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THE IMPACT OF SME FINANCING ON ECONOMIC GROWTH IN ZIMBABWE (1989-2019).

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CHAPTER ONE   ……………………………………….

CHAPTER TWO   ……………………………………….

CHAPTER THREE   ……………………………………….

CHAPTER FOUR   ……………………………………….

CHAPTER FIVE   ……………………………………….

DATE   ……………………………………….

DEDICATION

This dissertation is dedicated to my family especially my mother and brother for their unwavering support throughout my studies.

ABSTRACT

Small and Medium scale Enterprises (SMEs) are important for the success of economic growth and development. There is a global increase in recognizing the importance of Small and Medium Scale Enterprises in terms of supporting economic growth and development. The primary purpose of this study was to assess the contribution of SMEs financing towards economic growth in Zimbabwe. Specifically, the study investigated the impact of SMEs financing on GDP growth. The study focused on the classical and the modern theories mainly the Neoclassical Growth Theory, Finance-Growth Theory, lending theory, Signaling theory, the pecking order theory and the Access to finance Theory of Change. This study adopted an explanatory correlational study design since it helped the researcher to comprehend and describe how SME financing drives economic growth. In this study all SMEs that received funding from the government through SMEDCO constituted the population since 1989. The SMEs sector was selected due to its importance in Zimbabwe achieving the economic pillar of Vision 2030. The data gathered was presented and analyzed in a way that enabled statistical inferences to be made. Statistical methods of presentation such as descriptive statistic tables, correlograms and multiple linear regression model were used to help in achieving meaningful interpretation. Tests were performed on sample data to ensure that required conditions were met before regression modelling. The model was fitted using EViews 7.1 statistical data analysis package. In a correlational study, the researcher examined whether and to what degree a statistical relationship exists between SMEs financing and Economic Growth. This study employed Classical Linear Regression Model (CLRM) to ascertain the statistical relationship between SMEs financing and Economic Growth. To evaluate the appropriateness and validity of the model the study analyzed the properties of the statistical distribution of the residuals generated by the fitted model to check for autocorrelation, heteroscedasticity and normality. The overall significance of the model was also evaluated by inspecting the model's coefficient of determination (R-squared) and the probability value for the F-statistic. The estimated model found SMEs financing to have a significant positive effect on Economic growth with respect to GDP growth. The Reserve Bank of Zimbabwe (RBZ) should make sure that SMEs have proper accounting records so that they can have access to loans within the banking sector. Moreover, the RBZ should stabilize the cost of borrowing through strengthening the monetary policy. Small scale business operators should avoid investing in unprofitable business so that they will be eligible for loan applications.

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ACRONYMS AND ABBREVIATIONS

ADF................. Augmented Dickey Fuller

BUSE............... Bindura University of Science Education

CLRM.............. Classic Linear Regression Model

DW................... Durbin Watson

EU.................... European Union

GDP.................. Gross Domestic Product

IMF................... International Monetary Fund

MoSME.............. Ministry of Small and Medium Enterprise

OECD................. Organisation for Economic Co-operation Development

OLS................... Ordinary Least Squares

RBZ................... Reserve Bank of Zimbabwe

SEM................... Structural Equation Modelling

SME................... Small and Medium Enterprise

SMEDCO............ Small and Medium Enterprise Development Corporation

SMEF.................. Small and Medium Enterprise Financing

WEDP.................. Women's Enterprenuership Development Project

CHAPTER 1

INTRODUCTION

1   Introduction

Small and medium-sized enterprises (SMEs) are playing an increasingly essential role in the success of the economy and social economic activities in general (Chidoko et al, 2011). The purpose of this study is to explain the impact of SME funding on economic growth in Zimbabwe.

1.1   Background

There is a global debate over the effect of SMEs on the growth economies (Alibhai et al, 2017). On the G20 conference in 2015, the President of Turkey emphasized on the importance of SMEs in the economy growth and development (Alibhai et al, 2017). Following the 2020 G20 meeting, there has been a greater emphasis on SME finance around the world in order for every country to contribute to global economic growth (World Bank 2020). The contribution of SMEs to Gross Domestic Product has increased (World Bank 2020). SMEs contribute roughly 5% of GDP in Sub-Saharan Africa (SSA) each year. GDP growth has been identified as one of the key reasons for Africa's progress over the last 10 years, owing to the participation of SMEs. 2010 brought about a surge of SMEs in Africa, which have been critical to the development of the African economy (Ahmed, *et al*, 2019).

According to Alber et al (2013) the primary area of focus is job creation and economic growth for policy makers around the globe. Recent researches show the importance of SMEs in employment creation across the world. "There has been a rapid increase in SMEs worldwide

from 2000 to 2020" World Bank (2020). The following diagram shows the estimated number of SMEs in millions for the past twenty-one years.

Figure 1.1: The estimated number of SMEs in millions
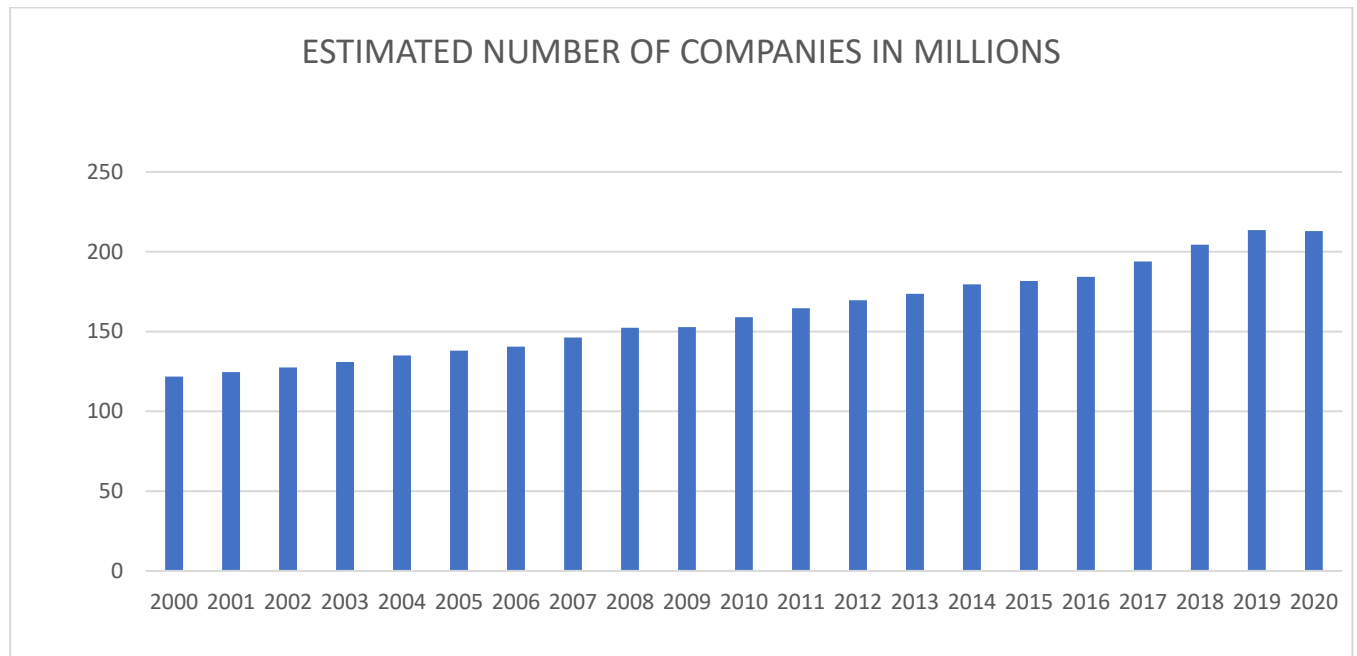
Source: **Author's own estimation using excel**

According to Alauddin & Chaudhary (2012), SMEs have been faced with a lot of challenges and one of them is lack of funding although they have been contributing to economic development worldwide. They are left out and marginalised from accessing credit facilities and funding from formal banks. Strict requirements have been set by formal money lenders and this has resulted in SMEs failing to get loans. Globally, SMEs require financial resources to sustain their growth (Barder, 2009). The finance gap has been a major impediment to the global expansion of SMEs.

