THE EFFECTS OF INFLATION ON FINANCIAL DEVELOPMENT: EVIDENCE FROM SELECTED DEVELOPING COUNTRIES

BY

PILLY HAMISI MTEPA

(818423)

MASTER OF SCIENCE (FINANCE)

UNIVERSITY UTARA MALAYSIA

2016

THE EFFECTS OF INFLATION ON FINANCIAL DEVELOPMENT: EVIDENCE FROM SELECTED DEVELOPING COUNTRIES

BY

PILLY HAMISI MTEPA

(818423)

Thesis Submitted to

Othman Yeop Abdullah Graduate School of Business

University Utara Malaysia

In fulfilment of the Requirement for the Degree of Master of Science (Finance)

PERMISION TO USE

In presenting this thesis in partial fulfilment of the requirements for a Post Graduate degree from the University Utara Malaysia (UUM), I agree that the Library of this university may make it freely available for inspection. I further agree that permission for copying this dissertation/project paper in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor(s) or in their absence, by the Dean of School of Economics, Finance & Banking (SEFB). Where I did my dissertation/project paper. It is understood that any copying or publication or use of this dissertation/project paper parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the UUM in any scholarly use which may be made of any material in my dissertation/project paper.

Request for permission to copy or to make other use of materials in this dissertation/project paper in whole or in part should be addressed to:

Dean of School of Economics, Finance & Banking (SEFB)

University Utara Malaysia

06010 UUM Sintok Kedah

Darul Aman

Abstract

The main objectives of this research is to study the effect of inflation on financial development for 23 selected developing countries worldwide for the period 2000 to 2014.The dependent variable for financial sector performances is measured by credit provided to private sectors, and money supply(M2). Other controllable variables are, inflation which consumer price index, interest rate particular lending interest rate, and GDP per capita which measure economic growth of a particular country. This study employs panel data regression analysis of fixed effects and random effects models. Furthermore, the results show that, two independent variables was found having negative significant relationship with dependent variables, those variables are inflation and interest. While GDP per capita has negative significant relationship with money supply when used as a financial development measure. At the same time GDP per capita has positive significant relationship with credit as a measure of financial development.

Abstrak

Objektif utama kajian ini adalah untuk mengkaji kesan inflasi ke atas perkembangan kewangan terhadap 23 buah negara membangun seluruh dunia bagi tahun 2000 sehingga 2014. Pembolehubah bersandar bagi pencapaian sektor kewangan diukur dengan pinjaman yang diberi kepada sektor swasta, dan bekalan wang (M2). Antara pembolehubah dikawal adalah, inflasi yang mengukur indeks harga pengguna, kadar faedah iaitu kadar faedah pinjaman tertentu, dan KDNK (keluaran dalam negara kasar) per kapita yang mengukur perkembangan ekonomi bagi sesebuah negara. Kajian ini menggunakan analisis regresi data panel bagi model kesan tetap (fixed effect) dan model kesan rawak (random effects model). Tambahan pula, keputusan menunjukkan bahawa dua pembolehubah tidak bersandar didapati mempunyai hubungan yang ketara negatif dengan pembolehubah bersandar, iaitu inflasi dan kadar faedah. KDNK per kapita pula mempunyai hubungan yang ketara negatif dengan bekalan wang apabila digunakan sebagai pengukur perkembangan kewangan. Dalam masa yang sama KDNK per kapita mempunyai hubungan yang ketara positif dengan pinjaman (credit) sebagai pengukur kepada perkembangan kewangan.

Acknowledgements

I am grateful to the **Almighty Allah** for his blessings and giving me the opportunity to complete my thesis in Master degree. Alhamdulillah and million thanks to Allah. May peace and blessing of Allah be upon His beloved **Prophet Muhammad** (SAW), his family divine good and his companions.

I would like to express my sincere appreciation to my supervisor **Dr. Sabri Bin Nayan**. He has showed professionalism and commitment in his guidance. His keenness to complete this research was crucial to achieve this state of success.

I am indebted to **my father**, **AL haj Hamisi Bin Mtepa** for his care and love. As a typical father, he worked industriously to support the family and spare no effort to provide the best possible environment for me to grow up and attend school. My deepest gratitude goes to **my mother**, **Bi Khadija Bint Ulaya.** She is simply perfect. I have no suitable words that can fully describe my everlasting love for her. She will be remembered forever with great respect and deep love. My parents instilled in me the desire to achieve in spite of impediments, they taught me value of education and to them I will be forever grateful without their constant encouragement, motivation and assistance, I would not be able to complete my study, may Allah protect my parents.

A million thanks and appreciation goes to **my beloved spouse,** as my love and my partner life **Mohammed Sume** for his support to success**.**

My love also and grateful goes to **my brothers, Said , Juma, Suleiman**, **Jaafary**,to **my beautiful sisters**, **Fatma, Sophia, Kiwe** and **Bimkubwa**, and my beloved sisters in-law **Tatu and Hafsa** for their support and prayers.

My special thanks goes to my brother Mohammed Balozy for helping me during my entire study, no word can I use to express my thanks to him may Allah grant him mercy.

My love and thankful goes to my best friend in Malaysia, who make me happy and comfortably during the time of my study in Malaysia **Maizatul Mazni** Allah grant her mercy.

I would like to thank all of the faculty members and staff at the School of Economics Finance and Banking and Othman Yeop Abdullah Graduate School of Business at University Utara Malaysia for their help and support through my journey. My love also, and thankful goes to my classmates **Dian, and Maimuna**.

Last but not least I thankful my family and and also to whom my pen forgotten them but my heart remember them.

PILLY MTEPA

NOVEMBER 2016

Table of contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The crucial importance of financial development on economic growth is generally acknowledged in the literature. However, there is yet to a consensus to the effects of inflation on financial development, in particularly credit provided by financial institutions to private sectors. This thesis attempts to contribute literature by investigating the effects of inflation on financial sector development. In early neoclassical growth literature, financial development played a passive function by making direction to investors on household savings. Scholars like McKinnon (1973) and Goldsmith (1969) were among the first scholars who makes a break from this distinctive by emphasizing a more active role for financial sector development in promoting economic growth.

Since then, a considerable theoretical and empirical literature has emerged analyzing the role of finance in economic growth and development. Schumpeter (1911) is the one of the scholars who introduced the key role of the financial sector in economic growth. His argument is that, the service provided by financial intermediaries including savings mobilization, risk management, projects evaluation, to check and observe progress of several activities done by managers, and facilitating financial transactions are necessary for making improvement on technology and economic growth. Financial intermediaries need to be capable of efficient allocation of resources facilitating in that way higher returns and desirable risk transformation.

.

Economists often attach the overall health of an economy with the health of the financial sector. If financial companies are weak, may cause harmful to the average consumer. Financial institutions provide loans for businesses, mortgages to homeowners and insurance to consumers. If these activities are restricted, it bring back growth in both small business and real estate.

Overview of inflation

Inflation rate has received more attention by many empirical researchers. Inflation is a general and ongoing rise in level of prices in entire economy, or it is when most prices in an entire economy are rising. It has consequences for people and firm throughout the economy, in their roles as lenders and borrowers, wage-earners, tax payers and consumers. When there is inflation most price grow even if other prices does not much falling down, furthermore if no nominal increase of income compensated to inflation people become poorer. With extremely high inflation make difficult to economic, price forecasting and decision making process not only for government but also private sectors, investors, households, lenders and borrowers.

Further explained by Geetha, Mohidin, cHandran & Chong. (2011), inflation has distinguished as expected inflation and unexpected inflation. Expected inflation is an inflation rate planned by the economist and consumer. Since it is expected then people are less likely to hold cash over the time where they may loses the value due to the inflation problem. On the other hand, unexpected inflation is beyond what was expected by economists as well as consumers. Overall, the effect of unexpected inflation is much harmful compared to expected inflation. However, either expected or unexpected,

inflation still may create noises and problems in the functioning of economy if it is not well controlled. Inflation can be pushed up as substantial increases in money quantity, wages, and energy price particularly oil price and currency devaluation. Oil price fluctuations have more influence on inflation around the word by increasing prices for product that country purchase from abroad, in which makes currency devaluation. Uncompensated inflation reduces incomes, thus consumption and saving both in aggregate and with particular reference to certain social groups.

Inflation and financial development links

The relationship between inflation and financial development is an important and complex issue, it is important because it has been primary concern of the investors, shareholders and lenders as well as managers in planning their programs for greater efficiency. High inflation can distorts the working of the price system and leads to inefficiency in the allocation of resources and overall declining in economic growth. Among of a most important cost of inflation as it affect financial sector development is uncertainty about future inflation rates. Inflation uncertainty means uncertainty in the future price movement or fluctuation as a result of various factors which make problems on measurement since it is not direct observed. Financial institutions faced a problem of asymmetric information about future inflation rate, which make difficult on making future decision planning. Also it make harmful to investors and traders on making decision to initiate new projects, business and other investment because they don't have full information about future price. As a result financial institutions denied to provide more loan.

1.2 Background of the study

The issue of inflation is not a something new to the world. Issues arising related to the inflation and financial development has generated such heated debate as well as many series of studies related to it. As an empirical matter, there is a strong association between measures of inflation and financial development for economic growth. In general, macroeconomic theory suggests that the combination of low inflation with financial development plays a crucial and fundamental role in achieving sustained economic growth. Also it known that developed financial sector mobilizes savings efficiently and reallocates.

Economists generally believe that high rates of inflation cause problems to some individuals as well as whole economic growth. In general, low inflation rate with financial development plays a crucial and essential role in achieving sustained and stable economic growth. Therefore, by financial development and maintaining inflation rate at acceptable level are considering the main targets for policy makers to promote sustained and stable economic growth, the resources to productive projects and hence stimulates economic activities in the country.

The relevance of understanding the macroeconomic determinants of financial development lies in the fact that, with a great financial development have a great importance for economic growth and overall income inequality, which are of high priority in macroeconomic objectives of any developed and developing country. Although inflation may affect economic growth through various theoretical channels, there have been few efforts to examine the relationship between inflation and economic growth may run through the financial institutions. Rousseau & Wachtel, (2000). Both

theoretical and empirical evidences reveal that developed financial institutions mobilizes savings efficiently and reallocation of resources to potential activities which can create more production and subsequently promote economic activities of the country.

