



The Impact of Bank Lending on Economic Growth:  
Empirical Analysis from Palestine

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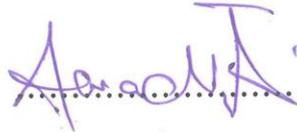
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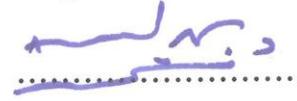
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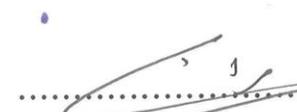
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## **Dedication**

I dedicate this thesis with all love and appreciation to my family and my wife for their limitless support and encouragement.

## **Acknowledgement**

First of all one must thank god for giving him the strength and blessing to conduct this study.

I would like to express my gratitude and appreciation for every one that has helped during the preparation of this study. Special thanks for my doctors at Hebron University that gave me part of their knowledge, a knowledge that enlightened my life.

I express sincere appreciation and thanks to my advisor Dr. Ibrahim Awad for his guidance, expertise, patience and support. Sincere gratitude is given to the examining committee members, Dr. Sameer Abu-Znied and Dr. RabeH Morrar.

Mohammed Saleh Alkaraki

## **Abstract:**

This study explores the impact of bank lending on economic growth in Palestine over the period (Q1 1996 - Q4 2013). The study employs the Augmented Dickey-Fuller to test for stationarity in the time series. The Johansen co-integration, Vector Autoregressive Model (VAR) and Vector Error Correction Model (VECM) are employed to identify the long-run and short-run dynamics among the variables. Granger causality test in order to determine the direction of causality.

The study shows that a long run relationship exists among the variables and insignificant short run relationship. Also, the core finding of this study shows that there is unidirectional causality and runs from GDP to bank lending, supporting the demand-following hypothesis (P.M.Romer, 1990) described. The insignificant contribution of bank lending to GDP may be attributed to the fact that banks exhibit apathy in lending to the production sector of the economy due to high level of risk involved.

Finally, the study recommends financial reforms and policies should focus on how to narrow the gap between savings and lending rates. Banks should also be encouraged to lend to the entire economy as opposed to favouring some specific sectors and government should avoid excessive deficit and borrowing from the private sector, which prove to be crowding out private investment.

## ملخص:

هدفت الدراسة الى التعرف على أثر الإقراض المصرفي على النمو الاقتصادي الفلسطيني خلا الفترة من الربع الاول للعام 1996 و حتى الربع الرابع للعام 2013 حيث تم تطبيق الاساليب القياسية التالية و منها اختبار جذر الوحدة للتأكد من استقرار السلاسل الزمنية من خلال استخدام اختبار ديكي فولر الموسع، و اختبار التكامل المشترك للتأكد من وجود علاقة توازنية مستقرة طويلة الاجل بين متغيرات الدراسة من خلال استخدام طريقة جوهانسون للتكامل المشترك، و تطبيق نموذج متجه الانحدار الذاتي لقياس العلاقات المتداخلة بين متغيرات السلاسل الزمنية بالاضافة الى نموذج متجه تصحيح الخطأ لقياس علاقة التكيف من الاجل القصير الى الاجل الطويل و اختبار العلاقة السببية للسلاسل الزمنية بين متغيرات الدراسة من خلال استخدام اختبار جرانجر.

تظهر الدراسة أن العلاقة بين متغيرات الدراسة موجودة في المدى الطويل وتكاد لا تذكر في المدى القصير و النتيجة الأساسية لهذه الدراسة تبين أن هناك علاقة سببية أحادية الاتجاه من الناتج المحلي الإجمالي إلى الإقراض المصرفي بسبب المساهمة الضئيلة للإقراض المصرفي بالنسبة للناتج المحلي الإجمالي و عدم اهتمام البنوك بتوجيه الإقراض لقطاع الإنتاج في الاقتصاد.

توصي الدراسة بمجموعة من الإصلاحات للسياسات المالية و التي ينبغي أن تركز على كيفية تضيق الفجوة بين معدلات الادخار والإقراض بالاضافة الى تشجيع البنوك على الإقراض لكافة قطاعات الاقتصاد بدلا من تفضيل بعض القطاعات و كذلك الحد من العجز المفرط للحكومة و اعتمادها على الاقتراض من القطاع الخاص.

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## Abbreviations

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
ARDL	Autoregressive Distributed Lag
BK	Bank Lending
ECT	Error Correction Term
FPE	Final Prediction Error
GDP	Gross Domestic Product
HQ	Hannan -Quinn Information Criterion
K	Gross Capital Formation
L	Labor
OLS	Ordinary Least Squares
PCBS	Palestinian Central Bureau of Statistics
PLA	Palestinian Local Authority
PMA	Palestine Monetary Authority
PNA	Palestinian National Authority
PP	Phillips Perron
QTM	Quantity Theory of Money
SBC	Schwartz Bayesian Criterion
VAR	Vector Autoregressive
VECM	Vector Error Correction Model

# Chapter 1

## 1 Introduction

### 1.1 Rationale :

Modern economy is a credit economy. The economy requires credit for different purposes; one main purpose is to promote economic activities. (Ndubuisi M. Nwaru and Okorontah, 2014). Credit fuels economic activities by allowing businesses to invest beyond their cash on hand, households to purchase homes without saving the entire cost in advance, and governments to smooth out their spending by mitigating the cyclical pattern of tax revenues and to invest in infrastructure projects. This relationship has occupied the minds of economists from Smith to Schumpeter; although the channels and even the direction of causality have remained unresolved in both theory and empirics. The influence of credit on economic growth is widely debated in economic literature for over the last decades.

The remarkable thing is how the idea of credit commenced in everywhere and it flourished more spectacularly. The story began from Venice which became the greatest lending laboratory in Europe and the place of the most famous moneylender in literature, Shylock in Shakespeare's "The Merchant of Venice", a fourteenth-century story that talks about a wealthy woman who marries an upstanding young gentleman who needed money. Therefore, he went to a moneylender to borrow the cash under his friend guarantee. The moneylender, Shylock, demands a pound of flesh as security if the money is not paid back.

The Merchant of Venice raises a question about economics. Why don't people as Shylock always lose out? The answer is: The more you grow, the more you become powerful. The earliest Italian banks adapted this thought; the Medici Bank, which had multiple related partnerships moved from financial success to hereditary status and power. The Medici Bank achieved this by adapting the risk diversification and by engaging in currency trading as well as lending. As a result, they reduced their vulnerability to defaults (Ferguson, 2008).

The Italian banking system became the model for those in North Europe, such as the Dutch, English and Swedish, that would achieve the greatest commercial success in the coming centuries. The banking system also developed proportionately and the eighteenth and nineteenth century experienced the rapid growth in this sector.

In the modern times, the banking system developed with the developing sector of trade and commerce. Today, there are different types of banks for different purposes. At every turn, the role of bank lending in economic growth has been mired in controversy. Can banking sector be left to benign neglect, or is it a key driver of economic growth?

The Palestinian economy, as any economy worldwide, is interested in stimulating economic growth and development which can be achieved by focusing on bank lending considered as the main variable of macro economy. To investigate that we will examine the impact of bank lending on economic growth by using analytical approaches and applying various econometrics tests. The scope of the study is from 1996 to 2013 and divided into six chapters. Chapter one is the introduction, chapter two is a conceptual framework, chapter three reviews past studies, chapter four includes the methodology, chapter five centres on empirical results and discussion of findings and chapter six is the concluding remarks as shown in figure (1-1):

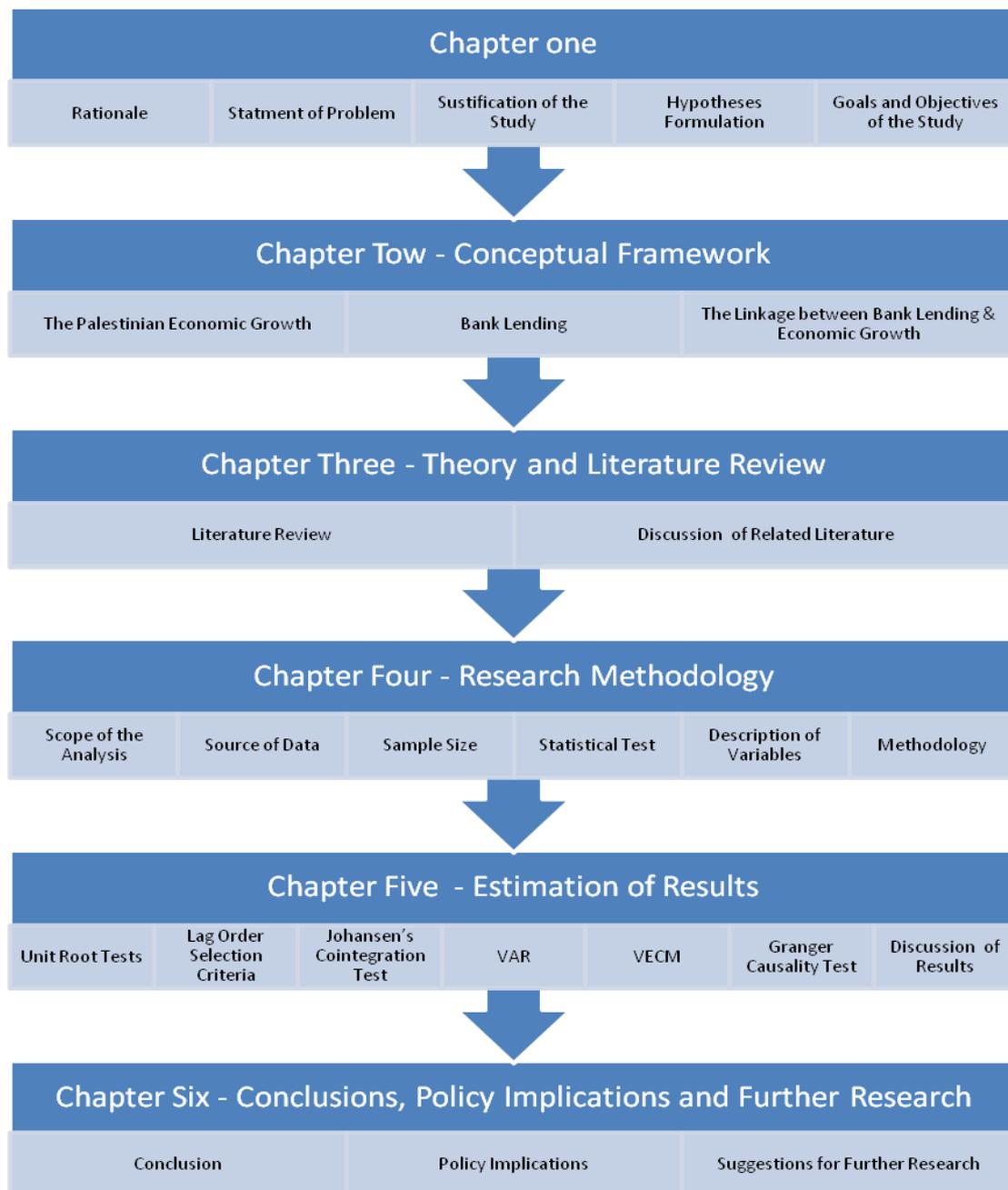


Figure 1-1 Structure of the Study

## 1.2 Statement of Problem:

The link between bank lending and economic growth has important policy implications for development strategies. Especially in the field of increasing the rate of economic growth in spite of the limited role of banking sector to control the money supply and its effects on the economy. Therefore, the statement of problem measures *“The impact of bank lending on the economic growth in Palestine during the period from 1996 to 2013”*.

### **1.3 Main Goals and Objectives of the Study**

The main goal of the study is to identify the impact of bank lending on economic growth in Palestine. The research is important from both theoretical and empirical points of view. The formulated conclusions and recommendations determine the practical significance of the paper which may be used in the decision making process of monetary and economic authorities of the country.

In this study the major objectives are to find out the relationship, if any, between bank lending and real economic growth and these specific objectives are :

- Investigate whether it is possible to use bank lending as the means of long-term economic growth, and if so, under which conditions;
- Understand the relationship between bank lending and economic growth with other economic indicators (Employment, Gross fixed capital formation);
- Apply Granger causality test to examine the causal relationships between the examined variables.

### **1.4 Justifications of the Study**

The banking system facilitates the transfer of funds from non-productive players to productive areas of the economy. The activity of banks may have immediate impact upon the economy by enabling investors to finance productive activities. Over the long term, productive activities that benefit from banking system produce further commodities and services to fill the increasing demand that results from increased lending.

Studies on the relationship between bank lending and economic growth have not been conclusive on whether bank lending drives and impact on economic growth or whether economic growth drives bank lending. Thus, studies of this nature are very important for policy makers and industry leaders in deciding which sector to put emphasis on, whether the real or the financial sector. Once we determine whether there is a causality from bank lending to economic growth, it is also important to understand the effect of bank lending on economic growth which is important for policy makers. By doing so, we should be able to draw some indicative conclusions

and make relevant policy recommendations, to facilitate and foster sound growth of the financial sector if it helps in spurring economic growth or alternatively drive the economy to higher economic growth.