According to the 2019 IMF report, around sixty-eight percent of SMEs in developing nations are either financially excluded or underserved by traditional finance institutions (Callen, 2020). Many governments developed policies aimed at boosting SMEs' financing. India, China, Ethiopia, and Kenya are among them.

In 2019 China issued about 23.85% of bank loans to SMEs. There was 11.5% increment in SME funding and they experienced a 4.2% growth in SME value in 2019. China experienced an increase in GDP and employment by 6% and 2% respectively.

Approximately 80% of industrial businesses in India consist of SMEs (Alibhai et al, 2017). In India they came up with the Innovation and Inclusion Project in 2015 which is a $550 million IBRD investment which is aimed at addressing key problems for SMEs in India (Andrianaivo & Chan, 2017). There was a 6.7% increase in GDP which was reported in 2019 due to the IRBD investment.

Ethiopia has one of the highest growth rates in Africa and the developing world. Ethiopia established the Women's Entrepreneurship Development Project (WEDP) to assist SMEs bridge the financial gap. Every month, the WEDP credit contributes around two million United States Dollars in mortgages to enterprise-oriented women (Strobbe & Alibhai, 2017). A year after receiving the WEDP loan, Ethiopian women's employment increased by 17%. As a result, the report by Strobbe and Alibhai (2017) provides sufficient evidence that WEDP helped to the financing gap for SMEs as well as job development.

Over the last decade, the Kenyan financial industry has grown quickly, and business finance has played an integral role in banking institutions' growth strategy (Berg & Fuchs, 2017). Many business concepts have been created to assist SMEs in filling the financial gap. There has been a remarkable involvement of the Kenyan banks in SME sector between 2009 and 2013. The lending platform for SMEs was estimated to be KSh332 billion in December 2013, representing 23.4% of the bank's total loans (Berg & Fuchs, 2017). Due to increased lending to SMEs in 2015, GDP increased from 8.9% in 2014 to 13.85% in 2015. SMEs contributed towards employment creation and in 2016 SMEs contributed about 32% of the employment rate.

SMEs have been contributing about 60% of the GDP in Zimbabwe (RBZ, 2009) although they are very small in percentage. SMEs face a lot of challenges but they have managed to change lives of many people and the economy as a whole (Nyoni, 2002). The government of Zimbabwe does not pay much attention to SMEs even though they contribute almost half of the GDP and employment. SMEs in Zimbabwe are motivated by growth so as to help the sector in realising the potential in people particularly women and youths.

1.2   Problem statement

Since 1980 the Zimbabwean economy has been struggling to perform in comparison to other countries (Nyoni & Bonga, 2018). The closure of big firms and retrenchment of people has

characterised the under performance of the Zimbabwean economy (Nyathi et al, 2018). Many people in Zimbabwe have survived through the functionality of SMEs (Nyathi et al,2018). SMEs are exposed to a lot of challenges such as limited access to finance, inadequate database and inadequate use of information technology. One of the challenges that SMEs are facing in Zimbabwe is lack of government funding. The government of Zimbabwe is not fully supporting SMEs even though they constitute of 60% of the economy (RBZ, 2013:28). Since most SMEs experience low profits due to low capital injection, they will end up avoiding to pay tax and this will lead to a decrease in the national income. However, the government should ensure that SMEs are properly financed so as to boost economic growth. This study focuses on assessing the impact of SME financing on Zimbabwean economic growth.

1.3   Research objectives

1) To examine the impact of SME financing on economic growth in Zimbabwe
2) Analyse the role of SME on economic growth

1.4   Research Questions

1. What is the impact of SME financing on economic growth in Zimbabwe?
2. What is the role of SMEs on economic growth?

1.5   Research Hypothesis

H_0: There is no relationship between SME financing and economic growth.

H_1: There is a relationship between SME financing and economic growth.

1.6   Significance

The research study is important in identifying the need of SME financing. This research will help policy makers in understanding and identifying the impact of SME financing on economic growth in Zimbabwe. The significance is summarised below:

1.6.1 To the Zimbabwean economy

The study will help the Zimbabwean economy in making policies that enhance SME financing and access to credit facilities especially in formal banking institutions. Since SMEs are contributing almost half of the GDP, it is important that policy makers pay attention to factors that affect SME financing. This research is an addition to the knowledge of policy makers with its recommendations aimed at improving SME financing.

1.7 Assumptions of the study

This study has the following assumptions:

- Data collected provides necessary information which is required to carry out the research
- Research instruments are valid
- The literature review gives a detailed explanation of the study

1.8 Delimitations

- This study focuses on the scope of SME financing in Zimbabwe from 1990 to 2020.
- This study utilizes yearly data obtained from published estimated national budgets of Zimbabwe.

1.8.1 Limitations

- Data necessary for the research is considered sensitive to the Ministry.
- Limited time to carry out the research due to covid 19. However, the researcher made use of the secondary data which is readily available from published national budget statements.
- Limited literature on SME financing in Zimbabwe, however the researcher related to literature from other countries.

1.9 Definition of terms

SMALL AND MEDIUM ENTERPRISES: There are so many definitions of SMEs around the world and they differ according to each country. They differ according to the number of employees, sales levels, capital injection and number of assets and some like (Siropolis, 1997) included the legal structure and formalisation to the definition of SMEs. According to MoSME and CD Policy Document (2009) an SME is a legal business which has less than US$800000 of turnover and have a maximum of 40 permanent employees.

ECONOMIC GROWTH: It is the process whereby the country's real gross domestic product increase than that of the previous years (Leamer, 2014).

1.10 Chapter summary

This chapter provided a detailed explanation on the background, statement of problem, objectives, hypotheses and questions. The significance, delimitations, limitations and definition of terms were outlined.

CHAPTER 2

LITERATURE REVIEW

2   Introduction

This chapter focuses on the literature which is relevant to the study. It follows the theoretical framework and the empirical framework. The rationale of the study is to investigate the impact of SME financing on Zimbabwean economic growth.

2.1   Theoretical Framework

2.1.1   Neoclassical Growth Model

In 1956 Robert Solow emphasized the significance of capital and savings creation for economic development. The Neoclassical Growth Theory states that production in the economy, SMEs, savings and capital formation in the business world serve as a measure of economic growth and development. In this theory, Robert Solow noticed that the steady-state growth per worker is constant. Robert Solow believes that increasing the long-term trend growth of the economy requires highly productive finance and business, increased labour supply and capital productivity. Neoclassical economists believe that growth cannot be stable. They also believe in the importance of growth rate and long-term growth in achieving economic development. Interest rates, according to neoclassical economists, are factors that limit the efficacy of savings and capital, as well as supply and demand. As a result, neoclassical growth theory contends

that funding to SMEs is a vital component of global growth of economies and fiscal consolidation stability.

The rate of interest charged on loans depends on the supply of money (Keynes, 1980). The equilibrium interest rate is the rate at which the money supply is proportional to the rate of inflation to the money supply. According Hoff & Stiglitz (1990) modern view interest rates are based on incomplete information. An empirical study of this contemporary view shows that the relationship between SME loans and several other factors in the supply and demand of funds. In the example of Funkor (2000) the determinant of SME growth such as bank interest rates, exchange rates, inflation rate, credit risk and Ministry of Finance securities are identifiable factors.

