yielded by the model are economically meaningful. The choice of the lag length was done using the Akaike and Schwarchz Information Criteria. The model with the least values of the two measures was chosen.

Manufacturing sector output

The coefficient for manufacturing output is significant and positive both in the long run and short run implying that an increase in demand of manufacturing sector positively stimulates investment in that sector as postulated by Clark (1917) in the accelerator theory of investment. This result is in line with the findings by Ndikumana (2003) in his study on investment in Sub Saharan African countries.

Financial Development.

The coefficient of the financial development variable is positive and significant implying that financial sector development in Zimbabwe fosters investment in the manufacturing sector. The result holds true for the both economic horizons. In a study by Bigstern etal (1997) in a four-country study including Zimbabwe he found that the finance variable was significant for small manufacturing firms. Financial development positively impacts on investment in the manufacturing sector by improving allocation of resources, mobilization of savings and pooling of risks.

Inflation

The coefficient of inflation is negative and significant in the long only. This indicates that high levels of inflation discourage investment in the manufacturing sector since high levels of inflation increase uncertainty in the long but not in the short run. Macroeconomic instability as measured by inflation shortens the economic horizon

detering long-term investment. In the face of inflation resources are moved away from productive uses to non-productive uses as economic agents hedge against inflation.

The error correction term

The coefficient of the ECM is significantly negative indicating that the in the short run the investment model is off its long run equilibrium. The term also indicates that there is a 65% feedback effect from the previous year's disequilibria.

Foreign Currency Earnings

The coefficient for foreign currency earnings is significantly positive. This is explained by the fact that much of the investment carried out in Zimbabwe's manufacturing sector relies heavily on imported capital resources such that the availability or unavailability of foreign currency determines the level of investment undertaken.

Dummy Variables

In the long run equation the dummy variables are not significant. In the short run the land reform dummy variable is significant showing that the land reform programme negatively affected investment in the manufacturing sector

5.3.2 Manufacturing output Equation

We now turn to analyse the results of the output equation whose results are given in the tables' below.

Table 9(a) Long run Output equation

Dependent Variable: LNOUTPUT				
Method: Two-Stage Least Squares				
Instrument list: C LNFIN INF LNTRADE LNAGRIC DI DL DS LNFOREX				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.085	1.086	3.761	0.0009
LNFIN	0.391	0.124	3.134**	0.0044
INF	-0.0007	0.0007	-1.013	0.3206
LNTRADE	0.0203	0.0889	0.228	0.8212
LNINVESTMENT	0.1814	0.098	1.841*	0.0775
LNAGRIC	0.0164	0.155	0.105	0.9165
DI	0.1569**	0.066	2.373**	0.0256
DL	-0.1943	0.097	-1.993*	0.0572
DS	-0.1138	0.138	-0.819	0.4203
R-squared	0.8797	Mean dependent var		8.1523
Adjusted R-squared	0.841	S.D. dependent var		0.2504

S.E. of regression	0.099	Sum squared resid	0.2488
F-statistic	24.888	Durbin-Watson stat	1.517
Prob(F-statistic)	0.0000		

NB *** denotes significance at 1% ** 5% and *10% respectively

Table 9(b) Diagnostic Test on the Long run Output Equation

Test	Test Statistic	Probability
BG Serial CorrelationTest	3.5	0.166
Arch Test	0.223	0.637
White Heteroscedasticity test	0.849	0.622
Ramsey RESET Test	0.186	0.83
Jacque-Bera Test	1.64	0.49

A number of diagnostic test were conducted on the output equation to establish whether the model is not one of these spurious regressions. Starting on how well does model fits the data we examine the R^2 which is 0.88 implying that 88% of the short run output behaviour is explained by the model. The Ramsey RESET test was also conducted and the results revealed that the null hypothesis of no misspecification could not be rejected. Serial correlation test was conducted using the Breusch-Godfrey Serial Correlation test and it yielded a statistic of 3.5 and a probability of 0.166 implying that the hypothesis of no serial correlation cannot be rejected. The White's Heteroskedasticity test was also performed to test heteroskedasticity but the result revealed that the null hypothesis of no heteroskedasticity could not be rejected at 5% level of significance. The test statistic was 0.846 with a probability of 0.629. A summary of the test statistics is given in table above. Drawing for the above results the model pass all the diagnostic tests conducted implying that we can confidently interpret the results.

The short run output equation is given in the table 10(a) below

Table 10(a) Short Run Output Equation

Dependent Variable: DLNOUTPUT			
Method: Least Squares			
Variable	Coefficient	t-Statistic	Prob.
C	0.039765	1.863	0.0780
DLNINVESTMENT	0.164089	4.851***	0.0001
DLNTRADE	0.040913	0.666	0.5131
DLNFIN	0.214140	2.575**	0.0185
DINF (-1)	-0.002657	-3.594***	0.0019
DLNAGRIC (-2)	0.087498	1.368	0.1872
DL	-0.003183	-0.056	0.9555
DS	-0.004211	-0.204	0.8398
DI	-0.042477	-1.477	0.1558
RESID06	-0.054863	-1.2746	0.0040
R-squared	0.808169	Mean dependent var	-0.000937
Adjusted R-squared	0.717302	S.D. dependent var	0.078911
S.E. of regression	0.041957	Akaike info criterion	-3.237558
Sum squared resid	0.033447	Schwarz criterion	-2.766076
Log likelihood	56.94459	F-statistic	8.893949
Durbin-Watson stat	2.198174	Prob(F-statistic)	0.000037

NB *** denotes significance at 1% ** 5% and *10% respectively

Table 10(b) Diagnostic Test

Test	Test Statistic	Probability
BG Serial Correlation Test	1.1411	0.342
Arch Test	0.0304	0.862
White Heteroskedasticity test	0.849	0.622
Ramsey RESET Test	0.0560	0.945
Jarque-Bera Test	1.281	0.526

The short run model passes all the diagnostic tests as shown in the table above. This implies that the results have meaningful economic implications.