### **1.5 Hypotheses Formulation:**

Hypotheses stated in null form to be tested in this study are:

- **H<sub>0</sub>** : bank lending has no significant effect on economic growth in Palestine.
- **H<sub>0</sub>** : bank lending for public sector has no significant effect on economic growth in Palestine.
- **H<sub>0</sub>** : bank lending for private sector has no significant effect on economic growth in Palestine.
- **H<sub>0</sub>** : there is no causality between bank lending and economic growth in Palestine.

**The rejection of the null hypothesis means the acceptance of the alternative hypothesis. Where: H<sub>0</sub>: null hypothesis and hypothesis will be tested at 5% level of significant.**

## Chapter 2

### 2 Palestinian Economy and Banking System

#### 2.1 Palestinian Economy:

Palestine is a developing country with an emerging economy characterized by some features that distinguish it from other economies. One of these features is the absence of local currency and the use of the three major currencies US dollar, the Jordanian dinar and the Israeli Shekel. In addition to these features the Palestinian economy dependent on foreign aids and characterized as a service economy.

The total Palestinian GDP is 6,942 million dollar in 2013 and the annual real GDP growth rate showed in figure (2-1) obvious fluctuations during 1996 –2013 due to the political conditions. Real GDP growth rate was the highest (13.7 percent) in 1997 due to the relative political stability during that year; period from 2000 to 2002 and year 2006 witnessed the lowest growth rate.

The majority of Palestinian firms are family business which in many cases create management conflicts and lead to liquidation especially in the second generation. thus, the economic growth will not come from normal conditions, but rather by joint efforts among all parties to create a strong economy that is capable to meet the domestic requirements.

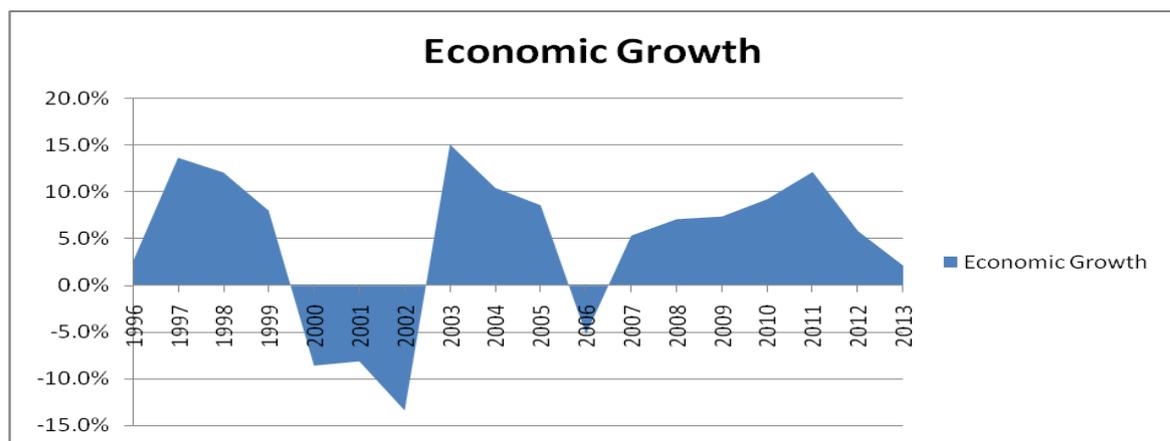


Figure 2-1 Economic Growth figures over the period of 1996 to 2013 (source: PMA, 2014)

In general, the average annual real GDP growth rate reached 4.7 percent during (1996 – 2013), which is acceptable under the conditions that the Palestinian economy experienced; but this rate was not sufficient to enable the Palestinian economy to enter into the process of self-growth and achieve sustainable development. And as shown in figure 1 the maximum and minimum economic growth rates are 15.1% in 2003 and -13.4% in 2002 , theses illustrate the intensity fluctuations in GDP growth because PA fiscal policy funded by donor aid and Growth has mostly been in government services, trade, real estate and other non-tradable sectors. In addition Real GDP per capita rate reached 1.6 percent during (1996 - 2013) as shown in figure (2-3):

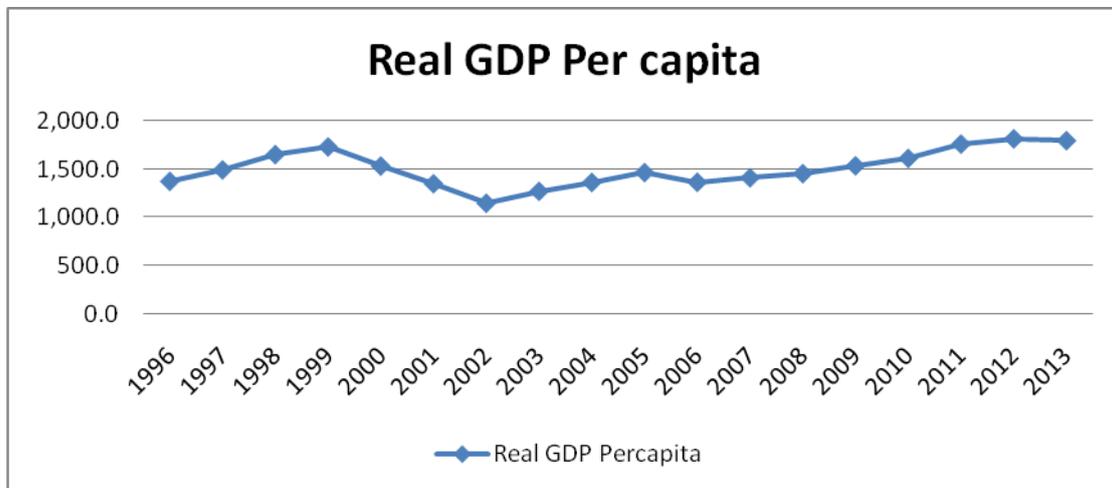


Figure 2-2 Real GDP Per Capita (source: PMA, 2014)

## 2.2 Banking System:

Banking system consists of 17 banks with 232 branches and offices 7 of them are local banks, and 9 are Arab banks and one is a foreign bank. The number of commercial banks is 15 banks and 2 Islamic banks. Total Bank Lending and deposits of residents as shown in figure (2-3) have grown substantially in the last few years, from \$423 million Bank Lending and \$1,707.5 billion deposits of residents at the end of 1996 to \$4.480 billion Bank Lending and \$8,024 billion deposits of residents at the end of 2013. The PMA monitors the banking sector closely to assist the expansion.

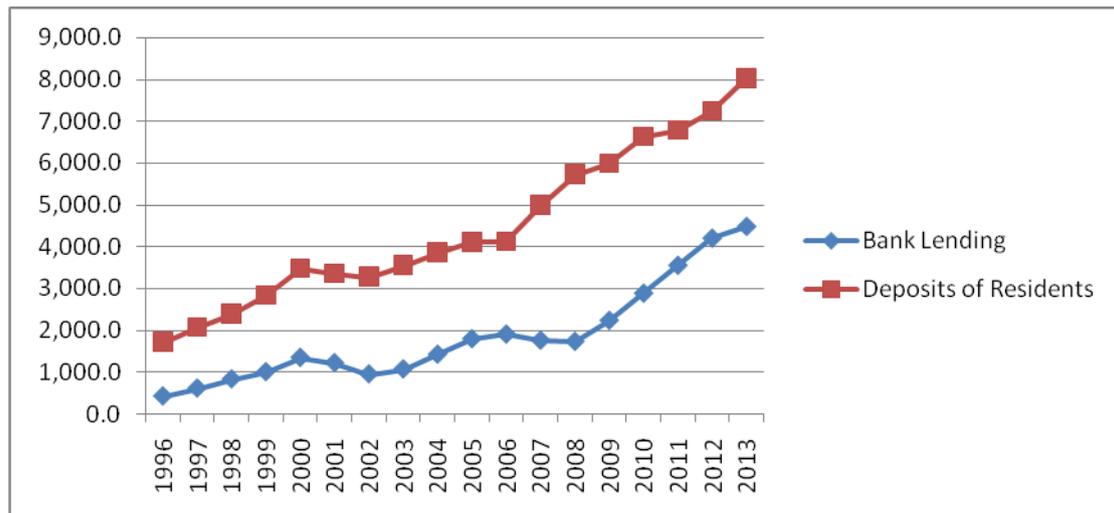


Figure 2-3 : Bank Lending and Deposits figures over the period of 1996 to 2013(source: PMA, 2014)

### 2.2.1 Types of Bank Lending:

Banks make a wide variety of loans to a wide variety of customers for many different purposes, from purchasing automobiles and buying new furniture, taking dream vacations, or pursuing college educations to constructing homes and office buildings. The diversity of Palestinian bank lending by grouping loans according to their purpose as the following: Real Estate Loans, Commercial and Industrial Loans, Lease Financing Receivables, Financial Institution Loans and Loans to Individuals

In addition with the diversity of bank blending, there are other services such as:

- Electronic services like: SMS banking, online banking and Phone banking.
- International trade: financing of commercial contracts, letter of credits and bill collection.
- Transfers : local transfers and international transfers (SWIFT)
- Treasury services : currency exchange
- Checks : bank checks and check books
- Deposits
- Accounts
- Cards : visa electron, prepaid cards and credit cards (visa & master)

Types of bank lending in Palestine divided in two main categories: bank lending for public sector and bank lending for private sector as shown in (figure 2-4):

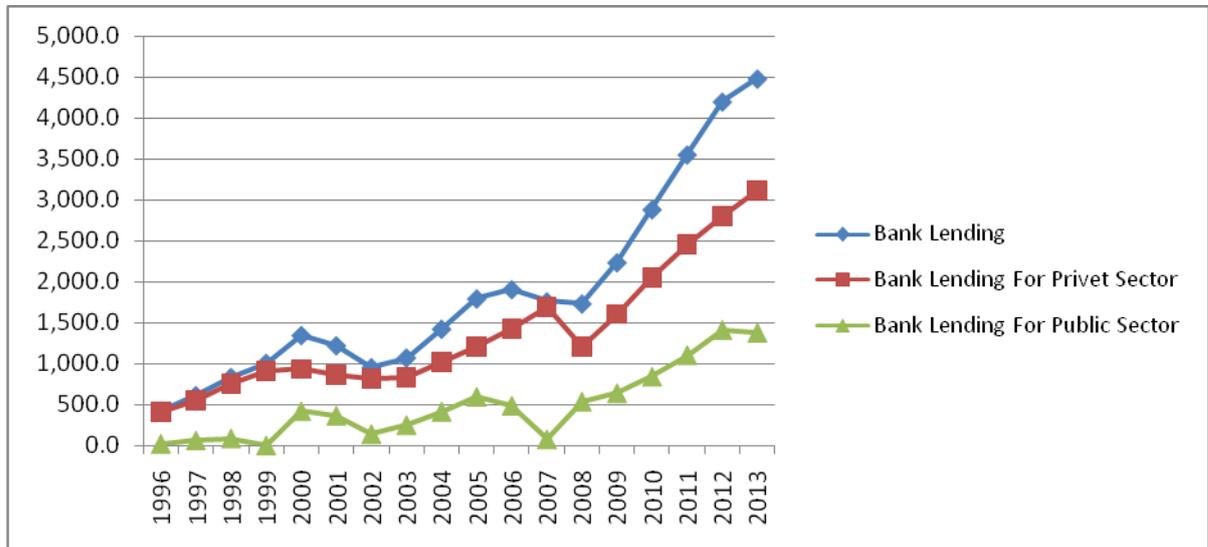


Figure 2-4 Bank Lending and Bank Lending for Private and Public over the period of 1996 to 2013 (source: PMA, 2014)

### 2.2.2 Geographical Distribution of Bank Lending:

Geographical distribution of bank lending in Palestinian territories as shown in (figure: 2-5) which indicate the bank lending in West Bank is more than in Gaza strip.