According to classical theory, loan availability helps to bridge the gap between available corporate capitals. The imbalance between available capital instruments and required business resources causes business credit demand. According to Aryeetel et al. (1994), SMEs have 3 types of credit demand: perceived, potential, and revealed. Perceived demand occurs when a corporation has a financial constraint and so a demand for cash. Potential demand occurs when monetary demand is not met due to governmental barriers and imperfect markets. The request for cash at a specific interest rate is known as revealed demand. When applying for a loan, banks typically do this. The purpose of this study is to put to the test the neoclassical growth theory's claim that SME funding is vital for economic growth and stability.

2.1.2   Finance Growth Theory

Bagehot pioneered the finance-led growth theory (1873). According to financial growth theories, monetary intermediaries offer an effective environment for boom and financial sustainability via the deliver-main and demand following impacts. The demand-following effect is complicated by the fact that the monetary device no longer promotes financial boom, but rather reacts to and influences the growth of the actual sector. The deliver main impact, however, divergences the demand-following discourse which states that monetary gadget does now no longer decide financial boom in an economic system. Theoretical wrangles do exist on the function of monetary middleman structures in financial boom. Some researchers view the function of monetary intermediaries` structures as insignificant to financial boom even as others view it as sizable to the financial sports and boom. Also, limited/ loss of get right of entry to monetary offerings via way of means of SMEs is considered as a vital component

withinside the concept, which reasons tenacious earnings inequality even as decreasing the financial boom. This implies that access to a safe, smooth, and low-cost supply of monetary offerings is identified as a precondition for accelerating financial sports, boom, decreasing earnings disparities, poverty eradication, enhances economically and socially contain economically and socially excluded sectors into the economic system, and safeguards the economically vulnerable segments from financial astonishment (Odeniran & Udeaja, 2010; Serrao, *et al*, 2012 and Babajide, Adegboyega, & Omankhanlen, 2015). This thesis strongly hypothesizes that the loss of SMEs funding is one of the actual causes of financial degradation in the majority of economies worldwide. As a result, this aimed to constrain the speculation of the Finance-Growth Theory.

2.1.3   Lending Theory

This theory views that loaning markets can reduce lending to credit ratio that SMEs accept high interest rates. This means that companies will not be able to invest in other projects. Therefore, it is important for governments especially those in developing countries where loans can be paid at lower interest rates, so as to enhance SME borrowing or have access to loans. However, asymmetry occurs when the company owner has more relevant information about risks and prospects of business than the lending institution. According to the principle of information asymmetry, lenders might raise available knowledge regarding business risk over and beyond the intended risk. Because of their small size, small firms benefit from information asymmetry because credit institutions cannot accurately analyze the risks associated with SMEs (Obanga, 2005).

Eriki & Inegbenebor (2009) has a shortage of funds which is the reason why SMEs are unable to increase economic growth, created expected employment, improve transfer technology and encourage local content so as to work in foreign owned businesses in Nigeria. According to Abereijo and Fayomi (2005), insufficient funds for SMEs result from their inability to raise funding from formal financial institutions due to high mortality rates, insufficient assets, and the unpredictability of SMEs' businesses. Okpara and Pamela (2007) disagreed with the preceding statement. They stated that inappropriate record keeping, lack of labor and corruption are responsible for poor performance by SMEs worldwide. They also cited challenges for SMEs, such as a lack of research money, mixing of company and own finances, and limited demand for manufactured products. Furthermore, inadequate funds are the most

significant challenges that entrepreneurs face, notably within Nigeria (Herrington, *et al*, 2009)). The author went on to determine that insufficient financial assistance was a close second.

2.1.4   Signalling Theory

Signal theory is delivery and inspection information relationship to capital market forecast. Companies provide insights on the terms and amounts of loans available to these companies. In other terms, information flow business company and capital market are determined by company-company capital flow (Emery et al 1991). Signalling theory utilizes SME credit and there is no general consensus on how to improve the potential. Emery et al (1991) supports this claim and how signalling theory provides insights or connections to SME financial management. They claimed that there was no consensus view on what to offer. Keasey et al (1992) stated in this study of SMEs and signal theory showing SMEs' disclosure of profits forecasts is positively related to equity owned by the owner's net proceeds from equity issues, financial advisor selection, and price level It is expected to offer a good grasp of how to manage the finances of SMEs (Emery et al, 1991).

2.1.5   The Pecking Order Theory

Donaldson (1961) proposed the pecking order hypothesis, which Myers (1984) and Myers & Majluf (1985) built on (1985). The school of philosophy arranges the financial structures of organizations in a hierarchical fashion. The influence of information inequities, as well as the inherent risk, must be considered in this idea. Managers of a firm can better explain information asymmetry since they know more about the company's performance than outside venture investors. As a result, they have access to confidential information. As a result, internal funding is the ideal source since asymmetric information is eliminated and no third parties are required because retained earnings are utilised (Myers 1984).

While seeking external financing, borrowing is favoured over equity, and short-term debt is favoured over long-term borrowing. Issuing equity substantially increases the risk than obtaining debt finance. This idea is driven by the fact that if insider knowledge becomes public, the prospective value of securities shifts instantly. Nevertheless, the equity value fluctuates more than the debt value. The threat of buying a short-term debt is relatively low than the possibility of buying a long-term debt when it comes to debt lending. In the case of securities,

however, information asymmetry can lead to an underestimation of new issues. Furthermore, provided risk for equity financing (Myers, 1984).

Trade credit is a type of debt financing as well. However, the increase in interest rates associated with it have made it an unfavourable source of funding, ranking low in the pecking order theory (Petersen & Rajan, 1997). It has been identified that SMEs promote and encourage indigenous entrepreneurialism, increase per capita income and investment, and promote local content production (Sule, 1986 & World Bank, 1995). It improves resource consumption while decreasing rural-urban migration.

2.1.6   Access to Finance Theory of Change

Access to financial sources is one of the key hurdles to SME growth, and credit availability is a significant driver of success (Loening et al, 2010). Credit markets enable firms to invest in productive assets that are expected to improve output, resulting in higher productivity gains, as well as to hire more and more personnel as production factors (Ibid). Working capital and funding are essential for SMEs to embark on investment initiatives with terms and circumstances that correspond to the projected earnings timeline. However, financial institutions, particularly those in developing countries, frequently lack the necessary products, and modest SME loans are associated with higher financing costs for financial institutions to process and monitor, causing rates to rise and making it more difficult for SMEs to borrow in comparison to larger firms (Ayyagari et al, 2017).

Part of the issue with obtaining credit is legal when movable collateral is implicated, as well as an effective mechanism for repossessing or foreclosing on real estate. Another dilemma is obtaining profitable financing while taking creditworthiness and reimbursement probability into account. Another issue for high-growth SMEs is a flat monetary sector which does not loan relying on agreements, trade credit, or equity investment. As a direct consequence, SME will be levied a high rate of interest and may not even obtain a long-term mortgage from. exceeds the threshold, so SMEs will finance the initiative, which is a mutual understanding between campaign contributors and policymakers (Piza et al, 2013). Over the last ten years, microfinance companies, government entities, and donors have greatly contributed to the development of new products and programs to support small businesses. Subsidized loans, loan guarantees, and risk-sharing agreements are examples of interventions (Ibid.).

Empirical Literature Review

Several studies have been undertaken to evaluate the influence of SMEs funding on economic growth in both developed and developing countries. The purpose of this section is to clarify the empirical research on the influence of SME funding on global economic growth.

Carree et al. (2017) investigated the impact of SMEs on GDP in 23 OECD nations. The questionnaire employed a pooled OSL to evaluate data from 1976 to 2016 for the 23 countries. In all nations, including the United Kingdom, the United States, Belgium, and Italy, the data demonstrated a direct and positive association between GDP and SME finance.