While the studies of King & Levine (1993), Levine & Zervos (1998), Beck, Levine & Loayza. (2000), Beck & Levine (2004) for the impacts of financial development on economic development come with their findings that, financial development has a positive impact on long-run growth. According to Bonfiglioli (2005), Bittencourt (2010) and Odhiambo (2004) with their analysis established that financial development reduces income inequality. However, high rate of inflation reduce an efficiency on financial development and slows down the economic performance.

Therefore, high inflation rate has become not only a concern in the emerging market economies and industrial sector but also to the general economy of nations. Monetary authorities focus on price stability upon strong empirical evidence that only middle price level economic growth can be achieved. Inflationary conditions imply that general price level keeps increasing over time. Low and stable inflation rates make emphasize to the private sector on the future planning and lowering the need for costly price adjustments, prevent tax distortion and thus create a stable business environment Bencivenga & Smith, (1991).

1.3 Problem Statements

The relationship between inflation and financial development has been widely studied both in the theoretical and empirical literature. In particular, it is now widely accepted that inflation has negative effects on long-term and short-term financial development. The great shock of inflation raises a common question: through what channels does inflation harmfully affect financial development? Among the mechanisms through which inflation can affect economic activities, financial development plays a substantial role. According to Boyd, Levine & Smith. (2000), comes with their theory states that by creating uncertainty and financial market frictions, high rates of inflation interfere with an efficiency of a financial system by making the financial institution inefficient in allocating resources. Theory further emphasizes that inflation affects financial activity and reduce financial development only when it becomes higher than some threshold distance. On the basis of this theoretical proposition a number of recent empirical works has provided important contributions to the finance, inflation and growth literature. The studies of Yaya (2011) indicated that financial development promotes economic growth only under low or moderate inflation rates.

However, high rate of inflation making a worse efficiency of financial sector through financial market frictions and slows down the economic performance. Inflation tends to induce volatility in equity returns as well as lowers the credits trend to private sectors. In inflationary periods, governments are inclined to impose additional tax burden on the financial sector to reduce their budget deficits Bencivenga & Smith, (1993).We argue that inflation nowadays often accidental tax with surprisingly little use of direct

monetary financing of the government. It has two contrasting impacts on the financial development. On the other hand by increasing the risk and cost of payments and maintaining liquid transactions balances, it increases the demand for certain financial services, swelling the value added tax and profitability of banks and reduce loan provisions. On the other hand, the interaction of inflation with non-indexed tax system often results in an effective taxation rate on financial intermediation which is highly sensitive to the inflation rate. The high and volatile effective tax rates are associated with wide intermediation margins and a reduced scale of intermediation.

It is observed that inflation delay the performance of financial institutions by increasing cost of borrowing and reducing the level of investment in the economy as a result lowering loan trends. Thus, the policy makers are so obsessed about inflation because of its implication on the economy such as: it discourages long term planning, drops savings and accumulation for capital, decrease investment, shift in the distribution of real income and consequent misallocation of resources and creates uncertainty and distortions in the information content of prices.

Therefore, high inflation rate has become not only a concern in the industrial and emerging market economies but to the general economy of nations, hence monetary authorities on price stability upon has strong empirical evidence that, only in middle price stability economic growth can be achieved. Inflationary conditions imply that general price trends going up over time. With acceptable and stable inflation rates make free for private sector on planning future activities, lead to a lower need for costly price adjustments, prevent tax distortion and thus create a stable business environment Bencivenga & Smith, (1991). A proper legal and policy structure is required to have a

strong financial system. Most of the developing countries has a problems of financial repression in the form of high inflation rates, subsidized credits, and credit rationing, loan and deposit interest rate. According to Roubini (1992) strong financial repression can decrease per capita GDP by one percentage point an year. The governments sometimes adopt the policies of financial repression and raise the inflation rate to get the effortless inflationary income, this resulting to reduce the amount of financial services in the economy. All these actions stimulate the individuals to store nominal money. An efficient financial system offers improved financial decisions, supports the better distribution of resources and thereby accelerates economic growth. A strong financial sector must to have very intensive rooted domestic and international banking system as well as deep liquid stock markets. Therefore, based on previous study this research is conducted to investigate the effects of inflation on financial sector development in order to answer the research questions below.

1.4 Research questions

The following research questions are derived based on the issues previously discussed in the research problem of this study. The questions are developed in order to find out an actual effects of inflation on financial development.

1. Is inflation affects financial development?
2. Is there any relationship between economic growth and financial development?

1.5 Research objectives

In order to respond the research problem and answer the research questions, this particular study's objectives as follows:

1. To investigate the impacts of inflation on financial development.
2. To examine the relationship between economic growth and financial development.

1.6 Significant of the study

This research is very important to be conducted for several reasons, initial findings will provide actual information on how inflation rate affect financial development. Also it will help financial institution and stock market areas on making decision for future plan with consideration on the inflation problem. Besides, it will be an important literature for the economists and other students to conduct further research topic since the main focus of the financial institution for now is on investment in order to make more benefit and to build strong economic base for the future economic growth. Other significance of this study could be evaluated in terms of recommendation and findings of this research.

1.7 Scope of the study

This study investigates the effects of the inflation on the financial sector development. It covers sample of 23 selected developing countries. The sample focus on area where they have been experienced high and low inflation rate period and countries where have

data access. Also this research focused on financial sector development particularly financial institutions.

1.8 Structure of the study

This study is presented and organized in five chapters. Chapter one is an introduction part where it contains background of the study, statement of the problem, research questions and objectives, also it explains significant, scope of the study. Chapter two discusses the issues of the literature review that was derived from a variety of books, journals and previous research papers. Chapter three discusses the methodology used in this study, also discusses about theoretical framework and specification of the model used. Chapter four presents an empirical results of the analysis and interpretation of the results. Lastly is chapter five where contain summary of the findings, limitations of the study, conclusion and policy implications.

1.9 Conclusion remarks

This chapter provides an insight for entire research. It covers aspects such as background of the study. Under this sub-section on background for the study, an overview of financial development and inflation. Next to the sub-section on background of the study, the chapter provides a problem statement where the problem at a point was explained. Following providing a concise problem statement, a number of research questions were drawn in another sub-section and later translated into objectives in the next sub-section. Significance attached to this study is provided in a separate sub-section. The last sub-sections of the chapter handle scope the study covers and also the organization of the study. Finally the next chapter will discussed the literature review

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In economy, inflation is familiar term and it will lead to instability of economy and will affect several determinates of economy like demand and supply, exchange rate, unemployment, interest rate and GDP. Different scholars discussed on different views about effects of inflation on financial development. Traditionally high inflation rates considered to be falling down economy by creating uncertainty and drops the value of savings. Mostly Central Banks target an inflation of 2%, suggesting that low inflation can have various advantages to the economy and when the inflation rate rises above 2% is usually considered to be a problem. Usually high inflation is accompanied with higher interest rates so savers do not see their savings run away. It tends to discourage deposits and overall long term economic growth of the country. This is due to the uncertainty and confusion that more likely to occur during periods of high inflation. Low inflation is said to encourage greater stability and encourage firms to take risk. Also higher inflation rate may reduce consumption for some goods especial for low and middle income person which leads to lower trade volume and reducing credit to private sectors. In this chapter will discuss different views from previous studies on inflation rate impact to financial development also looking on different theories of inflation suggested by different scholars.

2.2 Theoretical review

2.2.1 Inflation theory

Different economists have presented different theories of inflation. The economists who stated inflation theories are broadly makes into two categories these are, monetarists and structuralists. Monetarists associated inflation to the monetary causes and suggested monetary measures to control it, in the other hand structuralists believed that the inflation occurs due to unbalanced economic system and they used both monetary and fiscal measures together for sorting out economic problems.

i. Market-Power Theory of Inflation

In an economy, when a single or a group of sellers together decide a new price that is different to a competitive price, this price is known as market-power price. Such groups keep prices at the level at which they can earn super profit without any concern for the purchasing power of consumers. According to advanced version of the theory of market power inflation, prices will increase without demand increase, because people with low and middle income will reduce consumption for some services and goods which leads to trade volume decrease also. Moreover, these policies cannot be applied to oligopolistic rise in prices, which is due to increase in the production cost. Monetary policy can decrease the inflation rate by increasing the interest rate and regulating the credit flow in the market. However, it would have no effect on the price for oligopolistic because the cost has been transferred to the prices of goods and services.

ii. Mark-up Theory of inflation:

Mark-up theory of inflation was proposed by Prof Gardner Ackley. His theory stated that, inflation cannot occur alone by demand and cost factors, but it is the cumulative effect of demand-pull and cost-push activities. Demand-pull inflation refers to the inflation which occurs as a resulting from an excess of aggregate demand, which leads to the increases in price level. The increase in prices levels stimulates production, but increases demand for factors of production. Consequently, the cost and price both increases.

iii. Structural inflation theory

There is another important theory of inflation known as structural inflation theory, this theory it explains inflation in the developing countries in a little different way. The structuralists argue that increase in investment expenditure and the expansion of money supply to finance it are the only reason and not the important factors responsible for inflation in the developing countries. According to them, one should go deeper into the question as to why aggregate output, especially of food grains, has not been going up sufficiently in the developing countries to match the increase in demand brought about by the increase in investment expenditure and money supply. However they have an argument on why investment expenditure has not been fully financed by voluntary savings and as a result excessive deficit financing has been done.

The well-known economists Myrdal and Straiten who have proposed this theory have analyzed inflation in these developing countries in terms of structural features of their economies. Recently Kirkpatrick and Nixon have generalized this structural theory of inflation as an explanation of inflation existing at a particular time in all developing countries. According to them have an argument that it is not correct to apply the highly aggregative demand and supply model for explaining inflation in the developing countries. Furthermore, there is a lack of balanced integrated structure in them where substitution possibilities between production and consumption, interaction among sectors flows of resources between different sectors of the economy are not quite smooth and quick so that the inflation in them cannot be reasonably explained in terms of aggregate demand and supply.