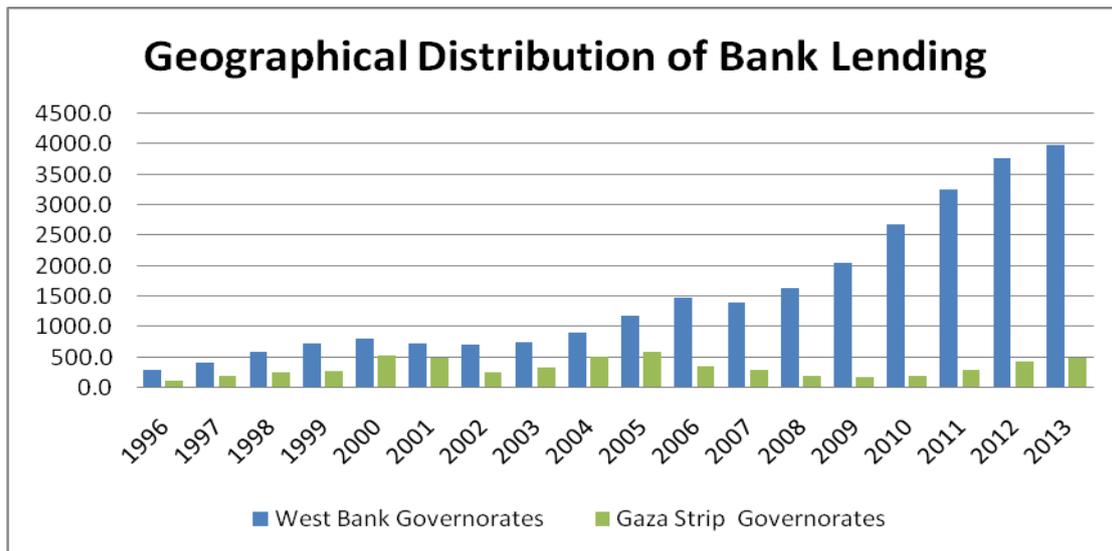


Figure 2-5 Geographical Distribution of Bank Lending over the period of 1996 to 2013 (source: PMA, 2014)

### 2.2.3 Distribution of Bank Lending by Type:

According to data availability by PMA, types of bank lending are: Loans, Over Draft and Leasing as shown in (figure2-6) below over the period from 1996 to 2013:

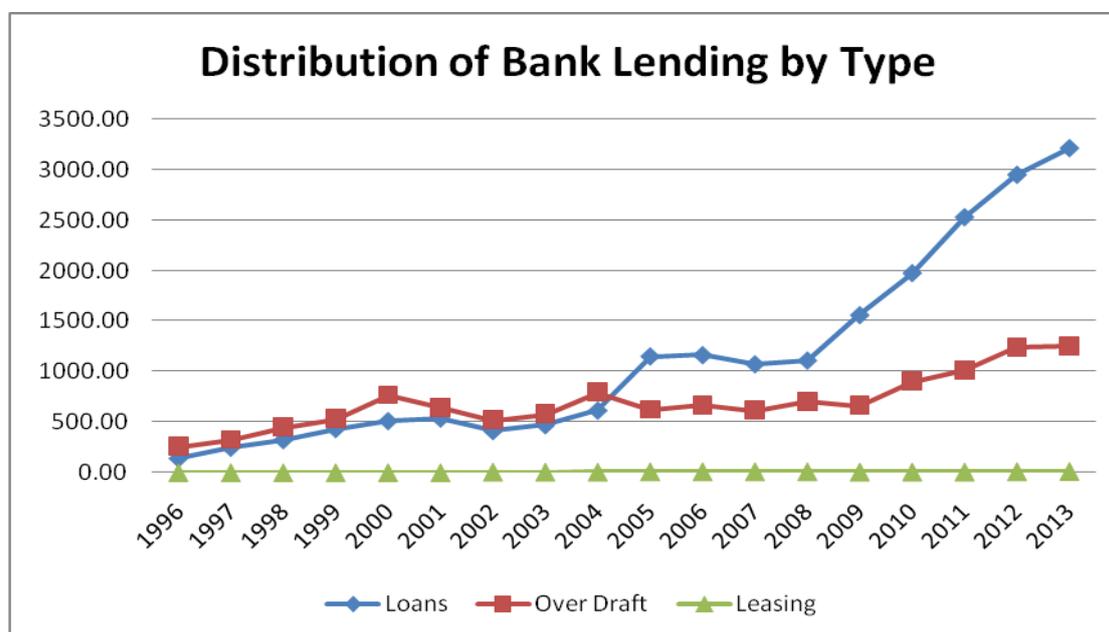


Figure 2-6 Distribution of Bank Lending by Type over the period of 1996 to 2013 (source: PMA, 2014).

This chart explains how the loans, over draft and leasing move over the past years. The main figure is the amount of loans which exceeds the amount of overdraft since 2004, and this reflects the global trend of lending.

### 2.2.4 Banks in Palestine:

The number of banks by end of 2013 are 17 banks, and they operate through a network of branches and offices spread across the different areas, constituting a total of 237 branches and offices, of which 125 are branches and offices of local banks and 112 are branches and offices of foreign banks, with 5 new branches and offices opened during 2013.

The Major Banks that are working in the Palestinian territories are as the following:

Table 2-1 The Palestinian Banking System Institutions (SOURCE: PMA, 2014)

Palestinian Banking System Institutions (source : PMA,2014)			
Foreign Banks		Local Banks	
Name of bank	Since	Name of bank	Since
Cairo Amman Bank	1986	Bank of Palestine P.L.C	1960
Arab Bank	1994	Palestine Commercial Bank	1994
Bank of Jordan	1994	Palestine Investment Bank	1995
Egyptian Arab Land Bank	1994	Arab Islamic Bank	1995
Jordan Commercial Bank	1994	Palestine Islamic Bank	1995
Jordan Ahli Bank	1995	Al Quds Bank	1995
Housing Bank for Trade & Finance	1995	The National Bank	2005
Jordan Kuwait Bank	1995		
Union Bank	1995		
HSBC Bank Middle East Limited	1998		

### 2.2.5 Banks Liquidity Indicators:

Customer deposits are the main external financing resources for banks and serve as a significant indicator for savings in the local economy. The accumulation of savings is particularly important as it helps in restoring the balance between consumption, investment and savings, necessarily leading to improved economic performance. Total assets of banks operating in Palestine increased to total USD 11,195.3 million by end of 2013, recording 11.3 percent rise, and equivalent to USD 10,051.9 million, compared with 2012. Direct credit facilities, the most important component of banks' assets, constituted 40 percent of total assets by end of 2013. Changes in this item are of great significance to the banking sector, and economic activity, at large.

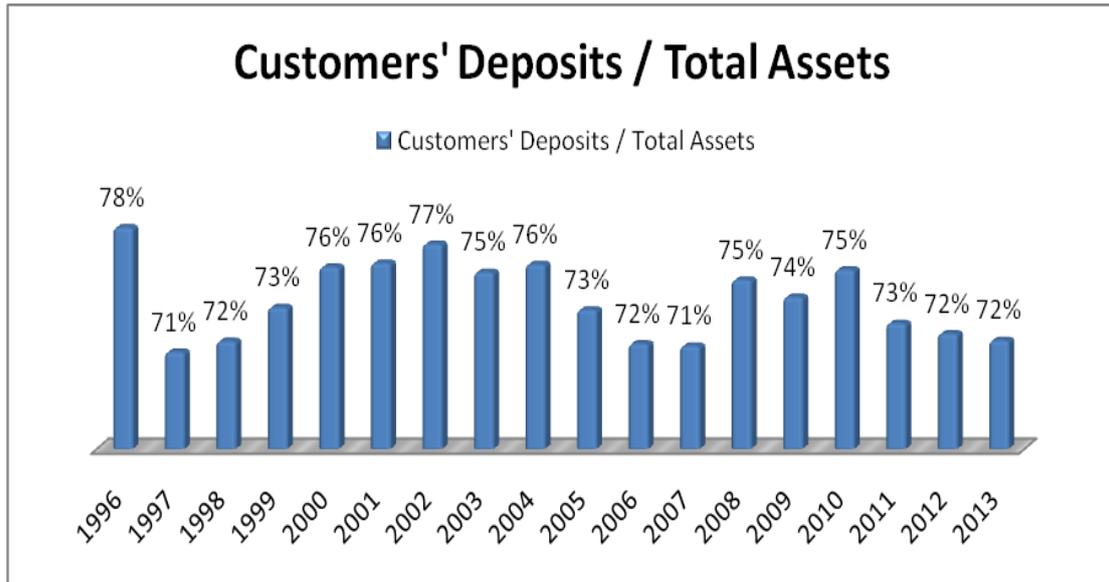


Figure 2-7 Customer' Deposits / Total Assets over the period of 1996 to 2013 (source: PMA, 2014).

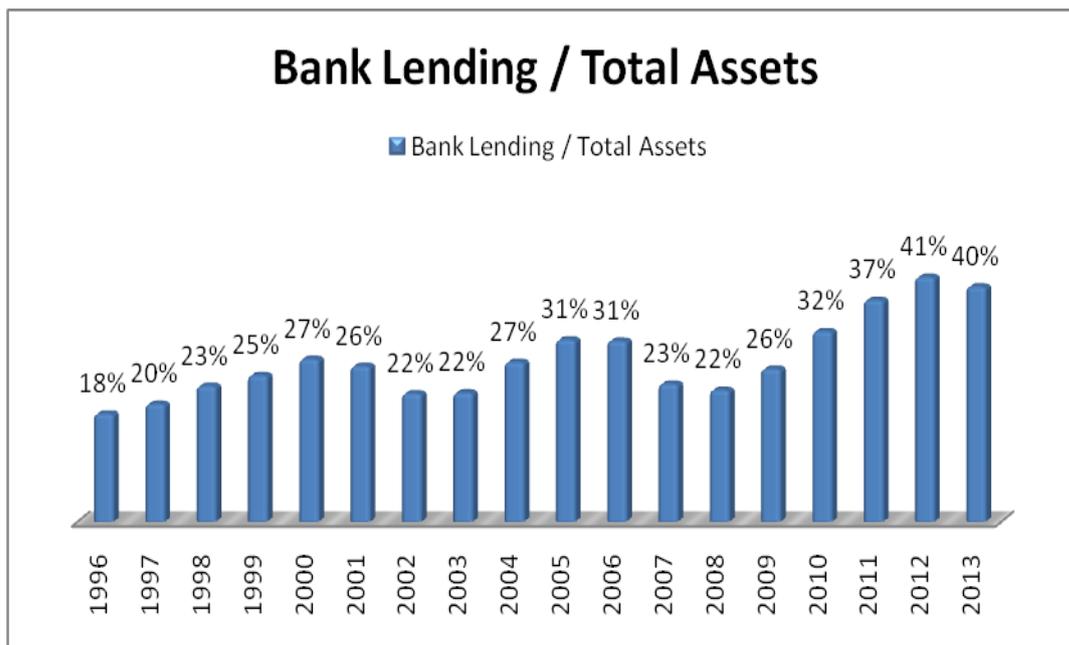


Figure 2-8 Bank Lending / Total Assets over the period of 1996 to 2013 (source: PMA, 2014).

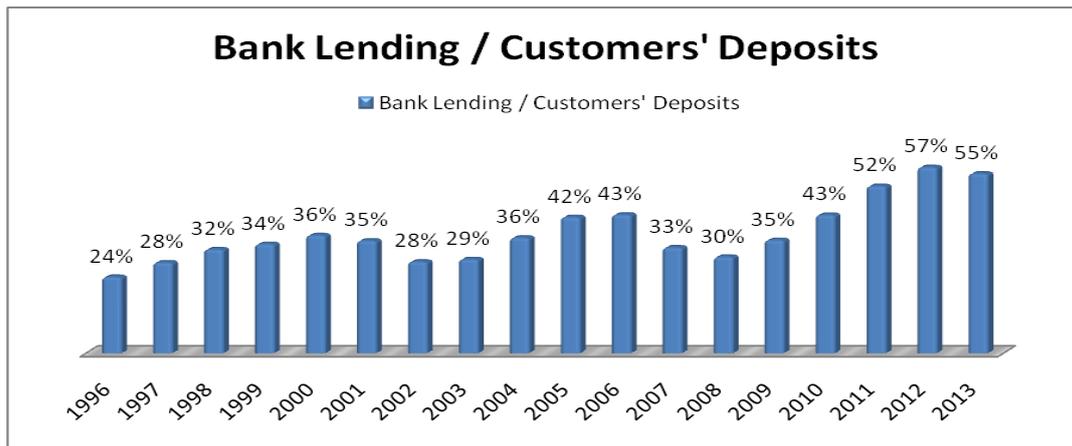


Figure 2-9 Bank Lending / Customer' Deposits over the period of 1996 to 2013 (source: PMA, 2014).

### 2.3 The Linkage Between Palestinian Economy and Banking System:

The health of our banks and the health of our economy are inseparable. The banking industry plays a vital role in the Palestinian economy. Beyond providing a range of important financial services, the banking industry is a major contributor to gross domestic product (GDP), employment and information and technology (IT) investment. Additionally, the banking industry supports the Palestinian economy by paying millions of dollars in tax and millions of dollars in dividends each year.

The finance and insurance industry makes contribution to the Palestinian economy. Over the 12 months to the end of December 2013, the finance and insurance industry contributed \$402 million to \$11.9 billion economy. This represents 4 per cent of Palestinian economic activity over the period as shown in figure (2-10) below:

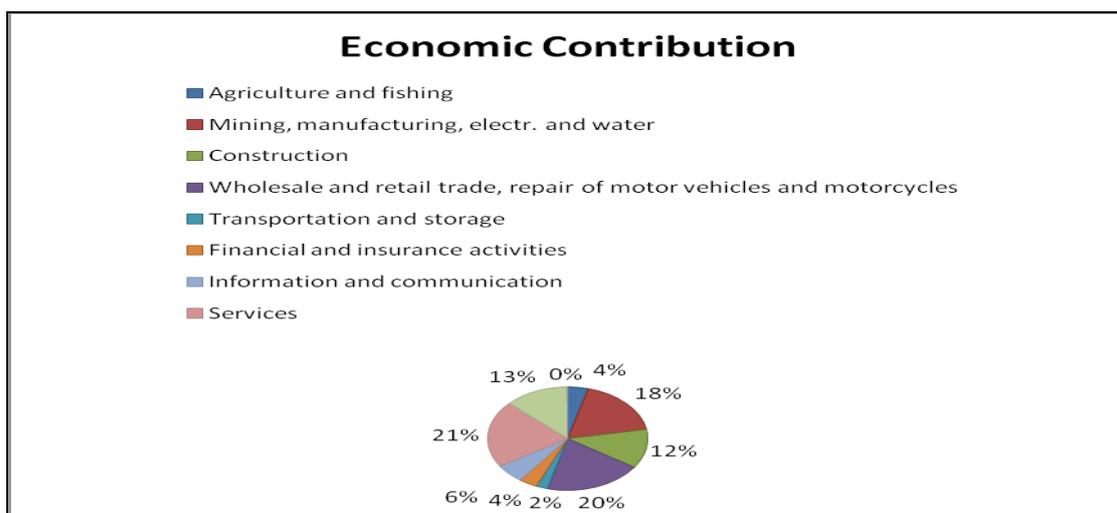


Figure 2-10 Economic Activities and Contribution for the year 2013 (source: PMA, 2014)

The contribution of finance and insurance industry to the Palestinian economy during the period (1996 - 2013) (Figure 2-11) with average represents 3.8 per cent of Palestinian economic activity over the period.