Khalid et al. reported similar findings (2019). Khalid et al. (2019) attempted to predict the impact of Micro finance on GDP in Pakistan. Some economic indicators were considered in this study. The survey used data from 1980 to 2017, and the dynamic perspective was incorporated using an ARDL-linked test approach. GDP was used as a model estimated dependent variable, while unemployment rate, among other variables, was used. The findings revealed a direct and significant relationship between SME financing and GDP.

Macerinskas et al. (2013) conducted a qualitative analysis of EU member states' understanding in order to develop better understanding of the role of Access to finance in the context of developed markets. Using month - to - month data from 2010 to 2012, the investigation used aggregated OLS regression to design the impact of SMEs financing on Economic output in European Union (EU) opening markets. The researchers noted that funding the European SMEs sector had enormous ability to boost Real GDP in EU member states.

The study by Sibanda et al (2013). yielded contradictory results. The impact of access to financial services and Performance of small and medium on firm level export behaviour was investigated, with an emphasis on a Zimbabwean SME manufacturing home furnishing. The structural equation modelling (SEM) technique was used to analyse the effects of SME financing on Zimbabwe's GDP growth. The technique tested the theoretical effects of financial accessibility on Zimbabwean GDP growth using partial intelligent statistical software (PLS). According to the study, the relationship between SME financing and GDP growth is weaker and insignificant.

Berger et al. (2011) examined the relationship between SME funding and economic development using data from 49 countries from 1993 to 2010. Data from both developed and emerging nations indicated a decreased, insignificant relationship between SME loan supply

and GDP growth. The multiple linear regression approach was used for data analysis, with macroeconomic factors serving as control variables. Sibanda et al. got similar results (2013).

Bamidele (2012) investigated the financing of SMEs in the Lagos state municipal authorities of Anuwo Odofin. The authors explored how authorities and various organizations in Anuwo Odofin finance SMEs. Through the use of the community concept, the research became a guide. The concept's dominant circumstance is the objective pattern of ties connecting institutions, individuals, and groups of society. This study's organizations include banks, co - operative societies, and governments. To collect statistics for the study, quantitative and qualitative approaches were used. Fifty respondents were chosen at random from the council area. The collected statistics were used to analyse the descriptive oscillation frequency, while the qualitative data was subjected to content and descriptive analysis. According to the findings, governments and other financial institutions have not sufficiently helped SMEs.

Because most research examining the impact of SME finance on employment generation have yielded varying findings, the findings of these studies cannot be inferred to the Zimbabwean context, Bamidele (2012), Chandler (2012), Bradshaw (2012), Owolabi and Nasiru (2017), DermirgucKunt and Maksimovic (2017), and Ghassibe et al (2019), all agreed that improving SMEs' access to credit is a critical component of job creation in any country. A substantial amount of research undermines the idea that small enterprises are the major source of new employment creation (Dunne et al 2015, Leonard 2016, and Brown et al 2010). Davis et al. (2013), for example, observe that while the gross rates of job creation and obliteration are higher in small businesses. According to Leonard (2016), there is no logical relationship between net job creation and business size in Sub-Saharan Africa; nonetheless, other records acknowledge that big enterprises are the dominant source of employment growth, notably in manufacturing, and that SMEs contribute insignificantly.

Hassaas (2019) investigated the influence of SME finance on poverty alleviation in Afghanistan using aid and a database. The role of SME finance in job creation, poverty reduction, GDP, and economic growth, which decreases poverty in a country instantly, is crucial (Hassaas, 2019). Using yearly data, the influence of SME financing on poverty reduction in Afghanistan was investigated. The purpose of the study was to examine if SMEs engaged in employment activities related to poverty reduction, and the data demonstrated that

SME funding is a viable weapon for poverty reduction and economic growth. A pooled OLS was used to evaluate annual funding and poverty data from 2000 to 2018.

Vijayakumar (2013) investigated the impact of SME financing on economic growth and poverty reduction in Sri Lanka. For information, the study relied on secondary sources. According to the findings of this study, SME financing had a negligible impact on economic growth and poverty reduction. Similarly, Ahmed and Chowdhury (2013) found insufficient evidence that SME finance has an impact on poverty reduction in South Asian economies, and Moktan (2014) found in Bangladesh. Ali (2013) and Hassaas (2019) investigated the role of SME financing in poverty reduction. OLS was applied to time series data in the studies.

2.2   Research gap analysis

Most studies were carried out in developed nations. The studies employed OLS to analyse the impact of SME financing on economic growth. The main disadvantage of these studies above is that they employed OLS to analyse panel data and time series data. The results could have been valid if they employed ANCOVA.

2.3   Chapter summary

The chapter offered the study's most fundamental theoretical basis. In no particular sequence, six hypotheses were investigated: the financial growth theory, the pecking order theory, the neoclassical growth theory, the signalling theory, the access to finance theory, and the lending theory. The chapter went on to evaluate the empirical literature on SME finance and economic development before analysing the research gap to identify variations across the studies.

CHAPTER 3

RESEARCH METHODOLOGY

3   Introduction

The previous chapter focused on the theoretical and empirical literature review of the study. This chapter focuses on giving a detailed explanation on how the study was conducted. It includes the estimation techniques, the model applied, sources and type of data in examining the impact of SME financing on economic growth in Zimbabwe.

3.1   Research design

A research design is the most effective solution to survey questions and also improve activities (Amiri & Amiri, 2019). This study used the non-experimental research design.

3.1.1   Non-experimental

Mertler (2014) states that in order to collect quantitative data, non-experimental research designs techniques are most suitable in a study in which no study variable is affected. The author also pointed out that this lack of manipulation is due to the variable being logically 'manipulated' before the main field work or as a result of failing to manipulate the other variable (Mertler, 2014). The three main categories of non-experimental research designs include descriptive, correlative and comparative research. Survey and observational research are part of descriptive research. This study utilised correlative research design which is best suitable for identifying and measuring the impact of SME financing on economic growth, which the current study aims to achieve.

3.1.2 Correlation research design

In economics, a correlative research design looks for crucial factors of macroeconomic factors. The design makes an effort to investigate economic variables that co-vary or correlate with one another (Bhattacherjee, 2012; Mertler, 2018). This study employed a correlative research design to better investigate the origins and resilience of the connection among SME financing and economic growth. The study used an explanatory correlational study design in particular because it assisted the researcher understand and characterize how SME financing drives economic growth.

3.2 Theoretical model

According to the neoclassicals an increase in SME financing leads to economic growth and stability of the economy. This means that SME funding is crucial in the transformation of economies globally. Thus, SME financing has a positive impact or relationship with economic growth. Many theories support this notion by the classicals that for there to be economic growth and stability SMEs should have proper funding and access to credit facilities since they are the main drivers of economic growth around the globe. Since SME financing is the main driver of economic growth in many nations it is considered to be the independent or explanatory variable and GDP as a measure of economic growth will be the dependent variable. The model was well explained in the previous chapter.

$$GDP = f(SMEF)$$

Where:

GDP=Gross Domestic Product

SMEF=Small and Medium Enterprise Financing

3.3 Empirical model

The empirical model is as follows:

$$GDP = \beta_0 + \beta_1 SMEF + \mu$$

Where:

$$\beta_0 \ is \ the \ intercept$$

$$\beta_1 \ is \ the \ slope \ of \ the \ equation$$

$$\mu \ is \ the \ stochastic \ error \ term$$

$$GDP \ is \ the \ dependent \ variable$$

$$SMEF \ is \ the \ independent \ variable$$

3.4 Justification of variables

According to the OECD (2005), macroeconomic variables are factors that relate to the general economy at a nationwide level and influence the broader population instead of individuals. Furthermore, the OECD (2005) stated that the growth of SMEs is portrayed as a significant weapon in attempts to alleviate poverty, implying that SMEs clearly add to economic prosperity and alleviating poverty. A 2012 World Bank Group Review of Small Business Operations underlined its priority to expanding the SME sector so that it becomes a fundamental component of its goals to increase economic development, employment, and poverty reduction.