2.2.2. Inflation and financial development

A growing theoretical literature describes mechanisms whereby even predictable increases in the rate of inflation can make interference to the ability of the financial institutions on the allocation resources effectiveness. More specifically, recent theories emphasize the importance of informational asymmetries in lending market and demonstrate how increases in inflation rate negatively affect lending market frictions with negative repercussions for financial development and therefore long-run real activity. Huybens & Smith. (1999), (1998). The common feature of these theories is that there is an informational friction whose severity is having an internal cause. Given this feature, an increase in the inflation rate drops the real rate of return not only on money, but also on assets in general. The implied decrease in real returns collapse lending market frictions. Since these market frictions lead to the rationing of credit, credit

rationing becomes more severe as inflation rises. As a result, the financial institutions makes fewer loans, resource allocation is less efficient, and intermediary activity diminishes with negative implications for capital investment. The reduction in capital formation negatively influences both long-run economic performance and equity market activity, where claims to capital ownership are traded. Huybens & Smith (1999) and Boyd & Smith (1996).

Existing models also emphasize that only when inflation exceeds certain critical rates do informational frictions necessarily play a substantial role. For example, according to Azariadis & Smith (1996), Boyd, Choi, & Smith(1997), when inflation is very low, credit market frictions may be nonbinding so that inflation does not distort the flow of information or interfere with resource allocation and growth. However, once the rate of inflation exceeds some threshold level, credit market frictions become binding, and there is a discrete drop in financial development as credit rationing intensifies. These models further predict the existence of a second threshold rate of inflation. Once inflation exceeds this threshold, perfect foresight dynamics are associated with endogenous oscillation in all variables, so that inflation is highly correlated with inflation variability and asset return volatility.

Furthermore, related models suggest the existence of a third inflation threshold. According to Boyd & Smith. (1998), Huybens & Smith. (1999), in some cases once the rate of inflation exceeds this critical level, perfect foresight dynamics do not allow an economy to converge to a steady state displaying either an active financial system or a high level of real activity. When this occurs, further increases in inflation have no additional detrimental effects on the financial system. Thus, in effect these models

imply that once the rate of inflation reaches a certain critical threshold, all of the damage to the financial system has already been done. Further increases in inflation will have no additional consequences for financial development or economic growth.

Inflation limits economic growth by reducing the efficiency of investment rather than its level. An effective way of achieving low inflation is to establish an independent central bank. De Gregorio reviews the theory and evidence on inflation and growth provides additional empirical evidence for a large cross-section of countries. The evidence he reports suggests negative relationship between inflation and financial development. He argues that inflation limits growth mainly by reducing the efficiency of investment rather than its level. But this finding is difficult to explain using traditional theories that rely on the effects of inflation on employment, which are not supported by the data. Explanations focusing on the effects of inflation on the allocation of talents and the functioning of financial markets may help in understanding better the long-run relationship between inflation and financial development.

De Gregorio also reviews the theoretical and empirical literature on how central banks affect inflation and output growth. An independent central bank can be effective in reducing inflation if the public perceives that it is tough on inflation. But inflation persists because the cost of reducing it is high the most evident cost being the loss of output from disinflation. De Gregorio concludes that although serious progress has been made in recent years in assessing empirically how central banks affect macroeconomic performance, the results are still inconclusive. The empirical evidence shows a negative correlation between inflation and central bank independence, especially in OECD

countries, but the effects on growth are less conclusive. It is fair to say that the bulk of the evidence suggests that central bank independence produces lower inflation at no real costs.

2.3 Previous Empirical Work

Inflation rate has been proved has significant negative effects on the financial sector development in long run and short run in Saudi Arabia by Almaliki & Batayneh (2015) with their study using Autoregressive Lag Distributed (ARDL) bound testing approach. Studies done by Boyd et all (2001) and Haslag & Koo (1999) show that inflation associated with financial repression, and that the financial sector become less developed as inflation increases, especially when the average inflation rate is very high. In other words the relationship between inflation rate and financial development is nonlinear one, as inflation rate increase financial development drops with high lending interest rate which reduce credits trends to private sectors. There is threshold level of inflation below which inflation has positive effort on financial depth, but above which the effect runs negative, Khan, Senhadji. (2001) with their study conducted for 140 countries by using panel data evidence.

According to Wahid, Shahbaz & Azm (2011), based on their studies their result states that, inflation reduce the performance of financial intermediaries in the long-run and short-run. GDP per capita promote development of financial sector through its casual channel when inflation is low. Has a negative correlation between inflation with financial sector development. There has also been argued that inflation negatively affects the holding of all classes of financial assets, including narrow and broad money, inflation leads to encourage the holding of currency and to discourage the holding of

quasi-money. Odhiambo, (2005), Ikhide, (1992). With higher price of goods and services peoples spending a lot of money for few goods and services which leads to discourage money deposit to the bank, making investment and initiating new project for traders.

According to Mahawiya (2015) on his study in ECOWAS and SADC countries result suggested that, in both regions inflation has a negative effects on financial sector development with the effect in ECOWAS greatest. The study indicate that simultaneously trade opens and financial sector lead to financial development in SADC. Inflation present clear negative effect on banking sector performance and its down flow effect is making harmful to the overall economy. Initial banks can be able to withstand the effects of inflation, since banking system mostly operates with reference to interest rate and maturity of financial instruments does not considering the purchasing power of money. However, when the rate of inflation becomes higher, the banking system cannot overcome the shock, this is according to Ummar, Maijama, & Adamu. (2014) resulting on the study of effects of inflation on banking performance. Financial institution can survive when inflation rate increased for the first time, but later when inflation continue to become higher cannot survive more with this situation pushed down the overall financial development.

According to Bittencourt (2007) with his study of conceptual exposition of the effect of inflation on bank performance, comes with the conclusion that all measures of financial development has negatively significantly affected by inflation, inflation affects the provision of better indexed asset that would otherwise not suffer from inflation and financial repression during high inflation period.

For low or moderate inflation financial development goes up, there is a very strong negative relationship between inflation and financial development. Furthermore as inflation rate increase the partial correlation between inflation and financial institution activity fails. Boyd, Levine & Smith. (2000) results from their study based on the impact of inflation on financial development.

According to Nacer & Ghazouani (2007) state their significance and economically important negative relationship between inflation and both stock market development and banking sector activity. Furthermore the relationship is not linear. A marginal increase of inflation is harmless to stock market performance and financial development whatever the rate of inflation.

Empirical studies such as the works of Boyd et al. (1996), Zoli (2007), resulting with the high inflation rate drop financial development through financial market rubbing, subsequently reduce the level of investment and slows down the economic performance.

In the study of Barnes, Boyd, & Smith (1998), they suggest that higher inflation does not tend to result in proportionately higher nominal interest rates but high inflation results in lower real rates of return. This increases the demand for loan funds, but reduces their supply.

Inflation have negative effects on financial sector development, it observed that negative effect of the measure of financial development on growth passes through financial sector. Therefore low and stable price in necessary first step to achieving a deeper and more active financial development that will enhance economic growth. Alimi. (2014) on his study by using DF-GLS-NG-Perron methods.

According to Smith & van Egteren (2003) on their studies come with their results states that inflation can impact real output. In their model, inflation both lowers the real value of internal funds used by firms to make investment and distorts firms' incentives to accumulate internal funds. This causes firms to rely more heavily on external sources of funds, make problem of informational frictions in financial markets. This negatively impacts the level and efficiency of investment, resulting in lower real output.

Another potential relationship between inflation and levels of financial development is through reserve requirements. High rates of inflation can serve as a significant tax on banks, especially in those developing countries with high levels of reserve requirements Boyd & Champ. (2003).The financial development relationship with inflation has been found to be very strong.

Nevertheless, the observed relationship between economic growth and financial development in cross-country studies does not necessarily imply causality. Causality from finance to growth is indicated by additional work that explicitly identifies finance mechanisms and by statistical tests with time series data. Rousseau & Wachtel, (2000), Bell & Rousseau (2001) based on their study of the relationship between inflation and financial development. On the contrary, previous financial sector's policies and economic growth have played major role in improving financial development.

The negative effect of inflation on financial development has been widely studied although the evidence does not always provide clear support. According to Temple (2000) discusses various arguments for the inflation and financial development relationship. Several influential studies in the early 1990 like Fischer, (1993); Barro, (1996) provided the empirical basis for the widely supported negative relationship.

Mostly recently Bruno & Easterly (1998) showed that the negative relationship between inflation and financial development is due to high inflation occurrence, and that magnitude for an inflation effects on financial development may be as high as 30 percent per year. The finding that high inflation occurrences are the primary source of the negative relationship is particularly interesting to us because it has strong implications for the finance development relationship as well. The reason for this is that financial intermediation becomes more difficult when inflation rates are very high. The flow of information about investment projects and returns that is used by intermediaries becomes more uncertain and less readily available in an inflationary environment. Furthermore, high inflation can repress financial intermediation by decreasing the usefulness of money assets and by leading to policy decisions that distort the financial structure. The channel by which inflation affects growth may run, at least in part through the financial sector. To the extent that high inflation disrupts the smooth operation of a nation's financial institutions and markets, it also discourages their integration with the rest of the world. Since high inflation is often variable inflation as well, there will be considerable uncertainty about future prices, interest rates, and exchange rates. Furthermore, this in turn increases the costs of hedging financial risks among potential trade partners. If inflation rate increases the possibility of a devaluation and vulnerability to speculative attacks, hedging instruments will become even more expensive and difficult to price. All of this will discourage trade and inflows of foreign capital.

However, based on study conducted by Oztur & Karagoz. (2012) that investigate the relationship between inflation and financial development in Turkey found that: there is a negative relationship between inflation and financial development. The growth in credit to private sector has an important contribute to decrease in inflation, by using ARDL co integration test they recognize that: low inflation rates drives the development of financial system, as overall economic growth of the country.