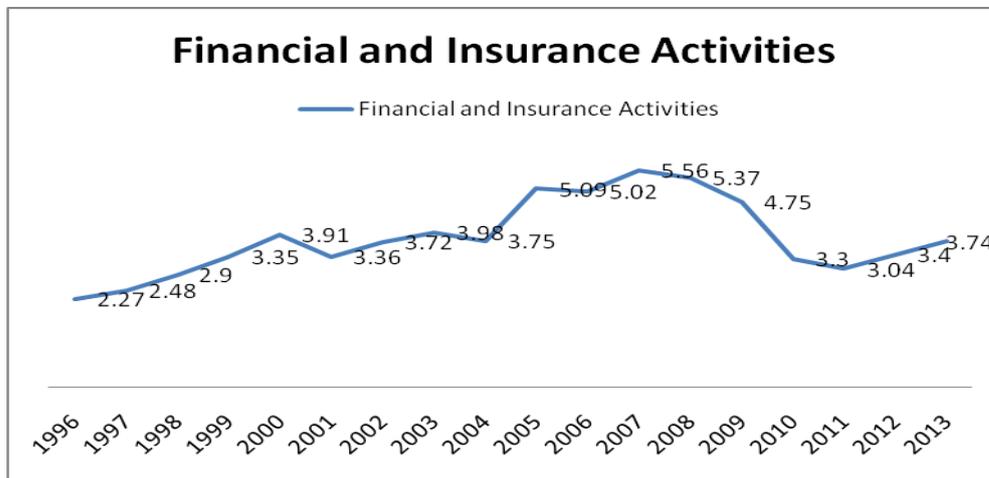


Figure 2-11 Financial and Insurance Activities over the period of 1996 to 2013 (source: PMA, 2014).

Banks as taxpayers: banks provide the Palestinian Government with considerable tax revenue. Over the past five years, banks have paid \$200 million in tax with \$58 million being paid in 2013 (Figure 2-12). On top of the tax payments provided to government, banks continue to return wealth to shareholders. Over the past five years, banks have paid out a total of \$636.9 million in dividends, with \$143.4 million paid out in 2013.

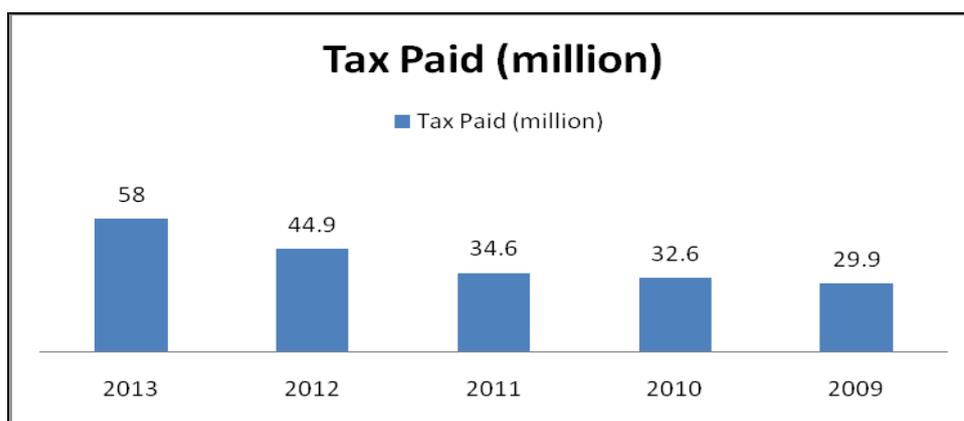


Figure 2-12 Tax Paid over the past five years (source: Association of Banks in Palestine, 2014)

Banks as employers: banks are an important provider of employment. As at November 2013, the finance industry directly employed over 5,379 people, making up approximately 0.46 per cent of the Palestinian labour force (PMA P. M., 2014).

In addition, to estimate Real GDP by adopting the Expenditure approach, we will focus on three main components which are: Final Consumption, Gross Capital Formation and Net Export of goods and services. As shown in figure (2-13) below:

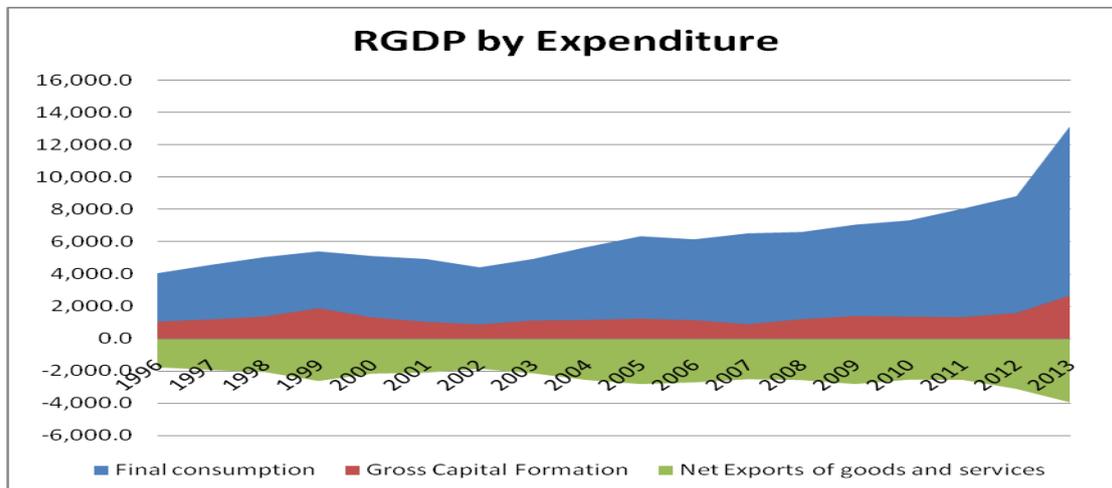


Figure 2-13 Real GDP by Expenditure over the period of 1996 to 2013 (source: PMA, 2014).

The contribution of banking sector to gross domestic product (GDP) is more than the contribution of gross capital formation as illustrated in (figure 2-14). In other words, the amount of Bank Lending exceeds the amount of Gross Capital Formation over the period from 1996 to 2013 in the Palestinian economy. This result emphasizes the importance of the banking in stimulating the economy.

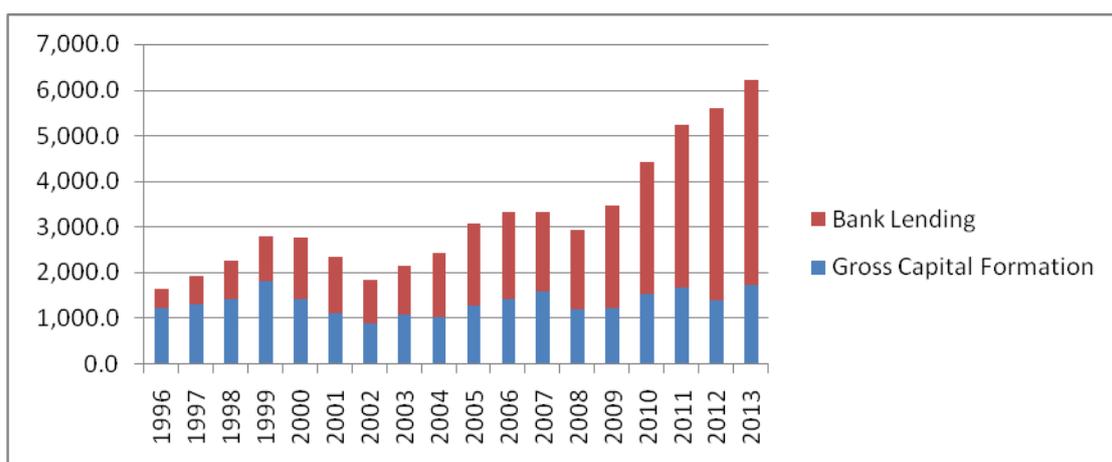


Figure 2-14 Bank Lending and Gross Capital Formation over the period of 1996 to 2013 (source: PMA, 2014).

## Chapter 3

### 3 Theory and Literature Review

#### 3.1 Theory

##### 3.1.1 Economic growth:

Economic growth is a sustained expansion of production possibilities measured as the increase in real GDP over a given period (Slavin, 2009). Rapid economic growth maintained over a number of years can transform a poor nation into a rich one. To calculate this growth rate, we use the formula:

$$\text{Real GDP growth rate} = \frac{\text{Real GDP in current year} - \text{Real GDP in previous year}}{\text{Real GDP in previous year}} \times 100.$$

The growth rate of real GDP tells us how rapidly the total economy is expanding. This measure is useful for telling us about potential changes in the balance of economic power among nations. But it does not tell us about changes in the standard of living.

Alternative theories of economic growth as shown in figure (3-1) provide insights into the process of economic growth, but none provides a complete and definite answer to the basic questions: What causes economic growth and why do growth rates vary? Why poor countries are poor? How design policies that can help them grow? How our own growth rate is affected by shocks and our government's policies? Economics has some way to go before it can provide definite answers to these questions. The growth theories have developed over time, each building upon and replacing the previous theory (Parkin, 2012):

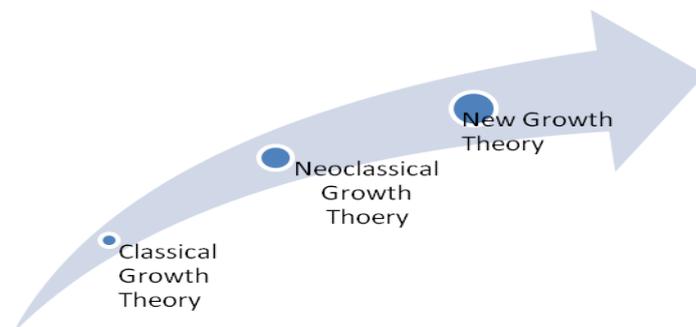


Figure 3-1 Theories of Economic Growth

**Classical growth theory:** study the main concentrates on the dynamics of economic growth. A combination of the contributions of Adam Smith, Thomas Robert Malthus, and David Ricardo, the leading economists of the late eighteenth century and early nineteenth century and is sometimes called the Malthusian theory.

**Neoclassical growth theory:** Economic growth will be happened with the proper amounts of the three driving forces: labor, capital and technology. When a technology becomes available, the labor and capital need to be adjusted to maintain growth equilibrium. because technological change induces saving and investment that make capital per hour of labor grow. Robert Solow the most popular version of this growth theory in the 1950s.

**New growth theory:** Real GDP per person grows because of the choices people make in the pursuit of profit. Paul Romer developed this theory during the 1980s, based on ideas of Joseph Schumpeter during the 1930s and 1940s.

### **Which theory is correct?**

None of them tells us the whole story, but each teaches us something of value. Classical growth theory reminds us that our physical resources are limited but without advances in technology. Neoclassical growth theory has the same conclusion but without keep growth going just by accumulating physical capital. But also with advance technology and accumulate human capital. New growth theory emphasizes innovation of human resources (Parkin, 2012).