However, SME funding has been recognised as critical to guaranteeing that SMEs contribute positively to globalisation (Ghassibe, Appendino and Mahmoudi, 2019; Akingunola, 2011; Oluseye, 2013 and Chandler, 2012;). The study included the following macroeconomic growth variables (dependent variable in the regression model) to investigate the influence of SME funding on economic development: GDP growth. The budget granted to SMEDCO was used as a predicting variable in the regression model.

3.4.1 Gross Domestic Product

GDP is used as an indication of economic growth in this investigation. The dependent variable in the standard linear regression model is GDP growth. "Classical" theories have proven that improved access to financing for SMEs is among the key drivers boosting GDP in any country throughout the world (Onakoya et al., 2013). Abiola (2012) also demonstrated that SME funding has the potential to boost economic expansion via GDP growth. As a result, GDP growth was used as a measure of economic growth. This statistic was calculated as the yearly growth rate of the gross domestic product.

3.4.2 SME Financing

The constructed conventional linear regression model includes SME finance as a crucial explanatory variable, which was quantified using quarterly loans given to SMEs by commercial banks and other financial institutions. SME finance refers to continual access to suitable sources of capital for prospective SMEs in order for them to survive and flourish (Adisa & Mordi, 2014). SMEs, according to Kauffmann (2006), are crucial participants in the growth of national economies, but their contribution development is sometimes constrained by finance restrictions. As a result, national governments must develop regulations and establish financial institutions focused at boosting SMEs' access to financing (Ayyagari et al, 2013).

3.5 Estimation procedure

The acquired data was then analyzed and presented in a manner that allowed statistical inferences to be drawn. To enable understandable interpretation, time series graphs, descriptive statistical charts, and correlograms were employed to compare statistical data from a multiple linear regression model. Prior to running the regression model, testing was conducted on the sample data to confirm that the necessary criteria were satisfied (McNeese, 2017). Normality tests, independence tests, and unit roots were used in the study to ensure that the essential data diagnostics were performed prior to model fitting. Non-stationarity, for example, might be addressed by subtraction. The data was normalized using Jarque Bera's normality test process, and the unit root tests were carried out using the extended Dickey-Fuller test (Ahmed and Chowdhury, 2013). EViews 7.1 statistical data analysis software was used to fit the model. The researcher conducted the statistical relationship between SME finance and economic development. The classical linear regression model (CLRM) was employed in this study to examine the statistical link between SME funding and economic development. The research investigated the features of the measure of dispersion of the residuals predicted after adjusting for autocorrelation, multi - collinearity, and normality to assess the model's sufficiency and applicability (Jambawo, 2014). The model's overall relevance was also evaluated by assessing its R-squared (gauge of coefficient of determination) value and the significance level of the F-statistic. The impact of SME financing was determined using the coefficient attached to the SME financing proxy in the customized CLRM.

3.6 Diagnostic Test

This section was subjected to diagnostic tests to ensure that the predictor met all CLRM parameters, including tests for stationarity, multicollinearity, and data variable normality.

3.6.1 Unit root test

The examiner has to run stationarity checks on each individual time series before changing the CLRM to prevent the problem of inaccurate regression findings. The stationarity test was crucial since fitting a model with non-stationary variables, even if just one, would result in nonsensical regression results and the findings of, p. B. the meaning of the regression coefficients. Study avoided this issue by employing the Augmented Dickey Fuller (ADF) test for stationarity/root of unity. Individual time series were subjected to unit root tests using the ADF test at levels of 1%, 5%, and 10% significance to confirm that non-stationary variables are stationary using difference training or exponential smoothing prior to, resulting in reconstructed model fits. To suit the trend of the series, this study employed differentiation. A decision criterion was the comparison of the crucial values at each of the three significance levels with the generated ADF test statistic. The ADF test statistic's p-value was also compared to the standard test level of 0.05. If the probability value exceeds 0.05, the series is either a transmitter or not. If a time series X t becomes stable after d differentiation, it is said to be integrated of order d, implying that it includes X t d roots of unity. I denote a stationary time series in (original) level form (0).

3.6.2 Normality test

The Jarque-Bera normality test was employed in the study to determine if the research variables were normally distributed. The normality of the variables must be determined since the bivariate correlation analysis, confidence interval test, hypothesis test, and traditional linear regression model all presume that the candidate variables are normally distributed. As a result, before doing correlation studies and traditional linear regression modeling, the Jarque-Bera normality test was required to guarantee that the normality assumption was met.

3.7 Model adequacy

The study examined the features of the statistical distribution of the residuals to check hysteresis, heteroscedasticity, and normality to evaluate the model's sufficiency and validity.

The model's significance was determined by assessing the coefficient of determination (R^2) and the probability value of the F-statistic.

3.7.1   Autocorrelation test

The DW test statistic was used to determine if the corrected CLRM residuals are autocorrelated. CLRM requires that the residuals of the fitted model are not autocorrelated. When the DW test statistic is near to 2, the residuals from the fitted CLRM are not autocorrelated, implying that the CLRM model is plausible. According to Jambawo (2014), the absence of autocorrelation between variables means that the R^2 and F-statistic values offer accurate judgments about the importance of the model coefficients, and hence the adequacy and reliability of the fitted model.

3.7.2   Normality test results

The Jarque-Bera normality test was employed to check for normality in the distributions of the fitted model's standardized residuals. For prediction efficacy, the fitted model must generate normally distributed residuals.

3.7.3   Heteroscedasticity test results

The Breusch-Pagan Godfrey test was employed to determine the presence of heteroscedastic error terms. If the p-value for the F-statistic is larger than 0.05, the residuals are not heteroscedastic, according to the Breusch-Pagan Godfrey test.

3.8   Data collection

The research population in this study consists of all registered SMEs in Zimbabwe that have received loans from SMEDCO since 1989. The SME sector was chosen because of its relevance in implementing the economic pillar of Zimbabwe's 2030 Vision. There is also substantial body of evidence that greater access to financing for SMEs greatly helps to industrial prosperity. As a result, the study relied on consolidated loans made accessible by SMEDCO to all SMEs in Zimbabwe. Economic variables are used to calculate national economic growth. Limiting focus to the SME sector reduces cross-industry variability, which typically distorts study outcomes (Jambawo, 2014). The research included the entire population

since it aimed to analyze the influence of SME funding on the wider Zimbabwean economy. Because aggregated population statistics are easily accessible, the study examined using a census rather than a sampling. As a result, the research must have utilized aggregated data for the whole SME sector.

3.8.1 Data sources

The data sources have been classified into two types: primary and secondary data. Because this research relies on historical data, quantitative documentation data was employed. Secondary data was used in this analysis, as it is freely available from many sources on the web, including RBZ Annual Budget Reports and World Bank reports, as it was in a previous study by Chingwaru and Jakata (2015).

3.8.2 Secondary data

An explanatory correlative study design was used in this study, with quantitative data analysis methodologies used to acquire a clear and thorough grasp of the issue and discover succinct answers to the research questions. Quantitative approaches were used to define features, quantify them, and then evaluate observations using statistical tools (Saunders, 2013). Secondary data sources were utilized in the study. Annual loan amounts given to SMEs were gathered from National Budget annual reports for the first 31 years, from 1989 to 2019. The World Bank website was used to obtain the actual GDP. Data was manually entered into MS Office Excel spreadsheets in order to perform additional computations with the specified variables. These variables included GDP measurements, which were considered as a dependent variable. SMEDCO loans to SMEs were also included as an independent variable. Following the data gathering procedure, statistical methods were utilized to analyze the data and detect patterns and correlations with research variables (Saunders, 2013).