By using times series data, the study conducted by Keho. (2011) based on the study of the modeling the asymmetric effects of inflation on financial development in Cote d'Ivoire and Senegal found that, in Cote d'Ivoire inflation is detrimental to financial sector depending only in periods of recession or low economic activity. In period of expansion inflation does not reduce the financial sector development, this demonstrate that financial Deeping in Cote d'Ivoire depends on the economic growth. These findings also clearly demonstrate that inflation and financial development relationship various across the country's economic growth is an important determinant of the degree to which inflation affects financial development. While in Senegal inflation has a significant negative effect on financial development.

There is a long-run relationship between inflation and financial sector development, this relationship is distinctly negative direction by applying irrespective of whether the model is estimated in the short run or in the long run, this is according to Odhiambo (2012) on his study for the impact of inflation on financial sector development in the case of Zambia by using ARDL bounds testing approach.

The effect of inflation on financial development is examined in Boyd et al. (2000) and in Haslag & Koo (1999). These papers show that inflation is associated with financial

repression that is financial sector less developed in higher inflation environments. The effect of inflation occurs through a wide variety of direct and indirect channels. Higher inflation rate increases information and transactions costs which directly move down economic development. For example, economic agents will find planning difficult when inflation makes nominal values uncertain. Firms and individuals will be reluctant to enter contracts when inflation is imperfectly predicted and ability to make decision about absolute and relative prices are uncertain. The customers become reluctance to apply for loan and other financial contracts over time.

Haslag & Koo also show a positive effect of financial depth on growth and a weak negative effect of inflation on growth with a specification that differs from ours. Will inhibit investment and entrepreneurship, which will affect resource allocation and economic growth. Inflation will inhibit the development of the financial sector and result in financial repression. High inflation will also discourage any long term financial contracting and financial intermediaries. Thus, in an inflationary environment intermediaries will be less eager to provide long-term financing for capital formation and growth, both lenders and borrowers will also be less willing to enter long-term nominal contracts.

Increase in inflation rate mostly associated with various forms of financial repression as governments take actions to protect certain sectors of the economy. For example, interest rate increasing and directed credit allocations are common in high inflation environments. Such controls lead to inefficient allocations of capital that inhibit growth. In some instances, repression is a natural effort to protect certain sectors from inflation. In other instances, financial repression that is introduced to assist the government in

financing its own activities is a cause of both inflation and resource misallocation. According to Khan. (2015) on his study of inflation and financial development relationship founds that inflation has a negatively association with financial development, with high inflation rate interest rate increase which private sectors become not willing to apply for loan from financial institutions.

High inflation will increase the opportunity costs of holding money and lead agents to economize on money holdings. Thus, the ratio of money to GDP might decrease as a direct to the increase of inflation. Further, the ratios of financial assets to GDP also might drop in a high inflation environment if nominal debts do not increase as highly as GDP. This is particularly likely if the financial repression occurred, it is common when higher inflation exist keeps lending interest rates higher. According to Rousseau & Wachtel, (2002) on his study of the impact of inflation on the financial sector development by using panel data model comes with the results showed that inflation affects financial development has a direct adversely effect on growth as well.

The result that high inflation occurrences are the primary source of the negative inflation to financial growth relationship is particularly important to us because it can have strong implications for the finance growth relationship. The reason for this negative impact is that, financial intermediation becomes more difficult when inflation rates are very higher. The flow of information about investment projects and returns that is used by financial intermediaries becomes more uncertain and less readily available in higher inflation rate situation. Furthermore, high inflation can repress financial intermediation by destroying the usefulness of money assets and leading to policy decisions that make the financial structure to collapse. Also other studies that examine

the inflation and finance growth association. According to Andres et al. (1999) find out that the, two strands of the empirical literature (the finance–growth and inflation–growth relationships) have lived separate lives. Their paper comes with two strands together using a data set of mostly industrialized (OECD) countries over a relatively short time span, and obtains rather weak results. Also the effect of inflation on financial sector development is examined by Boyd et al. (2001) and Haslag & Koo (1999). Both of these papers show that inflation is associated with financial repression, the financial sector is less developed in higher inflation environments.

2.4 Conclusion

This chapter finds that literatures suggest that inflation can affect financial development for a particular country or around the word, it is a worthy subject in order to gain knowledge about the challenges impacting financial institutions development particular on loan provision trends. This study contributes to the literatures exploring the relationship between inflation and financial development, and factors impacting the financial sector development. The study explored the significance of financial institutions to understand the challenges that can arise by inflation rate change. Theories of inflation has been explained in the literatures, in order to construct a theoretical perspective of understanding relationship between inflation rate and credit, GDP, interest rate and money supply on how can affect financial development. Hence, this study adapts it in carrying out further investigation in achieving objectives stated in Chapter 1. Next, Chapter 3 outlines the process this study has gone through.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describe and explain the procedures and methods used in this research. In addition, it attempts to determine the parameter of the research methodology through describing procedures used in collecting data, and explaining technique of data analysis and where data were collected. This chapter also highlights the method used for the research outline, designs, data collection, research sampling and source. Sekaran (2000). It is the part where discussing on the mechanism used to collect data, analysis explanation and the strategies to conduct research, sample selection and data collection.

3.2 Sample selection and data collection

The sample of the study comprise of 23 selected developing countries word wide for the period 2000 to 2014. Credit to private sector is the dependent variable for current study for model one, in model two money supply act as dependent variable. While, interest rate, GDP per capita, inflation, act as an independent variables. A majority of these data taken from World Bank, IMF and the rest was taken from the Organization for

Economic Co-operation and Development (OECD). The data are confined to the period of 2000-2014. Appendix will provides the complete list of nations and variables source. All variables with amount denominated in current home currency.

Table 3.1 sampling of the country

No	Name of a Country	Range(year)	Total
1	Argentina	2000-2014	15
2	Brazil	2000-2014	15
3	Bolivia	2000-2014	15
4	China	2000-2014	15
5	Colombia	2000-2014	15
6	Costa Rica	2000-2014	15
7	Georgia	2000-2014	15
8	India	2000-2014	15
9	Jordan	2000-2014	15
10	Kenya	2000-2014	15
11	Korea	2000-2014	15
12	Malawi	2000-2014	15
13	Malaysia	2000-2014	15
14	Mexico	2000-2014	15

15	Morocco	2000-2014	15
16	Nigeria	2000-2014	15
17	Peru	2000-2014	15
No	Name of a country	Range(year)	Total
18	Serbia	2000-2014	15
19	South Africa	2000-2014	15
20	Sri Lanka	2000-2014	15
21	Tanzania	2000-2014	15
22	Thailand	2000-2014	15
23	Uganda	2000-2014	15
			345

3.3 Theoretical framework

The research framework as shown below in figure 3.1 has been developed based on research problems for a particular studies and review from other previous researchers. This framework emphasis on the effects of inflation on the financial development. Credit to private sectors stands for financial development which is a dependent variable for model one and money supply (M2) dependent variable for model two. The independent variables are inflation, GDP per capita, interest rate particularly lending interest rate.

Figure 3.1 Theoretical framework (1)

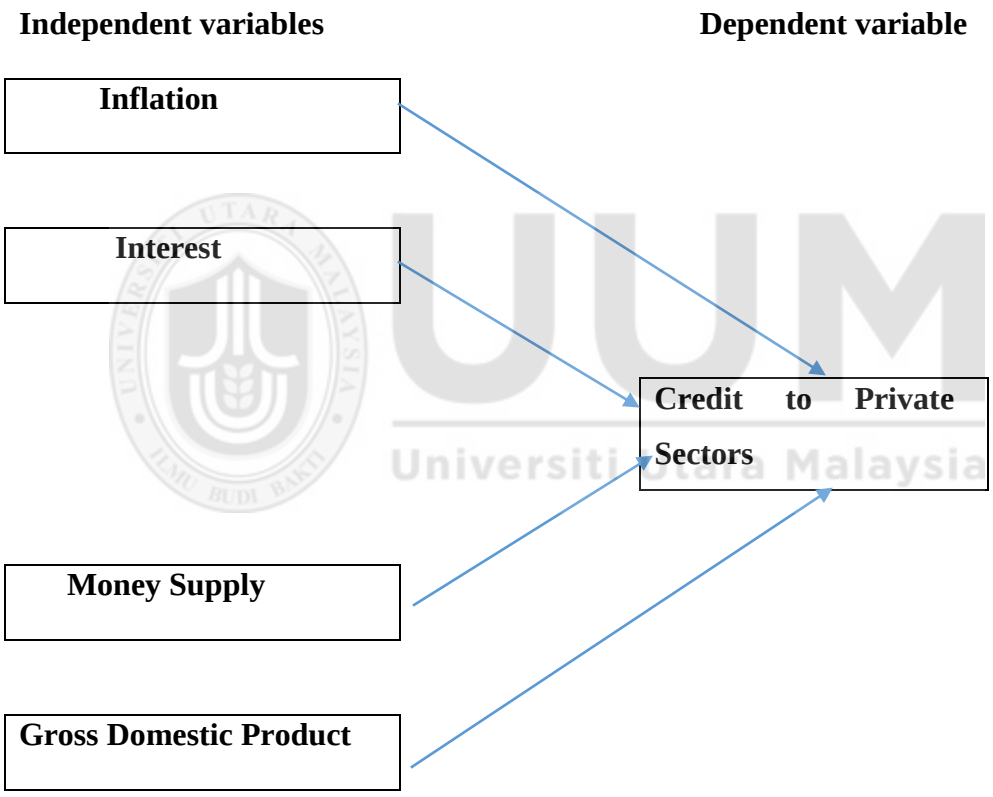
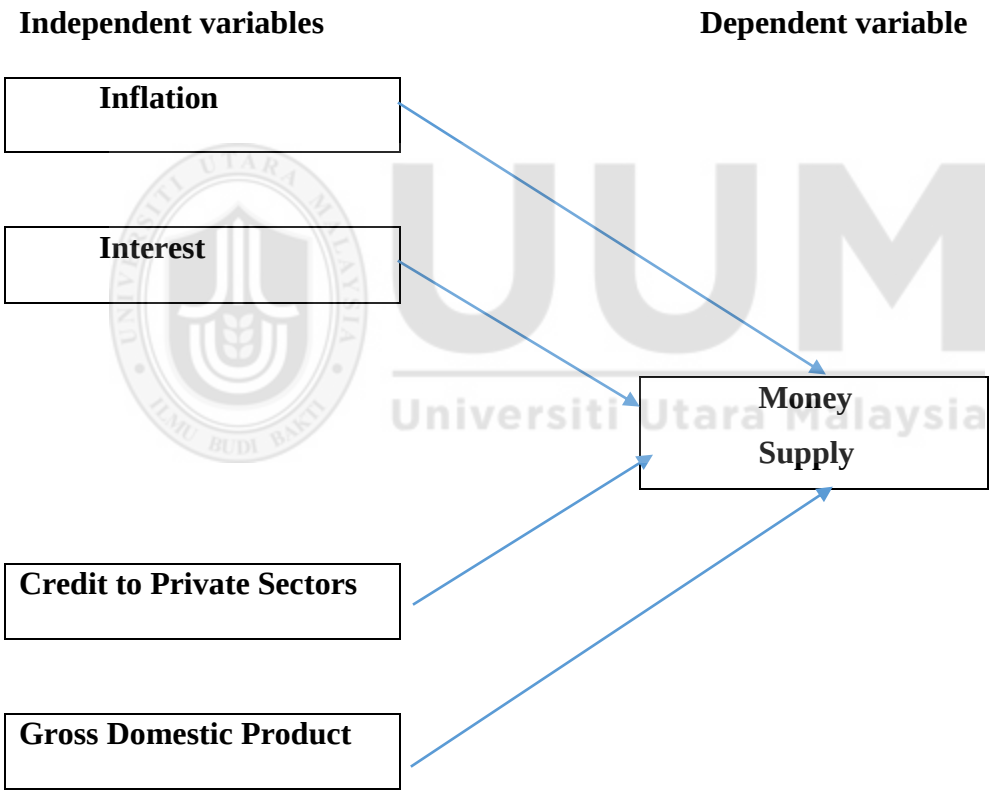