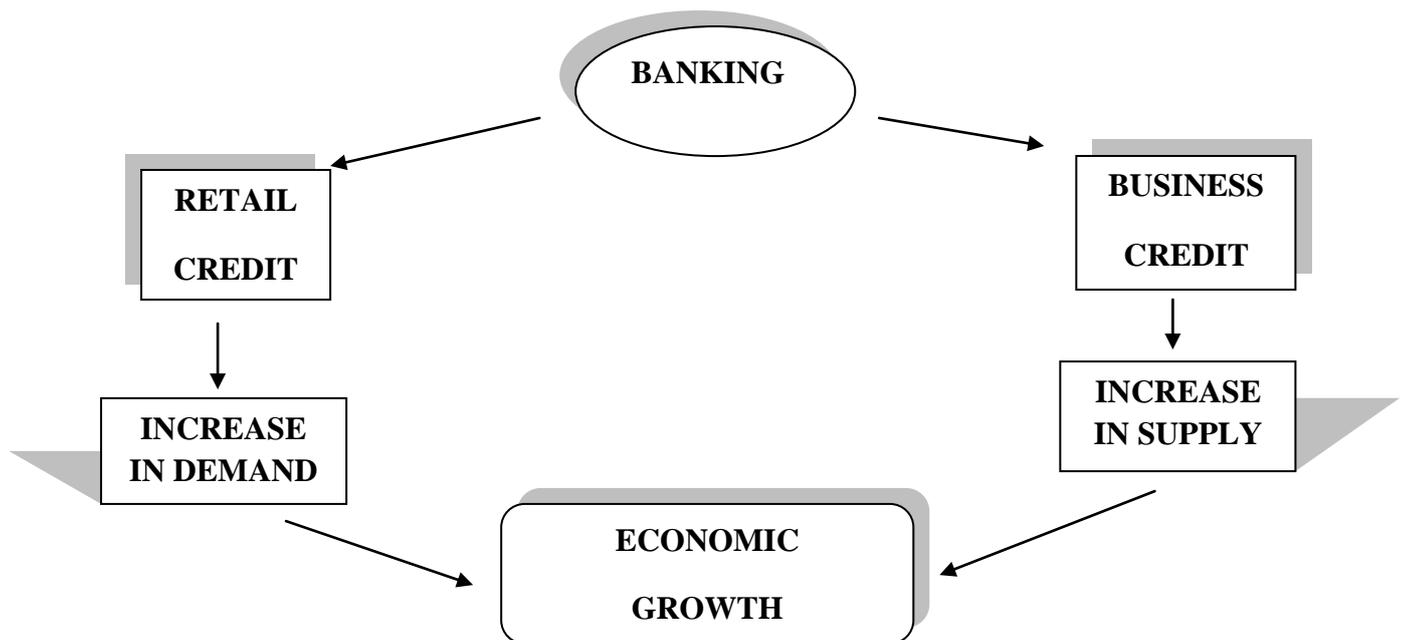
### **3.1.2 Schumpeter's View:**

Schumpeter made the first articulated statement about how financial transactions take central stage in economic growth. Thus, he wrote, "The banker stands between those who wish to form new combinations and the possessors of productive means. He is essentially a phenomenon of development, though only when no central authority directs the social process. He makes possible the carrying out of new combinations, authorises people, in the name of the society as it were, to form them. He is the ephod of the exchange economy." (Schumpeter, 1934, p. 78)

Only in the last decade, Schumpeter's view about the nexus between banking (and finance) and economic development (and growth) is being taken seriously. Below I review some of the literature to date.

Schumpeter sharpened his view in later writing. While discussing business cycles, he wrote, "the relation between credit creation by banks and innovation is fundamental to the understanding of the capitalist engine." (Schumpeter, 1939, p. 111)

Economic growth can be defined as an increase in a country's output, which is most commonly measured by GDP. The benefits stemming from economic growth are wide ranging. The specific benefits to banks are improvements in living standards, rising employment, increased capital investment, greater business and investor confidence and improved environmental outcomes. These benefits can be translated by banks through increasing bank lending.



According to Schumpeter's View, economic growth will be accomplished with the proper amount of bank lending. But What is the right size for the financial sector? Most policymakers and analysts believe that the financial sector grew to be too large and this certainly matches public sentiments. We have some sympathy with this view.

However, caution is in order, as it is extremely hard to determine the right size of the financial system based on well-grounded economic theories (Parkin, 2012).

It has also been shown that the impact of bank lending extension on economic growth depends on the type of facility extended (whether consumption or investment), and the economic sectors and activities targeted. The more bank lending is directed toward investment and productive sectors, the larger the impact on economic growth (Parkin, 2012).

### **3.1.3 The Solow Growth Model:**

Solow's theory on growth supports the neoclassical view that the economy naturally adjusts to achieve stable equilibrium growth. Before the Solow model, the most commonly referred to model in growth is Harrod-Domar, which mostly focuses on the potential shortcomings of growth such as the coexistence of growth and increasing unemployment.

We assume that the economy produces a single good  $Y_t$  by means of two factors of production – capital,  $K_t$  and labor,  $L_t$ . The productivity of these inputs also depends on the level of technology  $A_t$ . The production function:

$$Y_t = F(K_t, A_t, L_t) \quad (1)$$

The Solow growth model is designed to show how growth in the capital stock, growth in the labor force, and advances in technology interact in an economy, and how they affect a nation's total output of goods and services.

## **3.2 Literature Review**

### **3.2.1 Introduction**

The impact of bank lending on economic growth is a controversial issue on both empirical and theoretical framework. As shown in figure (3-2) the theoretical underpinnings of this relationship can be found in the works of Bagehot (1873) and Schumpeter (1954) and more recently in the works of Gurley and Shaw (1955, 1960), McKinnon (1973), Shaw (1973) and Lucas (1988).

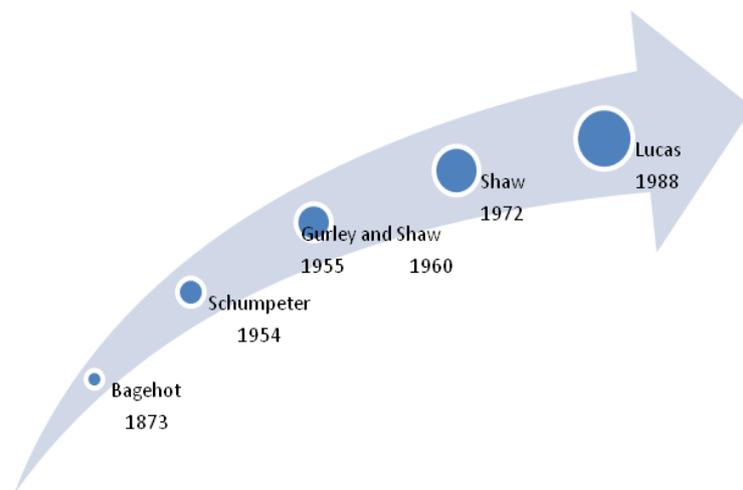


Figure 3-2 The theoretical underpinnings of Relationship Between Bank Lending and Economic Growth.

Throughout the survey of the literature, it was observed that, economists don't all seem to agree on the importance of the role played by finance in promoting economic growth and consequently they hold different views regarding the theoretical link between finance and economic growth.

The direction of causality has been described by Patrick (1966) as supply-leading and demand following hypothesis. When causal relation runs from finance to growth, it is termed supply-leading because it is believed that the activities of the financial institution increase the supply of financial services which creates economic growth. Similarly, when the growth within the economy results in increase in the demand for financial services and this subsequently motivates financial development, then it is termed demand- following hypothesis.

This relationship has occupied the minds of economists, although the channels and even the direction of causality have remained unresolved in both theory and empirics. Economic thought on the causality between bank lending and economic growth include two main directions as shown in figure (3-3). First trend sees that there is no clear relationship which called (No causality between bank lending and economic growth). The second trend includes the divergent views represented in three views. First opinion (Unidirectional Causality which includes: Supply-led and Demand-following). Second opinion (Bi directional Causality) believes that reciprocal causality in the way that both of economic growth and bank lending influenced each other. Third opinion negative causal relationship means that the role

of banks has a negative effect on economic growth which means banks move the deposits outside the economy, and not to pump these savings in the economy.

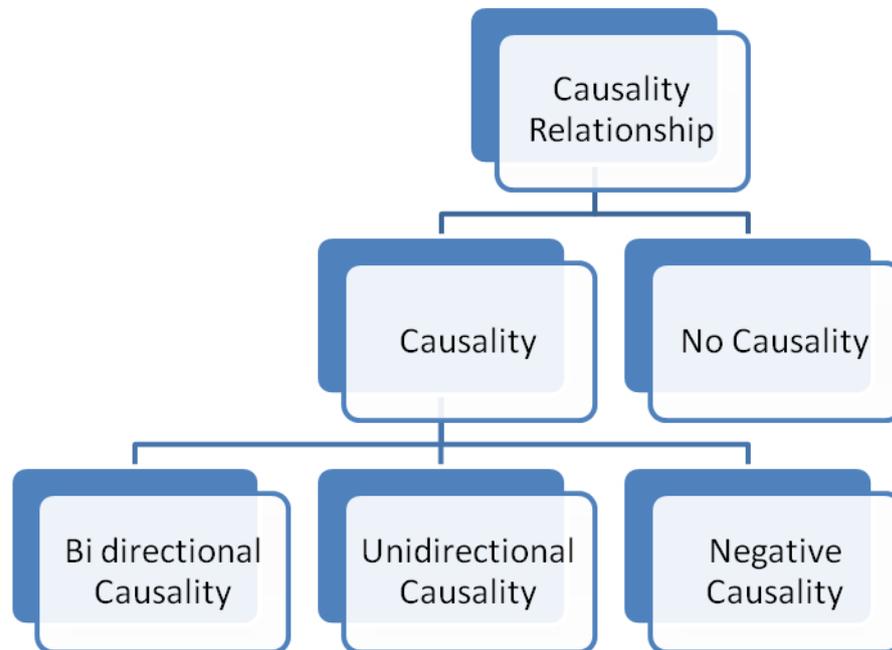


Figure 3-3 Causality Relationship Between Bank Lending and Economic Growth.

In order to shed more light on related literature, we will categorize them according to the causality between bank lending and economic growth as the following:

### 3.2.2 No Causality between Bank Lending and Economic Growth

(Precious & Palesa, 2014) explore the role played by monetary policy in promoting economic growth in the South African economy over the period 2000-2010. The dependent variable is (GDP = Gross Domestic Product) and independent variables are (MS= Money supply measured by M3), (REPO = Repo Rate), (CPI = Consumer Price Index) and (EXC = Exchange Rate). The econometric investigations are specified as:

$$GDP_t = \beta_0 + \beta_1 MS_t + \beta_2 REPO_t + \beta_3 CPI_t + \beta_4 EXC_t + \mu$$

The estimations are based on different techniques such as the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) Unit Root test, Johansen Co-integration test and Vector Error Correction Mechanism (VECM). The results show that in South Africa, adjusting the monetary policy through the repo rate and money supply has an

insignificant impact on economic growth. Although all variables indicate a positive impact on GDP, only inflation is significant.

(Nasir, Ali, & Khokhar, 2014) investigate the long and short run causal relationships between economic growth, financial depth and lending rate in the unique economic setup of Saudi Arabia where 92% of total GDP comes from oil exports. Using the Johansens co-integration, Granger causality and Vector Error Correction Model (VECM) the study finds a single co-integrated equation which establishes a long run relationship among the variables. This study intends to examine the relationship among Economic growth, Financial Depth and Lending rate in the unique economic setup of Saudi Arabia by using the following model.

$$Ecog_t = \alpha_0 + \alpha_1 LLI_t + \alpha_2 PRIVY_t + \alpha_3 LR_t + \varepsilon_t$$

Where  $Ecog$  = Economic Growth (real GDP per Capita),  $LLI$  and  $PRIVY$  as proxies for Financial Depth ( $LLI$ =ratio of Liquid liabilities to GDP and  $PRIVY$ = ratio of claims by Financial institutions to the private sector / GDP) and  $LR$ =annual Lending rate of central bank (SAMA). Finding suggests that financial depth causes lending rate which is in contradiction with most of the available literature; the study tries to explain this type of causality under the present circumstances. The other causations are insignificant and hence cannot be properly interpreted apart from economic growth Furthermore no short term significant relationship exists among the variables as reflected by the results of the Wald Test that is due to the unique political and economic setup under consideration.

(Aliero, 2013) explores the relationship between private sector credit and economic growth in Nigeria, using time series data for the period of thirty-seven (37) years (1974-2010). The dependent variable is economic growth presented by Real Gross domestic product and independent variable is Private Sector Credit. The econometric investigations are specified as:

$$Y = \beta_0 + \beta_1 PSC_t + \mu_t$$

Where: ( $Y$  = Real Gross domestic product -  $B_0$  = Constant parameter -  $PSC_t$  = Private Sector Credit -  $B_1$ = Vector coefficient of private sector credit -  $U_t$  =Stochastic disturbance term) the estimations are based on Autoregressive Distributed Lag (ARDL) bound F-test for cointegration. The results indicated that a long run

equilibrium relationship exists between private sector credit and economic growth, when private sector credit was used as dependent variable. However, causality results indicate that there is no causal relationship between private sector and economic growth in Nigeria.

(Ekone, 2010) investigates the impact of money supply on economic growth in Nigeria between 1980 and 2006. Applying econometric technique-O.L.S.E, causality test and E.C.M to time series data and the Vector Auto Regression (VAR) technique. We specify our money supply and economic growth functions as:

$$MSS = F(Ly/P, R)$$

Where MSS = money supply representing the total of demand deposits, time and savings deposit in the economy. Ly/P = log of real per – capital output as a ratio of GDP to total population R = Nominal interest rate deflated by price index. The results revealed that although money supply is positively related to growth but the result is however insignificant in the case of GDP growth rates on the choice between contractionary and expansionary money supply.

### 3.2.3 Unidirectional Causality:

(Nwaru & Okorontah, 2014) explore the significance of banks credit in stimulating output (GDP) and the factors that prompt financial intermediation within the economy, using time series data for the period (1985-2010). . The econometric investigations are specified as:

$$LRGDPg_t = \alpha_0 + \alpha_{11}LRCPSg_t + \alpha_{12}LRTXPg_t + e_t$$

$$LRCPSg_t = \alpha_0 + \alpha_{21}LRGDg_t + \alpha_{22}LRTXPg_t + \alpha_{23}LRFCIg_t + e_t$$

LRGDPg = Log of real gross Domestic product growth

LRCPSg = log of real private sector credit growth.