Investment

This variable is positive and significant in both the short run and long run economic horizons indicating that investment in the manufacturing sector goes a long way in

boosting output in that sector. This concurs with the theories of growth that predict that to attain economic growth there should be high levels of capital formation.

Financial Development

Financial development variable is positive and significant implying that the level of financial development in Zimbabwe fosters output growth through fostering of investment. This outcome is in line with the supply led growth hypothesis that predicts that financial development leads to economic growth. A similar study by Neusser and Kugler (1998) in the manufacturing sector of OECD countries revealed that financial developed impacts positively on the manufacturing sector output of those countries.

Inflation

The coefficient for inflation is negative and significant indicating that high levels of inflation hamper output growth in the manufacturing sector. Inflation as a proxy of macroeconomic stability is negatively related to output growth because it increases uncertainty in the economy. A study by Dornbusch and Reynso (1989) revealed that high levels of inflation were the dominant force behind the poor economic growth in Argentina and Peru. As inflation ravages on, resources are moved away from productive to non-productive uses, as economic agents attempt to hedge.

Dummy Variables.

The dummy variable for independence is positive and significant in the long run indicating that as the country joined the international community with the removal of sanctions, post war reconstruction and favourable world economic conditions manufacturing sector output was boosted. The land reform dummy variable is significant and negative. This is explained by the disruptive nature of the land reform process. The process led to reduction in agricultural output that constitutes a bulk part of manufacturing sector inputs. Manufacturing firms especially those in the agro processing business were compelled to curtail production and in some cases winding up operations.

Error Correction term

The error correction term of the output equation turned out to be insignificant. Thus, the output equation is in equilibrium both in the short and long run period.

CHAPTER 6

Summary and Policy Implications

6.1 Summary

The objective of the study was to establish the impact of financial sector development on investment and output in the manufacturing sector of Zimbabwe for the 1965-2003 period inclusive. The study started by reviewing the theoretical as well as empirical relationships among financial development, investment and output. Most of the reviews indicate that financial development positively impacts on investment and output. Financial systems promote investment through mobilization of savings, efficient allocation of resources, exerting corporate control, facilitating risk management and facilitating exchange. Financial systems particularly financial intermediaries mobilize savings from disparate savers for capital accumulation. They are in a position to overcome transaction costs and information asymmetries placing them in better position than individual investors. Financial systems including banks and stock markets ease the trading, hedging and pooling of risk. They are better placed to deal with liquidity and idiosyncratic risk. Well-developed financial systems perform these functions efficiently leading to higher level of investment and output in countries and periods where well-developed systems prevailed.

The objective of the study was achieved by estimating two equations namely the investment and output equation. A test for simultaneity test was conducted using the Hausman specification test and the presence of simultaneity was confirmed prompting the use of Two Stage Least Squares method. The unit root test was conducted using the Phillips- Perron Test on the all variables including the residuals and it was found that the variables were integrated of order one. The equations were subjected to a number of diagnostic tests to establish the reliability of the models' results for the purposes of economic interpretation. The hypothesis of no serial correlation, autocorrelation, misspecification and heteroscedasticity could not be rejected.

Coming to the interpretation of the results it was revealed that in the investment model the financial development, output, foreign currency earnings inflation and structural adjustment land reform dummy variables were significant. However openness and independence dummy variables were insignificant. For the output

equation investment, financial development, inflation and independence and land reform dummy variable were significant but openness, agricultural output and the structural dummy variables were insignificant.

The results showed that financial development positively affect investment and output in the manufacturing sector of Zimbabwe. The accelerator theory was also shown to be in operation in the sector as indicated by a significantly positive coefficient of output in the investment equation. Inflation, which measures macroeconomic stability, is to be negatively related to both investment and output. Openness negatively impact on the level due to lack to lack of competitiveness of the local manufacturing sector causing them to scale down in the face of international competition. All in all, the hypothesis that financial development has no positive impact on investment and output in the manufacturing sector was rejected.

6.2 Policy Implications

The significance of the financial development variable implies that policy makers should aim at fostering financial sector development to promote investment and output growth in the manufacturing sector. The major aim of the government should be the expansion of the size of the financial sector based on the understanding that the bigger the financial sector the better placed it is to perform its functions well.

A negative and significant impact of inflation on investment and output implies that if output and investment growth is to be promoted then low levels of inflation should be pursued. This finding does not only warrants but reinforces the on going fight against inflation. The significance of the foreign currency earnings variable implies that that government should continue to aim at promoting foreign currency generating activities such that investment and output levels are not constrained by foreign currency shortages.

6.3 Limitations of the Study.

Due to time constraint and data unavailability the study suffers from a number of limitations that future studies should seek to adress. For example, the study does not separately assess the effects of stock market and banking sector development on investment and output growth in the manufacturing sector. Further studies should

seek to address this limitation and show whether a bank based or market based financial system is preferred over the other or the two are complimentary.

The study also suffers from the use of a broad measure of financial development and the lumping of interest rate into the financial development variable. Further studies should come up with finer measures of financial development and probably include interest rate variable separately in the investment equation.

Future studies should also endeavor to include some sectors of the economy to clearly illustrate that the manufacturing sector disproportionately gains from financial development as opposed to other sectors of the economy. However these limitations do not in any way belittle the findings of this study.

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