3.9 Chapter summary

The study's methodological framework was described in this chapter. The analysis relied on aggregated secondary data for the SME sector and national economic growth indices. The SMEDCO, yearly anticipated national budgets, and the World Bank provide secondary data. Diagnostic tests were run to check that the estimated model satisfied all of the classical linear

regression model's assumptions (CLRM). The chapter concluded with a detailed breakdown of the models' adequacy tests.

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4   Introduction

This chapter aims to emphasize findings from the preceding chapter on the influence of SME finance on Zimbabwean economic growth. This chapter also focuses on model estimate and the presentation of the model's relevance. E-views 7.1 was used to summarize and handle the data.

4.1   Summary statistics

TABLE 4.1: DESCRIPTIVE STATISTICS

	GDP	SMEF
Mean	852.7823	9.10E+08
Median	731.95	88932304
Maximum	1683.74	2.97E+09
Minimum	356.69	9721261
Std. Dev.	405.4067	1.19E+09
Skewness	0.743393	0.721968
Kurtosis	2.059096	1.666551
Jarque-Bera	3.998787	4.989756
Probability	0.135417	0.282507
Sum	26436.25	2.82E+10
Sum Sq. Dev.	4930637	4.23E+19
Observations	31	31

Source: Own estimation using E-views 7.1

The normality test using the Jarque-Bera tests the H_0 that variables are normally distributed whereas the H_1 states that they are not normally distributed shows that GDP and SMEF are normally distributed since their p-values are greater than 0.1 therefore, we fail to reject H_0.

4.2   Diagnostics Tests

4.2.1   Heteroscedasticity Test

TABLE 4.2: ARCH HETEROSCEDASTICY TEST

Heteroskedasticity Test: ARCH				
F-statistic	0.947935	Prob. F(1,28)		0.3386
Obs*R-squared	0.982386	Prob. Chi-Square(1)		0.3216

Source: own estimation using E-views 7.1

The H_0 states that there is no heteroscedasticity against the H_1 that there is heteroscedasticity, we fail to reject H_0 since the p-value is greater than 0.1. The above table shows that there is no heteroscedasticity in the residuals hence it is homoscedastic.

4.2.2   Multicollinearity Test

TABLE 4.3: Correlation matrix

	GDP	SMEF
GDP	1	0.745745
SMEF	0.745745	1

Source: Own estimation using E-views 7.1

The above table shows the correlation between explanatory variables. The relationship between GDP and SMEF is below 0.8 which means that there is no perfect linear relationship between the variables. This means that the data is not suffering from multicollinearity.

4.2.3 Normality Test

Figure 4.0: Histogram

Series: RESID	
Sample 1989 2019	
Observations 31	
Mean	-2.14e-13
Median	5.566986
Maximum	516.0949
Minimum	-605.9414
Std. Dev.	216.3201
Skewness	-0.290048
Kurtosis	4.163517
Jarque-Bera	2.183282
Probability	0.335665
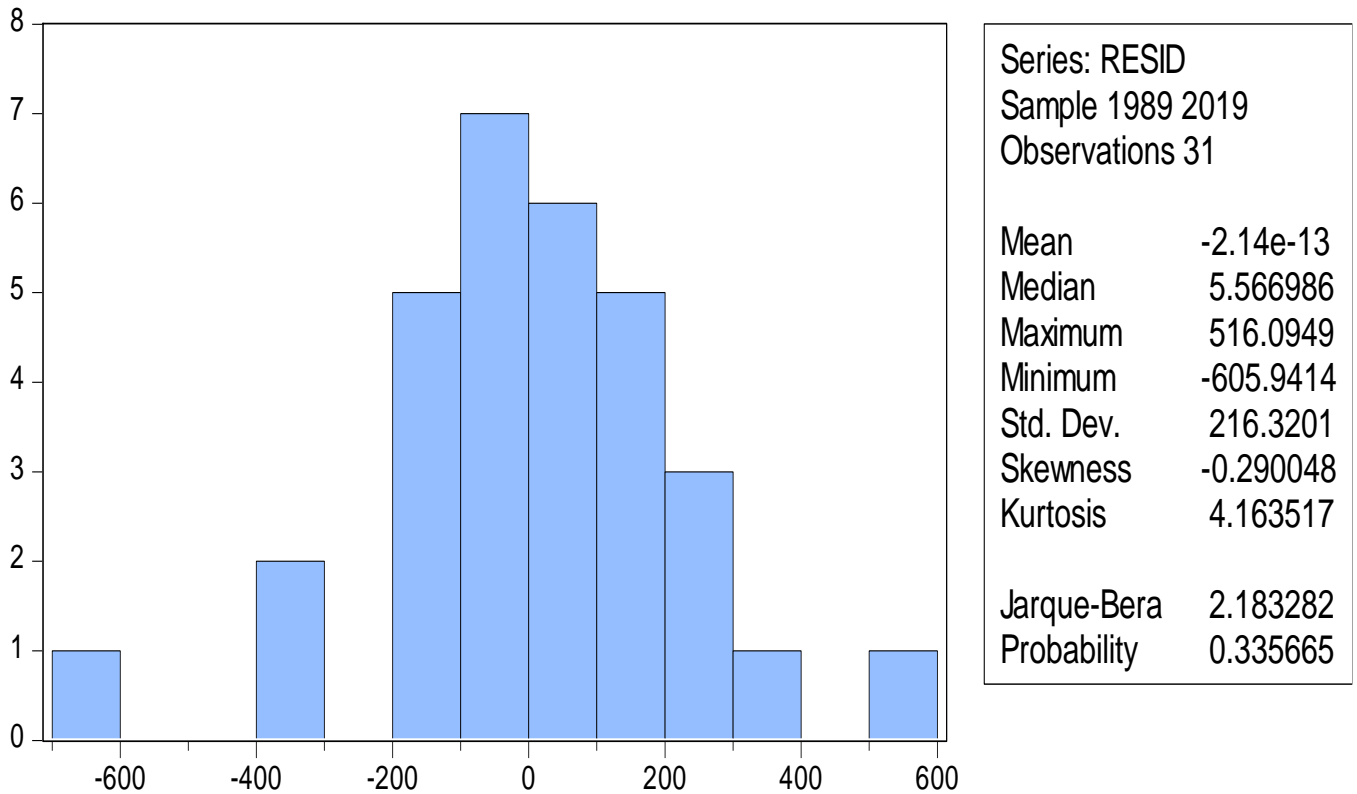
Source: Own estimation using E-views 7.1

The data is normally distributed since the Jarque-Bera probability is greater than 0.05 with a p-value of 0.335665. this allowed the research to carry own with other diagnostics tests since the data is normally distributed.

4.2.4 Breusch-Pagan Godfrey Test

TABLE 4.4: Autocorrelation Test

F-statistic	10.89305	Prob. F (2,27)		0.3081
Obs*R-squared	13.84347	Prob. Chi-Square(2)		0.1546

Source: Own estimation using E-views 7.1

The above table represents the LM test which shows that a p-value which is greater than 0.1. Thus, we fail to reject the H_0 that there is no autocorrelation between the error terms.

4.3   Stationarity Test

TABLE 4.5: ADF Unit root test at levels for SMEF

Null Hypothesis: SMEF has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, max lag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.725217	0.2343
Test critical values: 1% level	-4.296729	
5% level	-3.568379	
10% level	-3.218382	

TABLE 4.6: ADF unit root test at levels for GDP

Null Hypothesis: GDP has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, max lag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.515958	0.8013
Test critical values: 1% level	-4.296729	
5% level	-3.568379	
10% level	-3.218382	

The above diagrams shows that the variables are non-stationary at levels since the p-values are greater than 0.05 and the ADF test statistic is less than that of the McKinnon critical values at 10%, 5% and 1% level. The ADF test was performed again at first difference so as to attain stationarity of the variables.