LRTXPg = log of Real total Export growth

LRFCIg = log of real foreign capital inflow growth.

The estimations are based on using cointegration to test for the long run relationships and the causality between two or more variables in both the long run and the short run. The results indicate that bank's credit did not affect the productive sectors sufficiently for the later to impact significantly on the Nigerian economy. It was also observed that real output causes financial development, but not vice versa, and that

export was not significant in driving financial development; but growth in financial sector was highly dependent on foreign capital inflows.

(Owolabi, Olanrewaju, & Okwu, 2013) attempt to determine the causal linkages between banking sector reforms and output growth of manufacturing sector as well as the direction of such causality. A selected sample of financial development and manufacturing output of Nigeria with annual data between 1970 and 2008 is used and cointegration and Granger-causality techniques were applied to ascertain evidence regarding this important issue. The econometric investigations are specified as:

$$MGDP_t = f(BF_t, LC_t, A_t)$$

Where MGDP is the manufacturing output growth; BF is the measure of banking reforms, LC is the lending capacity of the banking system and A represents those conditioning variables which would also determine the productivity of the invested capital. The results indicate that showed that the MDGP and banking sector reforms indicators (BF) move differently with one not predicting the other within the study period and there is a causal effect from manufacturing output growth to banking development or a bi-directional relationship

(Ndlovu, 2013) examines the causal relation between financial system development and economic growth from a Zimbabwean perspective (for the period 1980-2006). The econometric investigations are specified as:

$$GDP_t = \sum_{i=1}^n \beta_i FD_{t-i} + \sum_{i=1}^n \lambda_i GDP_{t-i} + \delta_t$$

$$FD_t = \sum_{i=1}^n \mu_i FD_{t-i} + \sum_{i=1}^n \theta_i GDP_{t-i} + \varepsilon_t$$

Where GDP is economic growth and FD is financial system development .The results indicate that existence of demand following financial development in Zimbabwe, there is unidirectional causality from economic growth to financial development. Financial system development is therefore an outcome of the pressure for institutional development in capital markets and introduction of modernized financial instruments.

(Smith, 2012) examines the role of remittances and economic growth in banking sector development in Fiji using annual data from 1980-2010. The econometric investigations are specified as:

$$\begin{aligned}\Delta \ln F_t &= \delta_0 + \lambda_1 ECT_{t-1} + \sum_{i=1}^p \phi_i \Delta \ln F_{t-i} + \sum_{i=1}^p \pi_i \Delta \ln Y_{t-i} + \sum_{i=1}^p \varpi_i \Delta \ln R_{t-i} + e_t \\ \Delta \ln Y_t &= \delta_1 + \lambda_2 ECT_{t-1} + \sum_{i=1}^p \beta_i \Delta \ln F_{t-i} + \sum_{i=1}^p \omega_i \Delta \ln Y_{t-i} + \sum_{i=1}^p \theta_i \Delta \ln R_{t-i} + e_t \\ \Delta \ln R_t &= \delta_2 + \lambda_3 ECT_{t-1} + \sum_{i=1}^p \sigma_i \Delta \ln F_{t-i} + \sum_{i=1}^p \tau_i \Delta \ln Y_{t-i} + \sum_{i=1}^p \delta_i \Delta \ln R_{t-i} + e_t\end{aligned}$$

Where: (F) is measured as credit to private sector is a more appropriate measure of financial development. (R) is measured as Workers' remittances and compensation of employees and economic growth. (Y) is measured by real GDP per capita. The causality analysis based on VAR-ECM reveals that there is short run causality from remittance to banking sector development and that in the long run; there is causality from economic growth and remittance to banking sector development. This study provides some preliminary but consistent evidence that there is causal impact of remittance flow on banking sector development in Fiji.

(Al Fara, 2012) explores (Yanique Carby, 2012) as the role of the banking sector in financing Palestinian economic development during the period (1995-2011). For the analysis, the unit root test and cointegration test and using the Engle-Granger technique. The econometric investigations are specified as:

$$GDP_t = AL^\alpha K^\beta BC^\gamma$$

$$BC_t = B_0 + B_1 GDP + B_2 POP + B_3 TDEP + B_4 RI + B_5 NB + U_i$$

Where: GDP is, L is labour, K is capital and BC is bank credit. The results generally show a causal relationship between the banking credit and the gross domestic product that each affects the other, although a larger proportion affected product in banking, where credit through study found that if GDP increased by 1%, it would increase banking credit by 1.56%, in contrast if bank credit has increased by 1% would increase GDP by only 0.19%, so the credit effect on the economy on positive way, but not the required level which ensures achieving the economic development, As well as the study showed that banking credit is linked to a positive relationship with both

gross deposits, bank branches, and population, and linked to an inverse relationship with interest rates.

(Carby, Craigwell, Wright, & Wood, 2012) use the financial system of Barbados over the period 1946 to 2011 to test the hypothesis of Patrick (1966) through the use of Granger (1969) causality tests utilizing co-integration and VECM and VAR analyses. The econometric investigations are specified as:

$$\Delta Y_t = \eta + \sum_{i=1}^{p-1} \Phi_i \Delta Y_{t-i} + \Pi \zeta_{t-1} + \rho X_t + \varepsilon_t$$

where  $\Delta$  is the first difference operator,  $Y$  is a  $n \times 1$  vector of variables consisting of real GDP and the ratio of M2 to GDP (the ratio of credit to GDP),  $X$  is a set of control variables,  $\zeta$  is a  $n \times 1$  vector of deterministic variables, and  $\Phi$  is a  $n \times n$  coefficient matrix. The results showed that causality ran unidirectional from economic growth to financial development in the short run and bi-directional in the long run throughout the entire period using a money variable

Kisu Simwaka (2012) examines the causal relationship between financial development and economic growth in Malawi during the period (1980-2010). Using the autoregressive distributed lag (ARDL) approach. The econometric investigations are specified as:

$$g_t = \alpha_0 + \sum_{i=1}^p \alpha_{1i} \Delta LRGDP_{t-i} + \sum_{i=1}^p \alpha_{2i} \Delta fin_{t-i} + \sum_{i=1}^p \alpha_{3i} \Delta CU_{t-i} + \beta_1 LRGDP_{t-1} + \beta_2 fin_{t-1} + \beta_3 CU_{t-1} + v_{1t}$$

Where  $\nabla$  the first-difference operator and  $v_t$  are is assumed to be a white-noise disturbance term.  $g_t$  is real GDP growth;  $LRGDP$  is log of real GDP growth;  $fin$  will take three different values, namely; ratio of private sector credit to GDP (PGDP), ratio of bank deposits to GDP (BGDP) and ratio of private sector credit to total domestic credit (PDOM).  $CU$  is the capacity utilization which is proxied by output gap and has been estimated by using the HP filter. The results showed that Results show that there is positive and significant relationship between financial development and economic growth in the long run. Granger causality tests show that economic growth drives financial development with no feedback effects.

(K. Sreerama Murty, 2012) (Chakraborty, 2012)

(Liang & Huang, 2011) studied the relationship between money supply and the economic output from theoretical and statistical perspectives. The suitable data set chosen consists of quarterly time series of M2 and nominal GDP of the US over the sample period from quarter one in 2000 to quarter four in 2010. The econometric investigations are specified as:

$$d(GDP)_t = C_1 + \sum_{i=1}^m a_{1i} d(GDP)_{t-i} + \sum_{i=1}^n b_{1i} d(M2)_{t-i} + e_{1t}$$

$$d(M2)_t = C_2 + \sum_{i=1}^p a_{2i} d(M2)_{t-i} + \sum_{i=1}^q b_{2i} d(GDP)_{t-i} + e_{2t}$$

The estimations are based on using a simple VAR as the original model in estimating the quantitative relationship of M2 and GDP and Granger Causality. The results showed that The Granger Causality result shows that d(M2) does not Granger Cause d(GDP), and d(GDP) Granger Cause d(M2).

(Murty, Sailaja, & Demissie, 2012) explore the long-run impact of bank credit on economic growth in Ethiopia is examined via a multivariate Johansen cointegration approach using time series data for the period 1971/72 – 2010/11. The dependent variable is economic growth presented by Real Gross domestic product and independent variables are bank credit to the private sector, deposit liabilities of banks to GDP ratio, gross secondary school enrolment, consumers price index, government final consumption to GDP ratio, and trade openness (the ratio of exports and imports to GDP), while  $e$  indicates random error term. The econometric investigations are specified as:

$$Y_t = A_t (K_t^d)^\beta (L_t)^{1-\beta}$$

$$y_t = \beta_0 + \beta_1 \ln k_t^d + \beta_2 \ln se + \beta_3 \ln pc_t + \beta_4 \ln dp_t + \beta_5 \ln p_t + \beta_6 \ln gc_t + \beta_7 \ln op_t + \varepsilon_t$$

The estimations are based on using a multivariate cointegration VAR econometric model for time series data. The results indicate that the long-run elasticity estimates are economically reasonable in terms of sign and magnitude. The first major conclusion of the study is that bank credit affects real GDP per worker through its role

of domestic capital accumulation and efficient resource allocation (efficiency) and hence, in total factor productivity in the long-run.

(Hussain & Chakraborty, 2012) examine empirically the relationship between Financial Development and Economic Growth and their causality in the context of Assam, a state in India. Using time series techniques, the stationary properties of the data sets are tested, followed by Johansen and Juselius Cointegration analysis to examine long term relationship between the two variables. The study uses time series data for the time period ranging from 1985 to 2009 (annual data sets) to test the nexus between financial development and economic growth of Assam. The variables in the study are Gross State Domestic Product (GSDP) and a Financial Development indicator (IFD) which includes (1) the number of bank branches per thousand population (NB), (2) The ratio of outstanding credit of all the scheduled commercial banks of the state to the different sectors to the GSDP (ROTG), (3) The share of the financial system in GSDP (SIG), and (4) credit-deposit ratio of all scheduled commercial banks of Assam (CDR). The econometric investigations are specified as:

$$F_j = W_{j1}Y_1 + W_{j2}Y_2 + \dots + W_{jp}Y_p$$

Where  $W_j$  is the factor score co-efficient and  $p$  is the number of variables. The study finds a co-integrating relationship between them. Further, Granger causality tests suggest that Financial Development causes Economic Growth in case of Assam.

#### **3.2.4 Bi-directional causality:**

(Fosu, 2013) explores the relationship between financial development and economic growth in twenty eight African Countries from 1975 to 2011. Westerlund cointegration and GMM dynamic panel techniques are used to examine the causal links between financial development and growth. The econometric investigations are specified as:

$$Y_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 X_{it} + \alpha_{it} + \mu_{it}$$

Where  $i$  and  $t$  denote country and time respectively,  $Y$  is GDP per capita,  $FD$  is financial development,  $X$  is a vector of control variables,  $\beta$  measures the effect which financial development and the other factors have on economic growth,  $\alpha$  captures the country-specific effect which varies across individual countries and  $\mu_t$  is the error

term. The results suggest that there exist long-run relationship between financial development and economic growth. Financial development leads to economic growth when domestic credit provided by the banking sector is used as a proxy for financial development. The result provides evidence that there exist bidirectional causality between financial development and growth

(Yazdi & Khanalizadeh, 2013) examine the causal relationship between the dynamic financial development, economic growth and instability in Iran using annual time series covering the period 1970-2011. In this study, we apply a time-series analysis (ARDL and Granger causality) the econometric investigations are specified as:

$$GDP_t = f(FD_t, GC_t, INF_t, TR_t).$$

Where: GDP is gross domestic product, FD is financial development, GC is General government final consumption expenditure (% of GDP). , INF is inflation rate and TR is trade openness of the economy. The results of the model used suggest that there is bidirectional causality between agricultural economic growth and financial development.

(Guttentag, 2011) investigates the nature and direction of the causal relationship between financial development and economic growth for the specific case of Bolivia. adopts a time series approach and performs Granger-causality tests within a cointegration and Vector Error Correction Model (VECM) framework. For this purpose, a pentavariate Vector Autoregressive (VAR) system is constructed using annual data for the period 1962-2009. The model is estimated twice with two different proxies of financial development: the ratio of credit to the private sector to GDP, and the ratio of Money and Quasi-Money (M2) to GDP. Economic growth is measured by GDP per capita, and three non-financial variables are also considered in order to control for omitted variable bias. Then, the Impulse-Response Function (IRF) and Variance Decompositions (VDCs) analysis are carried out. The econometric investigations are specified as:

$$x_{1t} = \mu_1 + \rho_{11}x_{1t-1} + \rho_{12}x_{2t-1} + \varepsilon_{1t}$$

$$x_{2t} = \mu_2 + \rho_{21}x_{1t-1} + \rho_{22}x_{2t-1} + \varepsilon_{2t}$$

Where  $\mu_1$  and  $\mu_2$  are constant drifts,  $\beta$  is a set of parameters to be estimated, and  $\varepsilon_{1t}$  and  $\varepsilon_{2t}$  are residual terms with mean zero and constant variance. The results showed that the existence of a stable long-run relationship between financial development measures and economic growth. After controlling for the set of non-financial variables, results show opposite causality patterns between the two models. There is evidence of a weak unidirectional Granger-causality running from credit to growth. There is also evidence for a unidirectional causality flowing from growth to M2. However, given that the two financial development proxies capture different dimensions of the financial system.