Figure 3.2 Theoretical framework (2)



3.4 Variables specifications

This study used two models of the research which consists three independent variables. First model credit act as a dependent variable, Inflation, Interest, and GDP per capita are independent variables including money supply. Second model money supply is a dependent variable. Inflation, Interest, and GDP per capita are independent variables including credit.

3.4.1 **Dependent variables**

This study applied two dependent variables which are Credit as a first variable for the first model and money supply for second model.

i. Credit

The first dependent variable of my current study is financial development which measured by credits provided by financial sectors to private sectors for panel one. Credit is a contractual agreement in which a borrower receives something of value now and agrees to repay the lender at some date in the future, generally with interest. Credit measure financial institutions how active in channeling savings to borrowers. Bittencourt (2008)

ii. Money supply

Panel two money supply (M2) is a dependent variable, M2 is a measure of the money supply that includes all elements of M1 as well as near money. This variable used to measure financial development. All in all, M2 measure the overall size or how deep a financial sector in terms of cash, saving and checking deposit. Bittencourt (2008).

3.4.2. Independent variables

i. Inflation

Like Ghosh (2014) in this study inflation measured by a percentage change in consumer price index. Inflation, as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.

ii. Interest

Lending interest rate as a proxy for interest rate sourced from the World Bank's World Development Indicators (WDI) database. Lending interest rate is the rate paid by individual, firms or other private sector after acquiring loan from financial institution. Financial institution generate revenue from mortages and loans which gain value as interest rate drop. Therefore financial services perform best with low interest rate environment.

iii. GDP per capita (GDP)

GDP per capita used to measure an average income per person in a country. I use this variable to determine economic performance of the country per person, when economic growth up ward people own more fund which leads to increase deposit. With high deposit financial institution increase lending trend. In view of the conflicting evidence, Khan & Senhadji (2000) stress that the relationship between financial development and economic growth needs to be refined and appropriate estimation methods employed. The relevance of understanding the macroeconomic determinants of financial development lies in the

fact that a deeper and more active financial sector is of crucial importance for key economic variables. That is economic growth and income inequality high in the agenda of any developing country Bittencourt. (2008).

3.5 Hypotheses and assumption

The study hypothesized by frame work developed on credit with inflation, interest rate, M2 and GDP per capita. Credit and its independent variables it seems have a greater power on affecting various economic activities. Therefore with higher inflation rate leads to high cost of borrowing which discourage loan application movement, also it reduce economic growth due to an increase of the price for goods and services. That is with low lending trend can affect overall economic activities, investors face capital problem for production improvement and new project initiation.

Inflation

The main focus on inflation is how can affect financial development either negatively or positive. Most previous empirical studies based on negative relationship among inflation and financial development. The results show that financial development reduces income inequality. Nevertheless, the gains from financial development are offset by inflation. As inflation becomes severe, financial development ceases to reduce income inequality. This is due to high inflation levels intensify credit rationing through reduction and greater

variability of real returns. Consequently the financial sector makes few loans, resource allocation becomes inefficient, and intermediary activity declines with adverse implications for income inequality. The results are robust to different measures of financial development. Khan (2015), Barugahara (2012).

Therefore this study hypothesis is:

H0: There are no relationship between inflation and financial development.

H1: There is a significant relationship between inflation and financial development.

Interest

With high interest rates reduce loan request, consumer spending and economic growth, general it create negative influence on financial development because financial institution more benefit through loan provision to private sectors. Furthermore with higher cost of borrowing those sector be discouraged on applying the loan.

Therefore this study hypothesis is:

H0: There are no relationship between interest and financial development.

H1: There is a significant relationship between interest and financial development.

GDP

Economic growth has a positive impact on financial sector performance, when economic growth of the country goes up emphasis owns more money as a result have more deposit and increase credit provision by financial institutions to private sector and vice versa hold. There is statistically significant positive impact of economic growth on financial development. Almalki &Batayneh (2015).

Therefore this study hypothesis is:

H0: There are no relationship between GDP and financial development.

H1: There is a significant relationship between GDP and financial development.

In sum up all independent variables have significantly influence financial development of the country.

3.6 Econometrical methodology model

This section describes the empirically econometrical models used for this research. Although my study based on 23 developing countries, I'm applying balanced panel data which variables observed for each entity and each time of period. I employ this model as emphasised by Basher et al (2012) to empirically analysis the Inflation relationship with the performance of financial development. By using panel data makes it possible to eliminate the omitted variable bias in a certain cases. Fischer (1993), Levine & Renelt (1992) use of panel data in estimating common relationships across countries is a particularly appropriate because it allows the identification of country-specific effects that control for missing or unobserved variables. Petersen (2007) in his studies also emphasis the use panel data to adjust standard error.

3.7 Regression Models

The regression model is used to analyze the relationship between independent variables and dependent variables which is financial development. The panel data regression is suitable for the estimated sample. The model is specified to test the hypotheses and the relationship between inflation, interest rate, GDP per capita, money supply (M2) and

credit provided to private sectors. The financial development is measured using credits provided to private sectors for panel one and money supply (M2) for panel two. Our models based on panel data of certain countries that include five variables.

$$Y=\alpha+\beta_0+\beta_1 X_{1it}+\beta_2 X_{2it}+\beta_3 X_{3it}+\beta_{4it} X_{4it}+\mu it$$

$$Credit_{it}=\beta_0+\beta_1 Inf_{it}+\beta_2 Int_{it}+\beta_3 GDP_{it}+M2_{it}+u_{it} \quad \text{Model 1}$$

$$M2_{it}=\beta_0+\beta_1 iInf_{it}+\beta_2 Int_{it}+\beta_3 GDP_{it}+Credit_{it}+u_{it} \quad \text{Model 2}$$

Where:

Credit = Credit to private sectors

Inf = Inflation

Int = Interest rate

GDP = GDP per capita

M2 = Money Supply

μ = Error Term.

3.8 Empirical Method

This section deals with a data analysis techniques employed to answer the research questions of this study. The data will be analyzed based on the several methods using the E-views program version 9.

i. Correlation.

ii. Panel OLS.

iii. Diagnostic test

iv. Descriptive statistics

i. Correlation

Correlation refers to any relations involving dependence. In statistical terms, dependence are correlation between two casual variables. Correlation model also is a favourable approach used in this study as the method for an empirical analysis of the correlation coefficient between inflation and financial development. It is a statistical technique that shows whether and how strongly pairs of variables are related, the central idea behind correlation is that dependent variables and its independent variables have a relationship between the values. This relationship can be positive or negative and varies in strength, the possible correlation range from 1 to -1 that single number describes the degree of the relationship between variables. The correlation coefficient in this case depends on both the variation between two variables individual values and the variation within individual (measurement of error), this model supported by Altman & Biland (1983) on their study of the analysis of the methods comparison.

ii. Panel Least Squares Regression

The most common statistical method for the application of different disciplines is the regression analysis. Hair, Anderson, Tatham & Black (2010). Regression provide the value prediction of one variable from other variables DeCoster, (2004), means that value of dependent variable is predicting from the independent variable.

iii. Diagnostic Test

The diagnostic tests were employed on the data are explained in this section. Before regression analysis several tests conducted for diagnostic test such as, normality, Heteroscedasticity and auto-correlation test.

a. **Normality test**

This refers to the scale which the distribution of the sample data corresponds to a normal distribution. Normality test is the most fundamental assumption in multivariate analysis. Residual plots and statistical test are used to check the normality test of the data based on Jarque-Bera test (Hair, Black, Babin, Anderson &Tatham (2006).

b. **Heteroscedasticity test**

In this study, the ARCH Test was used to detect the existence of heteroscedasticity problem in the model. Gujarati (2003) noted that ARCH Test is appropriate for large sample test and it's not sensitive to an assumption that a distribution μi are not normally distributed.

c. **Auto-correlation**

Auto-correlation referred to a correlation amongst members of the series for an observations ordered in space or time, Gujarati (2003). In detecting an existence of auto- correlation in the model, Breusch-Godfrey serial correlation LM test is used. Gurajat, (2003) and Hayashi (2000) show that the Breusch-Godfrey serial correlation

LM test is the most useful test for detecting auto-correlation problem in small and large sample.

d. **Multicollinearity Test**

Hair, Anderson, Tatham & Black (2010). Suggest that if an independent variable has a collinearity tolerance more than 0.1 and VIF less than 10, a multicollinearity problem does not exist.