TABLE 4.7: ADF Unit root test at first difference for GDP

Null Hypothesis: D(GDP) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, max lag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.844271	0.0283
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

TABLE 4.8: ADF Unit root test at first difference for SMEF

Null Hypothesis: D(SMEF) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, max lag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.907358	0.0000
Test critical values: 1% level	-4.309824	
5% level	-3.574244	
10% level	-3.221728	

at first difference the ADF test statistic absolute values of GDP and SMEF were greater than that of McKinnon critical values which implies that the variables are all stationary at first difference or integrated of order 1.

4.4   Model significance

TABLE 4.9: Classic linear regression results

Dependent Variable: GDP

Method: Least Squares

Date: 06/19/22   Time: 17:07

Sample: 1989 2019

Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	590.1662	50.08167	11.78408	0.0000
SMEF	2.89E-07	3.38E-08	8.535564	0.0000

R-squared	0.715284	Mean dependent var		852.7823
Adjusted R-squared	0.705466	S.D. dependent var		405.4067
S.E. of regression	220.0182	Akaike info criterion		13.68764
Sum squared resid	1403832.	Schwarz criterion		13.78015
Log likelihood	-210.1584	Hannan-Quinn criter.		13.71780
F-statistic	72.85585	Durbin-Watson stat		0.661331
Prob(F-statistic)	0.000000			

The R-squared coefficient was 0.715284 meaning that 71.5% of economic growth is being explained by the predictor variable in the model. The R-squared is high which implies that the relationship of variables in the model is adequate and that there are no spurious inferences. The prob(F-statistic) of the study was 0 which is less than 0.05 therefore the fitted CLRM is enough for estimating the model.

4.5   Regression results

The researcher used pooled OLS estimator after testing the variables for normality, multicollinearity and stationarity. Table 4.7 can be used to represent the model as follows

$$GDP = 590.1662 + 2.89SMEF$$

The model shows that SMEF has a positive impact on economic growth as measured by GDP growth.

4.6   Interpretation of results and discussion

SMEs financing was measured as annual budget allocated to SMEDCO by the government of Zimbabwe. It was found to have a positive sign where 1% increase in the budget allocated to SMEDCO would result in a 2.89% increase in economic growth as measured by GDP in Zimbabwe. This is statistically significant since the p-value was 0 which is less than 0.05 therefore, this means that an increase in SME financing results in GDP growth. We therefore reject H_0 at 5% level of significance and conclude that SME financing has a positive impact on economic growth.

4.7   Chapter summary

This chapter focused on interpretation of regression results and estimations. The estimated model showed that there is a positive relationship between economic growth as measured by GDP and SME financing. The following chapter summaries the study and recommend appropriate policies basing on the results.

CHAPTER 5

CONCLUSIONS AND POLICY RECOMMENDATIONS

5 Introduction

This chapter focuses on the summary of the whole research and gives a conclusion to the results of the study. It also provides recommendations of the study and that of future studies. It also gives the chapter summary.

5.1 Summary of the study

The main area of focus of the study was to establish the impact of SME financing on economic growth in Zimbabwe. The first chapter highlighted the background of the study, problem statement, research objectives and hypothesis which gave the researcher the urge to carry out the research. The second chapter mainly focused on the theoretical literature and the empirical literature review of the similar studies which were carried out in other countries through journals, chapter three was about the research methodology in which the research was explored in detail. The previous chapter (4) presents results of the diagnostics tests which are stationarity, serial correlation, normality and heteroscedasticity tests. Interpretation of these results was also carried out in chapter 4. Chapter 5 highlights the conclusion and policy recommendations based on the results of this study on the impact of SME financing on economic growth in Zimbabwe.

5.2 Conclusion of the study

This study has examined the impact of SME financing on economic growth in Zimbabwe for the period 1989 to 2019. Time series data was collected from the World Bank and estimated national budgets of Zimbabwe. The stationarity of the data was carried out using the ADF unit root test. The study was carried out to determine the impact of SME financing on economic growth in Zimbabwe and the results of the study showed that there is a positive impact between

economic growth through the measure of GDP and SME financing. This shows that an increase in SME financing will result in an increase in GDP growth in Zimbabwe.

5.3   Recommendations of the study

The government of Zimbabwe should encourage macroeconomic stability so as to ensure economic growth and development of SMEs. SMEs contribute about half of the GDP in Zimbabwe so efforts should be made by the government through SMEDCO to make short and long-term loans available to SMEs. The government and the private sector should make efforts to work together so as to ensure sustainability in the small and medium business sector. Incentives should be provided by the government to enable the survival of small firms in industries which are dominated by large firms. The Reserve Bank of Zimbabwe (RBZ) should make sure that SMEs have proper accounting records so that they can have access to loans within the banking sector. Moreover, the RBZ should stabilize the cost of borrowing through strengthening the monetary policy. Small scale business operators should avoid investing in unprofitable business so that they will be eligible for loan applications.

5.4   Recommendation for further study

This study considered SMEs as one of the factors that influence economic growth in Zimbabwe. To get the whole picture of factors that influence economic growth in Zimbabwe, further research needs to assess the impact of public sector investment and private equity in Zimbabwe.

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APPENDIX 1: Number of SMEs in the world

ESTIMATED NUMBER OF COMPANIES IN MILLIONS
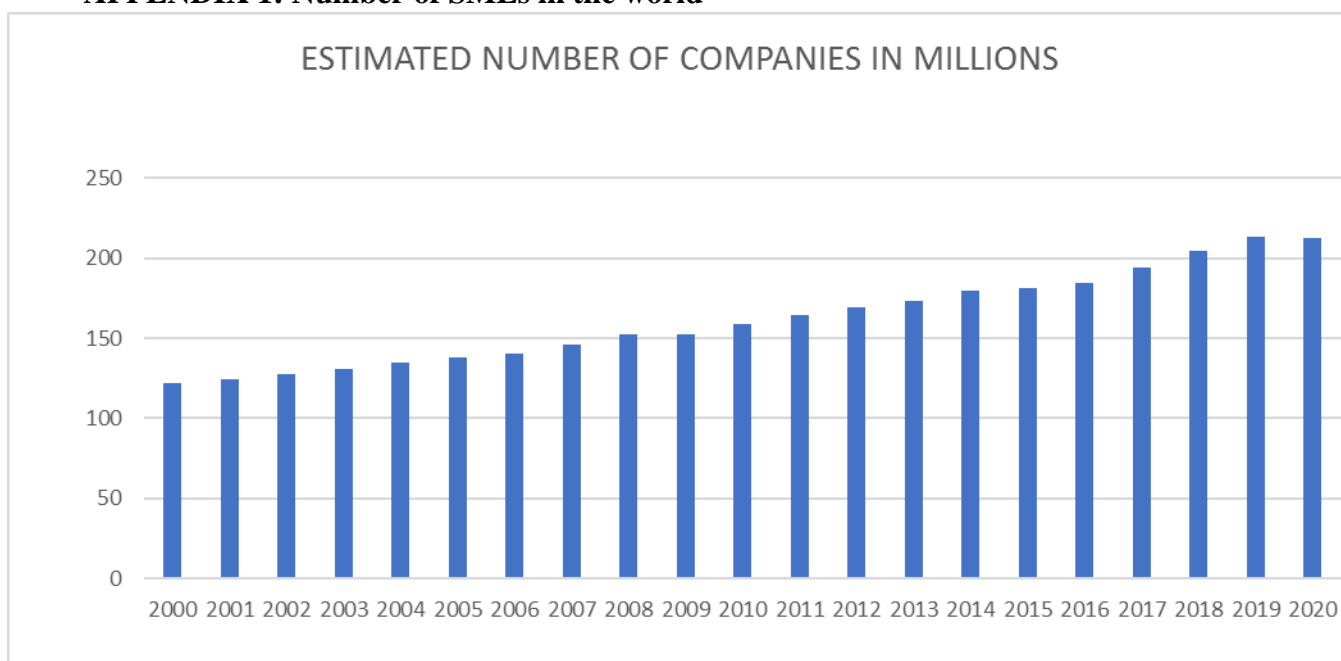
APPENDIX 2: Descriptive statistics