(Jordaan, 2010) examines the causal relationship between financial development and economic growth. Granger causality through cointegrated vector autoregression methods (VAR) and (VECM) is applied to test the causality between these economic factors in Botswana for the period 1977-2006. The study uses two proxies for financial development: ratios of bank deposit liabilities to nominal nonmineral GDP (LNDEPLIAB), and credit extended to the private sector to nominal nonmineral GDP (LNPRIVGDP). Although most studies in the literature use proxies for financial development that are standardized by GDP, this study uses non-mineral GDP instead because the mining sector in Botswana uses little credit as explained in Section. The econometric investigations are specified as:

$$FINA_t = \alpha_0 + \alpha_1 GDP_t + \varepsilon_{1t}$$

$$GDP_t = b_0 + b_1 FINA_t + \varepsilon_{2t}$$

The paper finds evidence of supply-leading and demand-leading views. When the ratio of deposit liabilities to non-mineral GDP is used as a proxy for financial development, the causality runs from financial development to economic growth, which supports Schumpeter's supply-leading view. Causality runs from economic growth to financial development when the ratio of private sector credit to non-mineral GDP is used as a proxy for financial development; thus, supporting the demand-leading view.

(Egbetunde & Akinlo, 2010) examine the long run and causal relationship between financial development and economic growth for ten countries in sub-Saharan Africa. The study is carried out for ten sub-Saharan African countries for the period 1980-2005. The ten sub-Saharan African countries covered in the study are Central African Republic, Chad, Congo Republic, Gabon, Kenya, Nigeria, Sierra Leone, South Africa, Swaziland and Zambia. Using the vector error correction model (VECM), In this study, we measured per capita real output as the ratio of real Gross Domestic Product (GDP) to total population (denoted as Y). Financial development (F) is measured as a ratio of broad money (M2) to GDP. Real per capita capital stock (denoted as K) is proxied by the ratio of total capital stock to total population. Real interest rate is denoted as (R). The econometric investigations are specified as:

$$\Delta X_t = \mu + \sum_{i=1}^{\rho-1} \Gamma_i \Delta X_{t-i} + \Pi X_{t-1} + \varepsilon_t$$

Where  $X_t$  is an  $(n \times 1)$  column vector of  $\rho$  variables,  $\mu$  is an  $(n \times 1)$  vector of constant terms,  $\Gamma$  and  $\Pi$  represent coefficient matrices,  $\Delta$  is a difference operator, and  $\varepsilon_t \sim N(0, \Sigma)$ . The results show that financial development Granger causes economic growth in Central African Republic, Congo Republic, Gabon, and Nigeria while economic growth Granger causes financial development in Zambia. However, bidirectional relationship between financial development and economic growth was found in Kenya, Chad, South Africa, Sierra Leone and Swaziland. The results show the need to develop the financial sector through appropriate regulatory and macroeconomic policies. However, in Zambia emphasis needs to be placed on economic growth to propel financial development.

### **3.2.5 Negative Causality: (from Bank Lending (BL) to Economic Growth (EG)):**

(Ben-Naceur, De Groen, & Ayadi, 2013) explore the relationship between financial sector development and economic growth, using a sample of northern and southern Mediterranean countries (Algeria, Egypt, Israel, Jordan, Lebanon, and Libya. Morocco, Palestine, Syria. Tunisia and Turkey) for the years 1985-2009. The dependent variable is economic growth (Growth) and it is defined as the log

difference of real GDP per capita. Five measures of financial development are used in this study (The amount of bank credit to the private sector (as % of GDP), The share of bank deposits (as % of GDP), Stock market capitalisation (as % of GDP), stock market total value traded (as % of GDP) and Stock market turnover to measure the liquidity of the stock market ) The econometric investigations with panel data, are specified as:

$$\Delta \text{Log real GDP per capita}_{i,t} = \alpha_0 + \gamma FD_{i,t} + \beta' X_{i,t} + \varepsilon_{i,t}$$

where: FD is the financial development variables,  $X$  is a vector of control variables and  $s$  is the number of lag-years. The estimations are based on fixed effect panel regressions but other estimators were used such as fixed effect with time dummies, random effects and GMM models, however the fixed effects give the most robust results The results on the large sample indicate that credit to the private sector and bank deposits are in many specifications negatively associated with growth, meaning that there are problems of credit allocation in the region and weak financial regulation and supervision.

(Gani & Musa, 2013) explore the long run relationship between financial development indicators and economic growth in Nigeria over the period 1970-2010. The econometric investigations are specified as:

$$\begin{aligned} \Delta \ln(GDP)_t = & \beta_0 + \sum_{i=1}^p \beta_1 \Delta \ln(GDP)_{t-i} + \sum_{i=1}^p \beta_2 \Delta \ln(RCG)_{t-i} + \sum_{i=1}^p \beta_3 \Delta \ln(RLG)_{t-i} \\ & + \sum_{i=1}^p \beta_4 \Delta \ln(TGE)_{t-i} + \sum_{i=1}^p \beta_5 \Delta \ln(GFCF)_{t-i} + \sum_{i=1}^p \beta_6 \Delta \ln(TTR)_{t-i} + \sum_{i=1}^p \beta_7 \Delta \ln(IRS)_{t-i} + \delta ECT_{t-1} + \eta_t \end{aligned}$$

Where  $\Delta$  is the difference operator,  $p$  is the optimal lag length,  $\ln$  is natural logarithm sign. GDP= Real GDP, RCG= ratio of private credit to GDP, RLG= ratio of banking sector liability to GDP, TGE= total government expenditure, GFCF= gross fixed capital formation and TTR= openness or trade. IRS is the interest rate spread which is not logged because it is a rate, ECT is the error correction term and  $\delta$ = is its coefficient and finally  $\eta$ = is the error term of the model. The estimations are based on a cointegration and Vector Error Correction Modelling (VECM). The results revealed that the credit to private, government expenditure and interest rate spread exert negative influence on growth in the long run. This might be as a result of the fact that, private credit in Nigeria is marred by high interest rate, lop-sidedness in credit

allocation in favour of few sectors and the willingness of banks to commit a substantial part of their funds to financing government through the purchase of treasury bills.

(Maduka & Onwuka, 2013) explore the both the long run and short run relationships between financial structure and economic growth using time series data (cover the period 1970–2008). The presence of a unit root in the time series data was tested using Augmented Dickey–Fuller and Philips–Perron tests. The long run relationship among the variables is estimated using Johansen and Juselius (1990) maximum likelihood procedure. While the vector error correction model is used to estimate short run the dynamic coefficients.

$$\ln PCG = \alpha_0 + \alpha_1 \ln FDI + \alpha_2 \ln DI + \alpha_3 \ln HDI + \alpha_4 \ln FD + \alpha_5 \ln GOVEX + \alpha_6 \ln INFLR + \alpha_7 \ln RER + \alpha_8 \ln POPR + v_t$$

Where, PCG is per capita GDP, FDI is foreign direct investment, DI is domestic investment, HDI is a human capital index, FD represents all the financial deepening variables used in the study- (M2, PCR, LLY, BANK, PCRMB, BTOT and GOVEX) are government expenditure, INFLR is the inflation rate, RER is the real exchange rate, POPR is the population growth rate. The main results reveal that financial market structure has a negative and significant effect on economic growth based on Nigeria data.

(Popa & Andreea, 2013) explore the relationship between financial development and economic growth in Central and Eastern Europe (Bulgaria, Estonia, Czech Republic, Hungary, Latvia, Lithuania, Poland, and Romania. Slovenia and Slovakia were excluded from analysis due to incompleteness of data series available.). Financial development is measured by broad money growth (annual %), domestic credit to private sector (% GDP), domestic credit to private sector (% GDP) annual growth, interest rate spread (lending rate minus deposit rate, %) and nonperforming loans (% total loans) and annual growth in GDP growth rates. Methodologically, we used a panel model for eight countries in Central and Eastern Europe for the period 1996 - 2011 (the date panel approach). ) The econometric investigations with panel data, are specified as:

$$\text{GDPcap}_{i,t} = \beta + \alpha_{i,t} X_{i,t} + \delta_{i,t} + \gamma_{i,t} + \varepsilon_{i,t},$$

Where: GDP capita is the dependent variable and shows the real growth in country  $i$  at time  $t$ ;  $\beta$  is the coefficient for constant term;  $X_{i,t}$  is the vector of explanatory variables of the model;  $\alpha_{i,t}$  is the coefficient of explanatory variables (Nonperforming CR, Private credit, M2\_growth, Interest rate spread);  $\varepsilon_{i,t}$  are error terms, random variables;  $\delta_{i,t}$  and  $\gamma_{i,t}$  are the values of cross-section or period specific effects (random or fixed). The main conclusions of the paper are: (1) increase nonperforming loans and interest rate spreads negatively affect economic growth, (2) increase in domestic credit to private sector negatively affect GDP growth, but increase its growth rate positively affects GDP (3) broad money growth is less relevant for economic growth.

(Taha, Anis, & Hassen, 2013) explore the impact of banking intermediation on the economic growth in ten countries in the MENA region over the period 1990–2009 using the method of GMM estimation for dynamic panels. The econometric investigations with panel data are specified as:

$$y_{it} = \alpha y_{it-1} + \beta X_{it} + \eta_i + \varepsilon_{it}$$

Where  $i, t$  index the country and year, respectively,  $X$  is the matrix of the control variables,  $\eta$  represents the individual specific effects,  $\varepsilon$  is an error term. The results generally show a negative correlation between all variables of banking intermediation and economic growth. While, all variables of banking intermediation are positively correlated with each other.

### 3.3 Discussion of Related Literature:

Number of related literatures in this study is: 24 and they are categorized according to the causality between the bank lending and economic growth as shown in figure (3-4):

## Bank Lending & Economic Growth

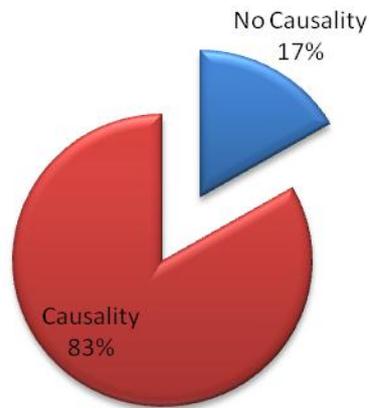


Figure 3-4 Causality between Bank Lending and Economic Growth.

As shown in figure (3-4) above there are 17 percent of literatures indicate no causality relationship and 83 percent of literatures indicate causality relationship.

## Bank Lending & Economic Growth

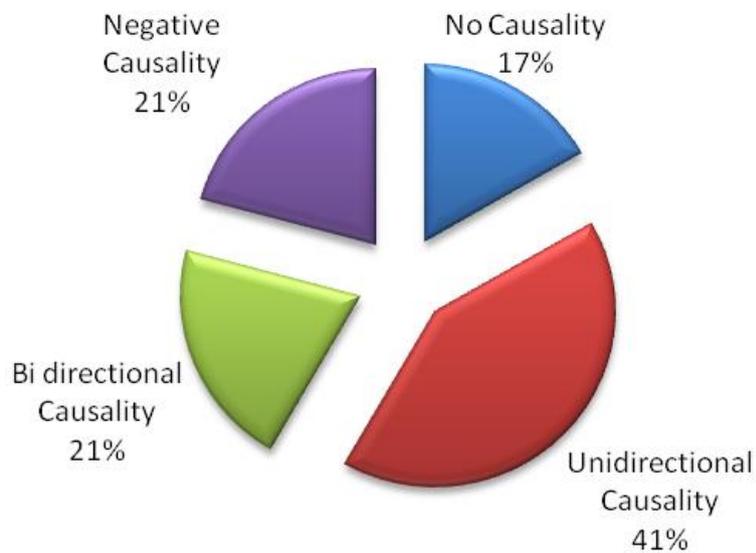


Figure 3-5 Causality between Bank Lending and Economic Growth.

As shown in figure (3-5) above, most of literatures of the study are unidirectional causality with 41 percent, followed by Negative causality and Bi

directional causality with 21 percent for each, then No causality with 17 percent of literatures.

The issue date of all the literatures in this study is between 2010 - 2014. And the countries they covered are as the following in figure (3-7):

Negative	Bi directional	Supply led	Demand following	No Causality
<ul style="list-style-type: none"> <li>•Mena countries</li> <li>•Central &amp; East Euorpe</li> <li>•Nigeria</li> <li>•Nigeria</li> <li>•Mediterian</li> </ul>	<ul style="list-style-type: none"> <li>•Sub saharan Africa</li> <li>•Botswana</li> <li>•Bolivia</li> <li>•Iran</li> <li>•Africa</li> </ul>	<ul style="list-style-type: none"> <li>•India</li> <li>•Ethiopia</li> </ul>	<ul style="list-style-type: none"> <li>•Malawi</li> <li>•USA</li> <li>•Barbados</li> <li>•Palestine</li> <li>•Fiji</li> <li>•Zimbabwe</li> <li>•Nigeria</li> <li>•Nigeria</li> </ul>	<ul style="list-style-type: none"> <li>•Nigeria</li> <li>•Nigeria</li> <li>•Saudi Arabia</li> <li>•South Africa</li> </ul>

Figure 3-6 Related Literatures Countries.