3.9 Conclusion

This chapter summarizes the research framework, data collection, methods used and hypotheses of the study. This study investigates the relationships between inflation and financial development for 23 selected developing countries worldwide. The study period covers 15 years, staring the year 2000 to 2014. Thus, the sample size of the study has 334 observations

CHAPTER FOUR

RESULTS AND DISCUSION

4.1 Introduction

This chapter provide and discuss the empirical results for my analysis based on panel data method to derive the impact of inflation on financial development. It comprises descriptive statistics of the variables, correlation between dependent and independent variables. Furthermore, it presents analysis of diagnostic test which includes heteroscedasticity test, multicollinearity test, autocorrelation, Hausman test and normality test. Also this chapter presents regression analysis results of the effects of inflation on financial development, and lastly discussion and findings of the results.

4.2 Descriptive Statistics

Table 4.1 provide summary for the descriptive statistics for the sample that used in this study, also it present information about a value of mean, median, standard deviation, maximum, minimum and number of observation. These variables are credit (credit provided by financial sector to private sectors) and money supply (M2) as a dependent variables, inflation, GDP per capita and interest rest (lending interest rate) those are independent variables.

Descriptive statistics

Table 4.1

Variables	Observation	Mean	Median	Maximum	Minimum	Std Dev
Credit	334	64.9499	49.4933	192.6601	4.0877	49.0717
Inflation	334	6.9569	5.3976	95.0052	-1.0666	7.7809
Interest	334	16.0977	14.0741	67.0833	3.5517	11.0190
M2	334	60.8132	44.1617	193.1680	10.3825	42.5838
GDP	334	3.4880	3.3317	30.2422	-11.8773	3.5630

Based on the table 4.1 above, the first variable credit has 334 observations and the mean of the variable is 64.9499 with standard deviation of 49.0717. The maximum and minimum value of this variable is 129.6601, 4.0877 respectively. The mean of inflation is 6.9569 and standard deviation is 7.7809. The maximum and minimum value of this variable is 95.0052, -1.0666 respectively. The third variable interest (lending interest rate) has also 334 observations with mean value of 16.0977 and standard deviation of 11.0190. The maximum value of this variable is 67.0833 and the minimum is 3.5517. The forth variable of this study is money supply. The mean of money supply is 60.8132 and maximum value is 193.1680. Minimum value is 10.3825 and standard deviation is 42.5838. There is fifth variable used in this study called GDP. The mean of this variable is 3.4880 with standard deviation of 3.5630. The maximum and minimum value of this variable is 30.2422 and -11.8773 respectively.

4.3 Correlation

Table 4.2 present Pearson correlation matrix among variables, it show the correlation between dependent variable with independent variables and among of the independent variables.

Pearson Correlation

Table 4.2

	Credit	Inflation	Interest	M2	GDP
Credit	1.000				
	……				
Inflation	-0.283	1.000			
	0.000	…….			
Interest	-0.380	-0.309	1.000		
	0.000	0.000	……		
M2	0.842	-0.354	-0.447	1.000	
	0.000	0.000	0.000	……	
GDP	0.014	-0.014	-0.230	0.122	1.000
	0.007	0.795	0.000	0.026	…….

The table 4.2 above represents the correlation among the variables. There is a positive correlation between dependent variables and two independent variables. The first

independent variable GDP has a significant positive relationship on credit. Due to this relationship, the financial institutions increase lending to private sector when the overall economy of the country grown up.

However, credit has a negative relationship with another two independent variables. There is a negative correlation between credit and inflation. When the inflation rate increase above acceptable level, deposit decrease due to more spending which leads to decrease loan provided by financial institutions to private sector. Similarly, interest rate variable also has a negative relationship with credit, When lending interest increases reducing lending trend to the private sector because customer willing to acquire loan with low cost.

There is negative relationship between inflation and GDP. When inflation rate increase above acceptable level economic growth goes down, but this relationship is insignificant. There is a significant positive relationship between GDP and money supply, when GDP increase people have more money for deposit and deposit for financial institutions increase, credit provision also increase.

4.4 Diagnostic Test

4.4.1 Autocorrelation Test

Breusch-Godfrey serial correlation LM test used in this study on testing autocorrelation. With p-value higher than 0.05 level, results indicates that autocorrelation problem not exist. In table 4.3 below the results show that p-value for F-statistics of independent

variable is (0.2011), and p-value of Obs*R-squared is (0.8320). This result indicate that p-value of the model is higher than 0.05 level, that means autocorrelation problem not exist.

Breusch-Godfrey serial correlation LM

Table 4.3

	F-statistics	Obs*R-squared
Credit	619.1757(0.2011)	264.2278(0.8320)

4.4.2. Heteroscedasticity Test

Heteroscedasticity ARCH Test results are presented in Table 4.4. Based on the results, the p-value is higher than 0.05 for the independent variable, which indicate that model accepts the null hypothesis and no problem of heteroscedasticity exists.

Heteroscedasticity ARCH Test

Table 4.4

	Obs*R-squared	Prob.Chi-Square
Credit	263.2325	0.1100

4.4.3. Normality Test

This study uses the Jarque-Bera test which is a chi-square based test to determine whether the cumulative distribution of the residuals is significantly different from the

theoretical normal distribution. The null hypothesis is that, there is no statistically significant difference. When the probability is less than 0.05, the null hypothesis must be rejected and the inference would be that residuals are non-normally distributed. For this study the Prob. Chi-Square is 0.6522. Consequently, null hypothesis is accepted and therefore the inference is that residuals are normally distributed. The result of the normality test as shown in the table 4.5 below:

Normality test using Jargue-Bera test

Table 4.5

	Obs*R-squared	Prob.Chi-Square
Cross section random	231.5083	0.6522

4.4.4. Multicollinearity test

Hair, Anderson, Babin and Black (2010) suggest that if an independent variable has a collinearity tolerance more than 0.1 and VIF less than 10, a multicollinearity problem does not exist. Accordingly, results in Table 4.6 indicate that all of the collinearity tolerance values are found to be above 0.1 value, and all of the VIF values are found to be below 10. Therefore, multicollinearity is unlikely to affect the regression analysis as table 4.6 below:

Multicollineality test

Table 4.6

Variables	Tolerance Value	VIFs Value
Inflation	0.40	1.19
Interest	0.20	1.35
M2	0.52	1.34
GDP	0.39	1.06

4.5 Hausman Test

The Hausman test is use to compare between random effects and fixed effects. If the P-value is insignificant (Prob>chi2 higher than 0.05) then random effects is appropriate to run the regression model. If P-value is a significant (Prob<chi2 lower than 0.05) then, fixed effects is suitable to run the regression model.

Hausman Test

Table 4.7

	Chi-Sq Statistics	Chi-Sq.df	Prob	Result
Cross section random	1.6260	4	0.8041	Random Effects

Table 4.7 above shows that the p-value for model is insignificant (p-value>0.05), this indicate that random effects is appropriate to run in this model.

4.6 Regression Analysis

The results of the panel data regression of independent variables on the performance of financial sector by using credit as measurement are depicted in tables 4.8 and 4.9 as below:

Regression results.

Table 4.8: Model 1

Dependent variable = credit

Variables	Coefficient	t-Statistics	Prob
Inflation	-0.1753	-2.5876	0.0101
Interest	-0.7578	-3.2788	0.0000
M2	0.8961	18.3674	0.0000
GDP	0.3922	2.6513	0.0084
Constant	10.3571	2.7101	0.0031
R-squared	0.5611		
Adjusted R-squared	0.5558		
F-statistic	105.1688		
Prob (F-statistic)	0.0000		
N	334		

In table 4.8 above, the regression analysis showed that the F-statistics of independent variable is significant, implying that there is an association amongst the dependent variable credit and the sets of independent variables of inflation, interest, money supply and GDP. The value of the adjusted R-squared indicates that the regression model that consists of inflation, interest, money supply and GDP explain 56.1 percent (0.5611)

variations in credit. However, the regression results show that, all the independent variables are significant to credit. Among the four significant variables, inflation shows the highest coefficient value of beta (0.8961); which indicates that the most robust contribution in clarify the dependent variable. Nevertheless, it shows that both inflation and interest have a negative association with credit. While, money supply and GDP has positive association with credit.

Table 4.9: Model 2

Dependent variable = M2

Variables	Coefficient	t-Statistics	Prob
Inflation	-0.1265	-2.3602	0.0188
Interest	-0.3657	-4.8499	0.0000
Credit	0.5674	18.5080	0.0000
GDP	-0.1108	-0.9399	0.3498
Constant	31.4661	5.9553	0.0000
R-squared	0.5919		
Adjusted R-squared	0.5870		
F-statistic	119.3100		
Prob (F-statistic)	0.0000		
N	334		

In table 4.9 above, the regression analysis showed that the F-statistics of independent variable is significant, implying that there is an association amongst the dependent variable money supply and three independent variables except GDP. The value of the adjusted R-squared indicates that the regression model that consists of inflation,

interest, credit and GDP explain 58.7 percent (0.5870) variations in money supply. However, the regression results show that, three independent variables are significant to money supply while GDP shows insignificant. Nevertheless, it shows that both inflation and interest have a negative association with money supply same as model one.