	GDP	SMEF
Mean	852.7823	9.10E+08
Median	731.95	88932304
Maximum	1683.74	2.97E+09
Minimum	356.69	9721261
Std. Dev.	405.4067	1.19E+09
Skewness	0.743393	0.721968
Kurtosis	2.059096	1.666551
Jarque-Bera	3.998787	4.989756

Probability	0.135417	0.282507
Sum	26436.25	2.82E+10
Sum Sq. Dev.	4930637	4.23E+19
Observations	31	31

APPENDIX 3: Multicollinearity

	GDP	SMEF
GDP	1	0.745745
SMEF	0.745745	1

APPENDIX 4: Heteroscedasticity

Heteroskedasticity Test: ARCH

F-statistic	0.947935	Prob. F (1,28)	0.3386
Obs*R-squared	0.982386	Prob. Chi-Square(1)	0.3216

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/20/22   Time: 19:41
Sample (adjusted): 1990 2019
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	36894.55	17461.22	2.112942	0.0437
RESID^2(-1)	0.181180	0.186089	0.973619	0.3386

R-squared	0.032746	Mean dependent var	45231.26
Adjusted R-squared	-0.001799	S.D. dependent var	83275.54
S.E. of regression	83350.40	Akaike info criterion	25.56383
Sum squared resid	1.95E+11	Schwarz criterion	25.65725
Log likelihood	-381.4575	Hannan-Quinn criter.	25.59372
F-statistic	0.947935	Durbin-Watson stat	2.019577
Prob(F-statistic)	0.338582		

APPENDIX 5: Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	10.89305	Prob. F(2,27)	0.3081
Obs*R-squared	13.84347	Prob. Chi-Square(2)	0.1546

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/20/22   Time: 19:44
Sample: 1989 2019
Included observations: 31
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.396583	38.83882	-0.035958	0.9716
SMEF	1.02E-08	2.77E-08	0.369535	0.7146
RESID(-1)	0.506432	0.199287	2.541217	0.0171
RESID(-2)	0.250414	0.230560	1.086112	0.2870

R-squared	0.446564	Mean dependent var	-2.14E-13
Adjusted R-squared	0.385071	S.D. dependent var	216.3201
S.E. of regression	169.6327	Akaike info criterion	13.22506
Sum squared resid	776931.6	Schwarz criterion	13.41009
Log likelihood	-200.9885	Hannan-Quinn criter.	13.28538
F-statistic	7.262032	Durbin-Watson stat	1.905269
Prob(F-statistic)	0.001008		

APPENDIX 6: Normality test
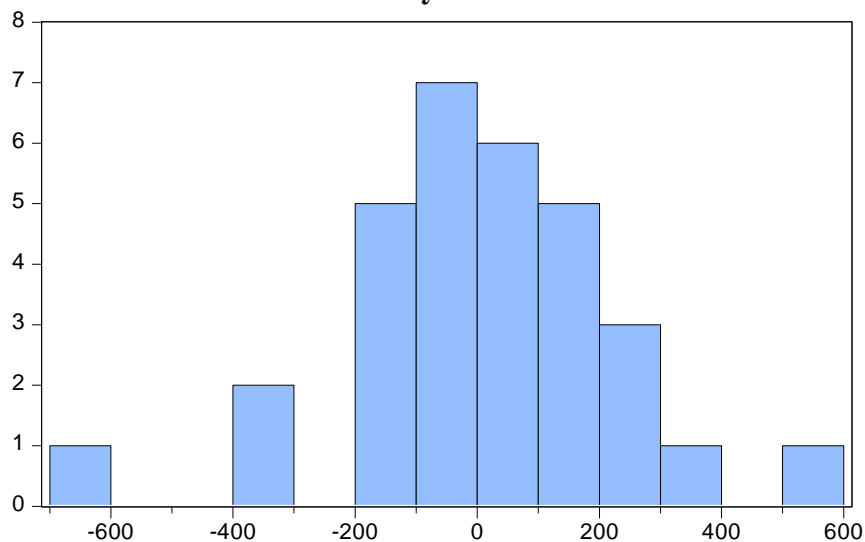
| Series: Residuals |
| Sample 1989 2019 |
| Observations 31 |
| |
Mean	-2.14e-13
Median	5.566986
Maximum	516.0949
Minimum	-605.9414
Std. Dev.	216.3201
Skewness	-0.290048
Kurtosis	4.163517
Jarque-Bera	2.183282
Probability	0.335665

APPENDIX 7: Stationarity test for GDP

Null Hypothesis: D(GDP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, max lag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.844271	0.0283
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDP,2)
Method: Least Squares
Date: 06/20/22   Time: 19:48
Sample (adjusted): 1991 2019
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.858942	0.223434	-3.844271	0.0007
C	-39.53968	52.00973	-0.760236	0.4540
@TREND(1989)	3.548019	3.077857	1.152756	0.2595
R-squared	0.368681	Mean dependent var		-8.470345
Adjusted R-squared	0.320117	S.D. dependent var		150.3684
S.E. of regression	123.9863	Akaike info criterion		12.57592
Sum squared resid	399687.6	Schwarz criterion		12.71736
Log likelihood	-179.3508	Hannan-Quinn criter.		12.62021

F-statistic	7.591792	Durbin-Watson stat	1.755927
Prob(F-statistic)	0.002531		

APPENDIX 8: Stationarity test for SMEF

Null Hypothesis: D(SMEF) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.907358	0.0000
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SMEF,2)
Method: Least Squares
Date: 06/20/22   Time: 19:49
Sample (adjusted): 1991 2019
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMEF(-1))	-1.512823	0.169840	-8.907358	0.0000
C	25120792	2.19E+08	0.114657	0.9096
@TREND(1989)	5940381.	12137831	0.489410	0.6287
R-squared	0.753272	Mean dependent var		17496507
Adjusted R-squared	0.734293	S.D. dependent var		1.06E+09
S.E. of regression	5.47E+08	Akaike info criterion		43.17395
Sum squared resid	7.77E+18	Schwarz criterion		43.31539
Log likelihood	-623.0223	Hannan-Quinn criter.		43.21825
F-statistic	39.68962	Durbin-Watson stat		1.880526
Prob(F-statistic)	0.000000			

APPENDIX 9: CLRM Regression results

Dependent Variable: GDP
Method: Least Squares
Date: 06/20/22   Time: 19:51
Sample: 1989 2019
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	590.1662	50.08167	11.78408	0.0000
SMEF	2.89E-07	3.38E-08	8.535564	0.0000

R-squared	0.715284	Mean dependent var	852.7823
Adjusted R-squared	0.705466	S.D. dependent var	405.4067
S.E. of regression	220.0182	Akaike info criterion	13.68764
Sum squared resid	1403832.	Schwarz criterion	13.78015
Log likelihood	-210.1584	Hannan-Quinn criter.	13.71780
F-statistic	72.85585	Durbin-Watson stat	0.661331
Prob(F-statistic)	0.000000		