4.7 Discussion and finding

i. Inflation and financial development

In table 4.8 and 4.9 above the regression analyses results show that, the impact of inflation on financial development is found to be significant to all independent variables for model one, while model two three variables significant to financial development except one which is GDP. It shows that inflation has non-linear relationship to financial development (credit), inflation β coefficient is (-0.1753) indicates that one unit increase in inflation will decrease financial development by (-0.1753) units. Also inflation beta (-0.1265) shows negative relationship with money supply. This implying that the higher the inflation, the lower is the financial development. also Obviously with higher inflation rate general price keep on increasing where by people spend more money for buying fewer goods and services. However, it decrease deposit to financial institution and distort production and investment as resulting lower financial development with low trend of loan provision. This results support the consistent with the studies done by other researchers of Almalki. (2015), Boyd, Levine, & Smith. (1996), Ozturk, & Karagoz. (2012.) Therefore, the results support the hypothesis of significant relationship between inflation and financial development.

ii. Interest and financial development

The regression analyses in table 4.8 of this study show that interest is found to be significant to credit and negatively related. Interest beta coefficient is (- 0.7578) which means that one unit increase in interest decreases credit by (0.7578) units, indicating that an increase in interest does not facilitate financial institution to increase their credits. Same as results of panel two interest rate has negative significant relationship with money supply. As we know financial sector more gain by loan provision particular when interest rate is low, with higher interest customer be discouraged on applying for loan which tends to decrease money supply and lending trend from financial institutions.

iii. GDP and financial development

The result support the positive relationship amongst GDP and financial development. Coefficient is (0.3922) which means that one unit increase in GDP per capita credit increase by (0.3922) units, results indicating that an increase in economic growth facilitate financial institutions to increase their credit. That is when economic growth for a country grown up facilitate deposit increase to the financial institution as a result loan provision increase. The finding of this study is consistence with literature of King & Levine. (1993), Odhiambo. (2005). However, the results also show that GDP per capita is found to be significant and positively associated to credit. For panel two GDP shows negative relationship with money supply, this relationship is insignificant.

4.8 Concluding remarks

This chapter discusses finding of the study. Furthermore, it illuminates on the results of descriptive statistics for all variables, correlation, diagnostic test, and regression analysis. Moreover, this chapter visibly interprets outcomes of the regression through discussion of the findings. The data strongly support the presence of a nonlinear relationship between inflation and financial development, perhaps driven by threshold rates of inflation. As inflation rises, financial development falls, but the marginal impact of additional inflation on the financial sector also diminishes rapidly.

CHAPTER FIVE

CONCLUSION AND SUMMARY

5.1 Introduction

This chapter presents the whole research based on what have been discussed in the previous chapters. First, an overview of a summary of the findings for this study in section, followed by policymaker's implication of the study, limitations and finally conclusion of the study.

5.2 Summary of the findings

This research examined the relationship between inflation and financial development for 23 selected developing countries worldwide over the period of 2000-2014. The study found a negative effects of inflation on financial development. Credit provided by financial institution to private sectors and money supply (M2) used to measure financial development with its independent variables namely inflation, interest, and GDP per capita were used. The relationship among inflation and interest to financial development is negative and significant. However, other variables called GDP has a positive relationship and found significant.

The present study also confirms that there is inverse correlation between inflation and financial development in the case of sample study. Report show that inflation reduces the efficiency of the financial sector in long runs and short runs. With higher inflation people with low and middle income reduce consumption for some goods and services

due to much spending with fewer goods and services. However it distort deposit and investment which reduce lending and borrowing trends.

Financial institutions gain more through loan provision with low interest rate, therefore with higher interest rate customers not willing to apply for loan with higher cost which reduce lending trend to financial institution. Generally interest rate has negative impact to financial development. Economic growth also promotes financial institutions, when a country experience higher economic growth facilitate financial development to be higher, that is people increase their spending, facilitate investment which leads to need more money from financial institution as credit/loan.

5.3 Policymakers Implication

Since it has been argued that inflation increases frequently when monetary policy changes. Therefore, the monetary authorities should ensure a stable monetary policy in the economy. The monetary authorities should try to curtail and maintain the long run inflation rate at the low and stable which is one of the channels through which inflation volatility affects financial development.

To curtail inflation, the monetary authorities should ensure increase in lending rate, reserve ratio requirements and selective credit control by the commercial banks and other credit institutions. On account of a lending rate instrument, the monetary authorities privatizes control over reserves procurement by turning the choice on the amount of reserves over the budgetary business sector.

5.4 Limitations of the study

My study faced with the problems on data collection process, some links does not provide data for countries according to a single year instead providing as a group of several years, which make difficult to analyse on actual period of time, due to this problems it takes long time on data collection by searching different database for finding actual data.

5.5 Conclusion

Inflation rate has negative impact on the financial development for the countries particularly for this study focus on developing countries. Recent theoretical work stresses that predictable increases in inflation can intensify informational asymmetries, leading to less financial intermediary. Recent empirical work shows that deterioration in financial development has large negative implications for economic growth. Theory further predicts that the inflation-finance relationship may exhibit strong non-linearity. For example, informational frictions may become binding only when inflation exceeds certain thresholds. When inflation passes these thresholds, some theories suggest that we will observe a corresponding decline in financial development with negative effects on allocation of the resources and economic activity.

Since previous empirical work highlights the impact of financial development on economic growth, this study focuses on empirically assessing these theoretical predictions regarding the impact of sustained inflation rates on financial development.

The results indicates that there is a significant and economically important, negative association between inflation and financial development. This correlation results emerges essentially for a particular countries selected of the time period considered, the empirical procedure employed, or the set of variables that appear in the conditioning information set. Thus, a preponderance of evidence indicates that sustained inflation and financial development display a strongly negative association.

Moreover, we have found that the empirical relationship between inflation and financial sector activity is highly nonlinear. Particular for this study focus in terms of lending trend the data also exhibit nonlinearities. Bank lending activity display strong negative correlations with inflation for countries with higher rates of inflation. As inflation rises, the marginal impact of additional inflation on financial development diminishes rapidly. Since financial development is strongly linked with long-run economic performance, our findings are consistent with the view that as inflation increase even predictable inflation passes certain critical values, there will negative implications for long-run economic performance.

References

Alimi, R. S. (2014). Inflation and financial sector performance: The case of Nigeria. *Timisoara Journal of Economics and Business*, *7*(1), 55–69.

Almalki A.M, & I, B. K. (2015). The relationship between inflation and financial development in Saudi Arabia. *T he journal of developing areas*, *49*(6).

Baltagi, B. H., Demetriades, P. O., Law, S. H., Perspectives, N., & Fund, I. M. (2007). Financial development and openness: Evidence from panel data. *Journal of Development Economics*, *89*(2), 285–296.

Beck, T. (2002). Financial development and international trade. *Journal of International Economics*, *57*(1), 107–131.

Beck, T, Levine, R (2002). Stock markets, banks and growth: Panel evidence. *National Bureau* of Economic Research, working paper 9082.

Beck, T, Levine, R, Loayza, N. (2000). Finance and the source of growth. *Journal of Finance Economics*, 58(1-2), 261-300.

Bencivenga, V.R, Smith, B.D. (1992). Deficits, inflation, and the banking system in

developing Countries: Optimal degree of financial repression. *Oxford Economic Papers,* 44(4).

Blundell, R, Bond,S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143.

Boyd, J.H, Champ, B.A (2003). Inflation and financial market performance: What have we learned in the last ten years? *FRB of Cleveland working paper*. 03-17.

Boyd, J. H., Levine, R. E., & Smith, B. D. (1996). Inflation and financial market performance.

Boyd, J. H., Levine, R., & Smith, B. D. (2000). The Impact of Inflation on Financial Sector Performance *. *Carlson School of Management, University of Minnesota, Minneapolis, MN 55455, USA, 1*(4), 42–48.

Bruno, M, Easterly, W. (1998). Inflation crises and long-run growth. *Journal of Monetary Economics, 41(1), 03-26*

Caramazza, F., Ricci, L. A., & Salgado, R. (2000). *Trade and financial contagion in currency crises, Issues 2000-2055*. *IMF working paper* (Vol. 2000).

Cheng, M.Y, Tan, H.B. (2002). Inflation in Malaysia. *International Journal of Social Economics,* 29(5), 411-425.

Cheng, M.Y. & Tan, H.B. (2002). Inflation in Malaysia. *International Journal of Social Economics*, 29(5), 411-425

Fischer,S. (1993). The role of macroeconomics factors in growth. *Journal of Monetary Economics*, 32(3), 485-512.

Francois, J. . E. (2002). *Financial sector competition, services trade, and growth*. *Tinbergen institute discussion paper*.

Francois, J. . E. (2004). *International trade in financial competition, and growth performance*.

Geetha,C,Mohidin, R, cHandran,V.V & Chong,V.(2011). The relationship between inflation and stock market: Evidence from Malaysia, United States and china. *International Journal of Economics and Management Sciences*, 1(2), 1-16.

GHAZOUAN, S. (2004). Relationship between inflation and financial sector performance.

Hair, H.C (2006). Multivariate data analysis, Six Edition, Pearson International Edition.

Huybens, E, Smith, B,D. (1999). Inflation, financial markets and long-run real activity. *Journal of Monetary Economics*, 43(2), 283-315.

Huybens, E, Smith, B,D. (1998). Financial market friction, monetary policy, and capital accumulation in a small open economy. *Journal of Economic Theory*, 81(2), 353-400.

Kiendrebeogo, Y. (2012). The effects of financial development on trade performance and the role of institutions.

King, R.G, Levine,R (1993). Finance,enterpreneurship and growth:Theory and evidence. *Journalof Monetary Economics*,32(3), 513-542.

Khan, H.R. (2015). The impact of inflation on financial development. *International Journal of Innovation and Economic Development*, 1(4), 42-48.

Khan, M.S, Senhadji, A.S (2001). Threshold effects in the relationship between inflation and growth. *International Monetary Fund, IMF Staff Papers* 48(1).

Levine, R, Zervos,S. (1996).Stock market development and long-run growth. *The World Bank Economic Development*, 10(2), 323-339.

Lees, C., & Skills, D. of B. I. and. (2012). *UK trade performance across markets and sectors*. *BIS Economics Papers* (Vol. 17).

Levine, R,Renelt,D. (1992). A sensitivity analysisi of cross-country growth regressions.The American Economic Review, 82(4), 942-963.

Levine,R, Zervos, S.(2000). Stock Markrts, Banks, and Economic Growth.*The American Economic Review*, 88(3), 537-558.

Mahawiya, S. (2015). Financial sector development , inflation and openness : A comparative panel study of ECOWAS and SADC.

Manova, K. (2008). *Credit constraints, heterogeneous firms, and international trade*. *Nber working paper series* (Vol. 14531).

Minh To, H., & Tripe, D. (2002). Factors influencing the performance of foreign-owned banks in New Zealand. *Journal of International Financial Markets, Institutions and Money*, 12(4–5), 341–357.

Odhiambo, N.M. (2005). Financial development and economic growth in Tanzania: A dynamic causality test. *Journal of African Finance,* 7(1), 01-17.

Odhiambo, M.N (2012). The impact of inflation on financial sector development: Experience from Zambia, *Journal of Applied Business Research*, 228(6), collection page 1497.

Ozturk, N., & Karagoz, K. (2012). Relationship between inflation and financial development : Evidence from Turkey. *International Journal of Alanya Faculty of*

Business, *4*(2), 81–87.

Ping, H., Chor, L. D., & Kalina, M. (2010). Off the cliff and back ? Credit conditions and international trade during the global financial crisis. *Journal of International Economics*, 87(1), 117–133.

Rioja, F., & Valev, N. (2004). Does one size fit all?: A reexamination of the finance and growth

relatioship. *Journal of Development Economics*, 74(2), 429–447.

Rousseau, P. L., & Wachtel, P. (2002). Inflation thresholds and the finance – growth nexus. *Journal of International Money and Finance*, 21, 777–793.

Rousseau, P.L, Bell. C. (2001). Post-independence India: Case of finance-led industrialization

Journal of Development Economics, 65(1), 153-175.

Rousseau, P.L, Wchtel,P. (1998). Financial intermediation and economc performance: Historical evidence from five industries countries. *Journal of Money, Credit and Banking,* 30(4), 657-698.

Wacziarg, R., & Welch, K. H. (2008). Trade liberalization and growth: New evidence. *World Bank Economic Review*, *22*(2), 187–231.

Wahid, A.N.M, Sahbaz, M, Azim, P (2011). Inflation and financial sector correlation: The case of Bangladesh. *International Journal of Economics and Financial Issues*, 1(4), 145-152.

Webster, A., & Hardwick, P. (2005). International trade in financial services.

Appendices

Appendix 1. LIST OF 23 COUNTRIES OF THE SAMPLE STUDY

No	Country name
1	Argentina
2	Brazil
3	Bolivia
4	China
5	Colombia
6	Costa Rica
7	Georgia
8	India
9	Jordan
10	Kenya
11	Korea
12	Malawi
13	Malaysia

14	Mexico
15	Morocco
16	Nigeria
17	Peru
18	Serbia
19	South Africa
20	Sri Lanka
No	**Country name**
21	Tanzania
22	Thailand
23	Uganda

Appendix 2. DESCRIPTIVE STATISTICS

	CREDIT	INFL	INT	M2	GDP
Mean	64.94986	6.956895	16.09772	60.81318	3.487985
Median	49.49337	5.397598	14.07417	44.16168	3.331676
Maximum	192.6601	95.00523	67.08333	193.1680	30.34224
Minimum	4.087733	-1.066636	3.551667	10.38249	-11.87729
Std. Dev.	49.07174	7.780890	11.01892	42.58375	3.562929
Skewness	0.863083	6.377355	2.045569	1.007700	1.044663
Kurtosis	2.589514	64.30926	7.876255	2.963846	13.18917
Jarque-Bera	43.81169	54574.31	563.8376	56.54547	1505.567
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	21693.25	2323.603	5376.639	20311.60	1164.987
Sum Sq. Dev.	801876.0	20160.57	40431.72	603854.2	4227.255
Observations	334	334	334	334	334

Appendix 3. CORRELATION

Covariance Analysis: Ordinary
Date: 11/24/16 Time: 00:32
Sample: 2000 2014
Included observations: 334
Balanced sample (listwise missing value deletion)

Covariance Correlation Probability	CREDIT	INFL	INT	M2	GDP
CREDIT	2400.826				
	1.000000				

INFL	-107.8286	60.36099			
	-0.283254	1.000000			
	0.0000	-----			
INT	-204.9929	26.44093	121.0531		
	-0.380251	0.309322	1.000000		
	0.0000	0.0000	-----		
M2	1754.542	-116.9383	-209.0818	1807.947	
	0.842152	-0.353986	-0.446926	1.000000	
	0.0000	0.0000	0.0000	-----	
GDP	2.459785	-0.394241	-9.023650	18.41277	12.65645
	0.014111	-0.014264	-0.230536	0.121722	1.000000
	0.7972	0.7951	0.0000	0.0261	-----

Appendix 4. DIAGNOSTIC TEST

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	619.1757	Prob. F(2,327)	0.2011
Obs*R-squared	264.2278	Prob. Chi-Square(2)	0.8320

Heteroskedasticity Test: ARCH

F-statistic	1293.148	Prob. F(1,328)	0.7290
Obs*R-squared	263.2325	Prob. Chi-Square(1)	0.1100

Variance Inflation Factors
Date: 11/24/16 Time: 01:21
Sample: 1 345
Included observations: 334

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
INFL	0.404570	2.139707	1.187528
INT	0.202931	4.239464	1.349853
M2	0.521521	4.073320	1.337467
GDP	0.392506	2.082314	1.061727
C	23.19288	11.27848	NA

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.626085	4	0.8041

Appendix 5. REGRESSION RESULTS FOR PANEL 1

Dependent Variable: CREDIT
Method: Panel EGLS (Cross-section random effects)
Date: 11/24/16 Time: 01:05
Sample: 2000 2014
Periods included: 15
Cross-sections included: 23
Total panel (unbalanced) observations: 334
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFL	-0.175280	0.067739	-2.587581	0.0101
INT	-0.757788	0.098804	-3.278827	0.0000
M2	0.896130	0.048789	18.36741	0.0000
GDP	0.392167	0.147913	2.651344	0.0084
C	10.35708	5.026443	2.710056	0.0031

Effects Specification	S.D.	Rho
Cross-section random	27.49460	0.9290
Idiosyncratic random	7.602050	0.0710

Weighted Statistics			
R-squared	0.561143	Mean dependent var	4.683793
Adjusted R-squared	0.555808	S.D. dependent var	11.36277
S.E. of regression	7.569654	Sum squared resid	18851.59
F-statistic	105.1688	Durbin-Watson stat	0.862169
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.707704	Mean dependent var	64.94986
Sum squared resid	234384.9	Durbin-Watson stat	0.200792

Dependent Variable: CREDIT
Method: Panel Least Squares
Date: 11/24/16 Time: 00:59
Sample: 2000 2014
Periods included: 15
Cross-sections included: 23
Total panel (unbalanced) observations: 334

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFL	0.174640	0.067829	2.574702	0.0105
INT	-0.008782	0.100071	-0.087753	0.9301
M2	0.885999	0.051611	17.16687	0.0000
GDP	-0.391116	0.148587	-2.632236	0.0089
C	11.36007	4.234008	2.683055	0.0077

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.977875	Mean dependent var	64.94986
Adjusted R-squared	0.976001	S.D. dependent var	49.07174
S.E. of regression	7.602050	Akaike info criterion	6.972096
Sum squared resid	17741.89	Schwarz criterion	7.280183
Log likelihood	-1137.340	Hannan-Quinn criter.	7.094935
F-statistic	521.8618	Durbin-Watson stat	0.923461
Prob(F-statistic)	0.000000		

Appendix 6. REGRESSION RESULTS FOR PANEL 2

Dependent Variable: M2
Method: Panel Least Squares
Date: 11/24/16 Time: 01:49
Sample: 2000 2014
Periods included: 15
Cross-sections included: 23
Total panel (unbalanced) observations: 334

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFL	-0.121144	0.053710	-2.255529	0.0248
INT	-0.367409	0.076214	-4.820763	0.0000
CREDIT	0.552800	0.032202	17.16687	0.0000
GDP	-0.130448	0.118451	-1.101287	0.2716
C	32.12113	2.843683	11.29561	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.981668	Mean dependent var	60.81318
Adjusted R-squared	0.980116	S.D. dependent var	42.58375
S.E. of regression	6.004795	Akaike info criterion	6.500377
Sum squared resid	11069.67	Schwarz criterion	6.808463
Log likelihood	-1058.563	Hannan-Quinn criter.	6.623215
F-statistic	632.3057	Durbin-Watson stat	0.938670
Prob(F-statistic)	0.000000		

Dependent Variable: M2
Method: Panel EGLS (Cross-section random effects)
Date: 11/24/16 Time: 01:50
Sample: 2000 2014
Periods included: 15
Cross-sections included: 23
Total panel (unbalanced) observations: 334
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFL	-0.126518	0.053603	-2.360274	0.0188
INT	-0.365724	0.075408	-4.849938	0.0000
CREDIT	0.567401	0.030657	18.50800	0.0000
GDP	-0.110842	0.117927	-0.939917	0.3498
C	31.46606	5.283700	5.955308	0.0000

Effects Specification	S.D.	Rho
Cross-section random	21.66626	0.9287
Idiosyncratic random	6.004795	0.0713

Weighted Statistics

R-squared	0.591933	Mean dependent var	4.407858
Adjusted R-squared	0.586972	S.D. dependent var	9.387716
S.E. of regression	6.024010	Sum squared resid	11938.98
F-statistic	119.3100	Durbin-Watson stat	0.852828
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.706424	Mean dependent var	60.81318
Sum squared resid	177277.3	Durbin-Watson stat	0.146349

Cross-section random effects test equation:
Dependent Variable: M2
Method: Panel Least Squares
Date: 11/24/16 Time: 01:51
Sample: 2000 2014
Periods included: 15
Cross-sections included: 23
Total panel (unbalanced) observations: 334

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	32.12113	2.843683	11.29561	0.0000
INFL	-0.121144	0.053710	-2.255529	0.0248
INT	-0.367409	0.076214	-4.820763	0.0000
CREDIT	0.552800	0.032202	17.16687	0.0000
GDP	-0.130448	0.118451	-1.101287	0.2716

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.981668	Mean dependent var	60.81318
Adjusted R-squared	0.980116	S.D. dependent var	42.58375
S.E. of regression	6.004795	Akaike info criterion	6.500377
Sum squared resid	11069.67	Schwarz criterion	6.808463
Log likelihood	-1058.563	Hannan-Quinn criter.	6.623215
F-statistic	632.3057	Durbin-Watson stat	0.938670
Prob(F-statistic)	0.000000		