A host of studies has examined the impact of bank lending on economic growth. The exploration of this relationship has been approached with a variety of methods. Some of these studies used cross-country regressions, others employed panel data, and many used time-series analysis. The main comments on related literatures are:

Majority of the available time series studies are subject to omitted variable problems. In the light of limited data points available for most developing countries, most studies typically specify a time series model, whether a single equation or simultaneous equations, with usually not more than four variables. This involves a real income variable ( $Y_t$ ), a financial development indicator ( $F_t$ ) and some control variables ( $Z_{it}$ ), such as real interest rate, inflation, investment, etc.

All studies share in the dependent variable which is Real GDP (Economic Growth) and the independent variables are different in numbers and type which in turn explains the theory adopting and the data availability. It is assumed that these variables could also have an impact on economic growth. The omission of these variables could therefore bias the direction of causality between bank lending and economic growth.

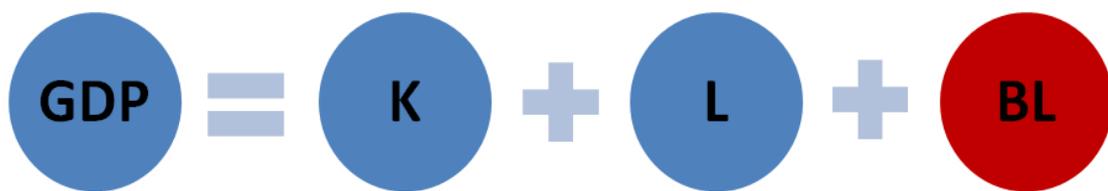
Econometrics literatures propose different methodological alternatives to empirically analyse the long - run relationships and dynamic interactions between two or more time-series variables. The most widely used methods include the two-step procedure of Engle and Granger (1987) and the full information maximum likelihood - based approach due to Johansen (1988) and Johansen and Juselius (1990). The bounds testing approach to co integration is of a newly developed approach to co integration that has become popular in recent years.

# Chapter 4

## 4 Research Methodology

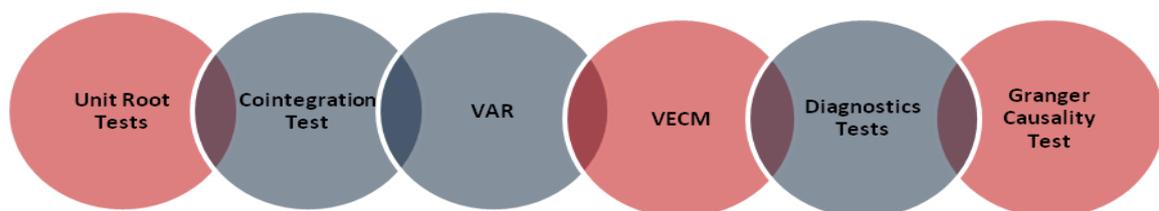
### 4.1 Introduction

We examine the impact of bank lending on economic growth during the period from 1996 to 2013 by using the production function model and adapt it with Schumpeter's view.



### 4.2 Scope of the Analysis

In testing the dynamic relationship between bank lending and economic growth, we will apply a qualitative approach consists of an econometric model using time series data between 1996 and 2013. A set of econometrics procedures and test will be applied by using Eviews 7 software. These tests are: time series analysis procedures: the unit root test of variables, Cointegration Tests, Lag Order Selection, VAR model estimation, VECM procedures, Wald Test, diagnostic tests and the Granger causality test.



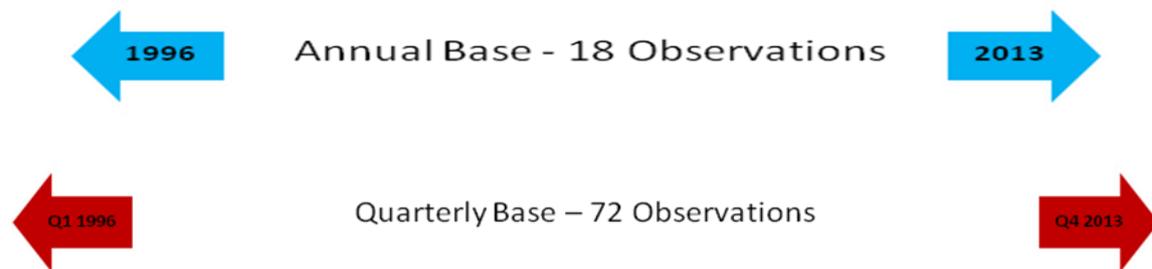
### 4.3 Source of Data:

The study gathered time series annual data for the period covering 1996 to 2013 from PMA and PCBS. The year 1996 was selected as the start of the sampling period due to data availability for all of the variables. The choice of annual data is also due

availability. These data converted from annual base to quarterly base to be (Q1 1996 – Q4 2013), 72 observations. we used EViews 7 software, frequency conversion options (Low to Higher frequency data which is Quadratic-match average: This performs a proprietary local quadratic interpolation of the low frequency data to fill in the high observations).

#### 4.4 Sample Size:

The variables used in this study are annually data. The period of study covering from 1996 to 2013 includes 18 observations. . These data converted from annual base to quarterly base (Q1 1996 – Q4 2013) to become 72 observations by using frequency conversion options (Low to Higher frequency data) available through EViews 7 software. This procedure was applied in many previous works using time series data such as (Safi, Meqdad, & Altaweel, 2014), (Arouri, Uddin, Nawaz, Shahbaz, & Teulon, 2013), (Abu maallah & Odeh, 2012), (Obiora, 2009) (Obiora, 2009) and (Seleteng, 2004).



#### 4.5 Description of Variables:

The variables of study shown in figure (4-1) and described in table (4-1) as the following:

Table 4-1 Variable Specification

<b>Research Variables</b>	
<b>Dependent Variable</b>	<b>Independent Variable</b>
<b>Economic Growth (Real GDP)</b>	<b>Labor (L)</b>
	<b>Gross capital formation (K)</b>
	<b>Bank lending (BL)</b>

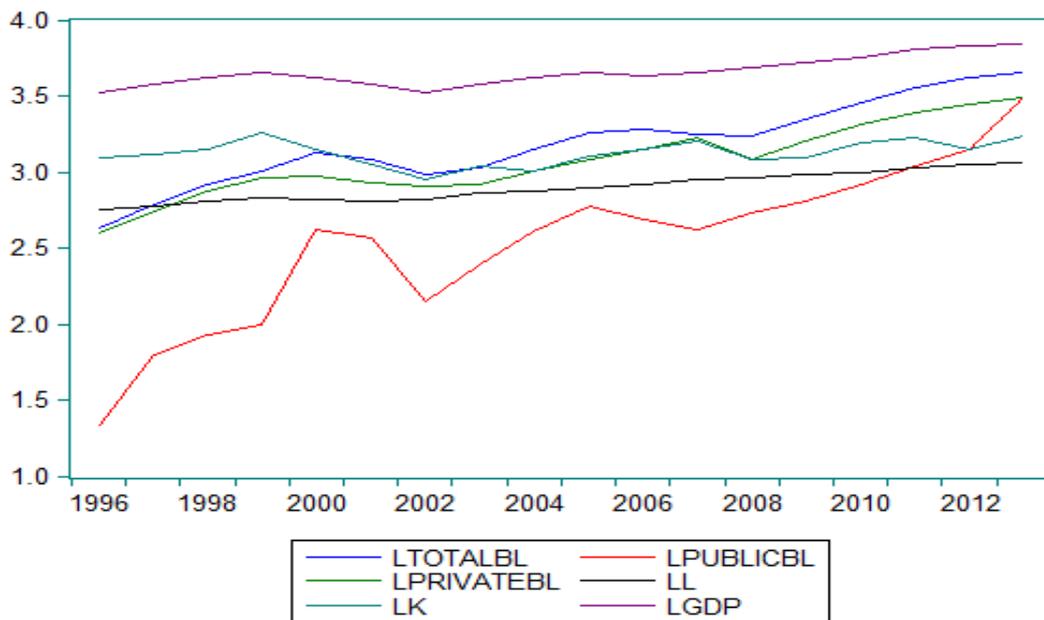


Figure 4-1 variables of study

#### 4.5.1 Economic Growth:

According to the definition of PCBS (2013), Gross Domestic Product or GDP is intended to be a measure of the value created by the productive activity of resident institutional units during a certain period in time. Estimate of GDP, like the output and the value added, can vary according to taxes and subsidies taken into consideration. GDP is usually estimated at market prices, producers' prices, or basic prices. There are three approaches to estimate the GDP: Output or Production approach, Expenditure approach, and Income approach.

Annual Real GDP of Palestine over the period of 1996 to 2013 as shown in figure (4-2):

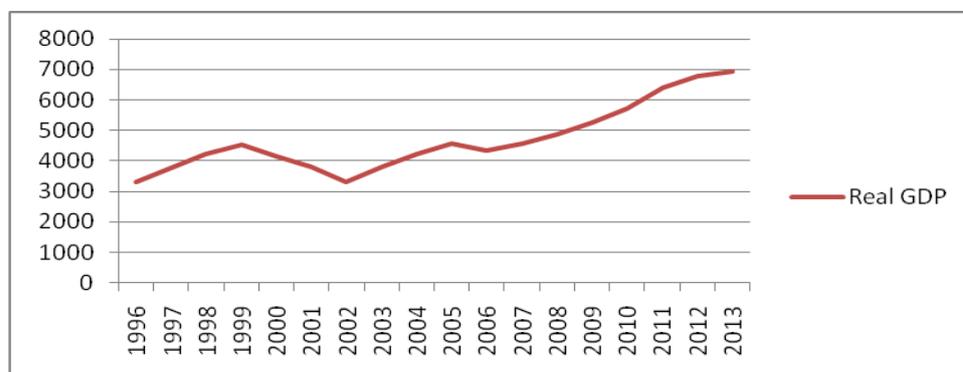


Figure 4-2 Annual Real GDP of Palestine over the period of 1996 to 2013 (source: PMA, 2014)

#### 4.5.2 Bank Lending:

Distribution of bank lending by economic activities are not the same over the period of study. Over the period from 1996 to 2007, bank lending was distributed in two main categories (bank lending for public sector and bank lending for private sector which includes 11 economic activities) on the other hand bank lending distributed over the rest of study period by different economic activities (bank lending for public sector and bank lending for private sector which includes 14 economic activities) as shown below:

#### Total Bank Lending

##### Public Bank Lending including:

1. PNA
2. PLA
3. None Financial Public Institution

##### Private Bank Lending including:

1. Agriculture
2. Industry & Mining of which
3. Construction
4. General Trade
5. Transportation Services
6. Tourism, Hotels, and Restaurants
7. General Services
8. Financial Services
9. Purchase of Securities
10. Miscellaneous

##### Public Bank Lending including:

1. PNA
2. PLA
3. None Financial Public Institution

##### Private Bank Lending including:

1. Real Estate and Constructions
2. Land Development
3. Mining and Manufacturing
4. Local and Foreign Trade Finance
5. Agricultural and food processing
6. Tourism, Hotels, Restaurants, Swimming
7. Transportation
8. Business and Consumer Services
9. Financial Services
10. Other Public Services
11. Securities purchasing and Carrying
12. Cars & Vehicles Finance
13. Consumptions
14. Others in Private Sector



According to data available we categorize the bank lending as the following:

- Total Bank Lending
- Bank Lending for Public Sector
- Bank Lending for Private Sector

Annual Bank Lending in Palestine as categorized above over the period of 1996 to 2013 as shown in figure (4-2):

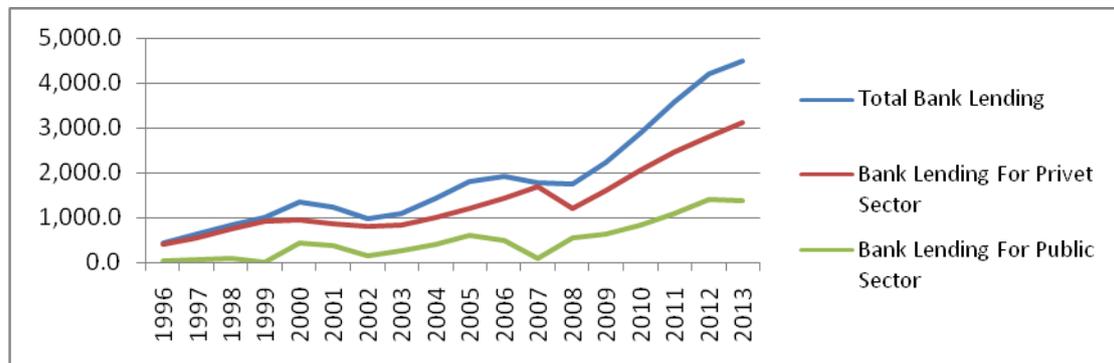


Figure 4-3 Bank Lending in Palestine over the period of 1996 to 2013 (source: PMA, 2014)

### 4.5.3 Labor:

According to the definition of PCBS: Labour Force Survey (2013), Persons aged 15 years and over who were at work at least one hour during the reference period, or who were not at work during the reference period, but held a job or owned business from which they were temporarily absent. Employed persons are classified according to labour force status as shown in figure (4-4) :

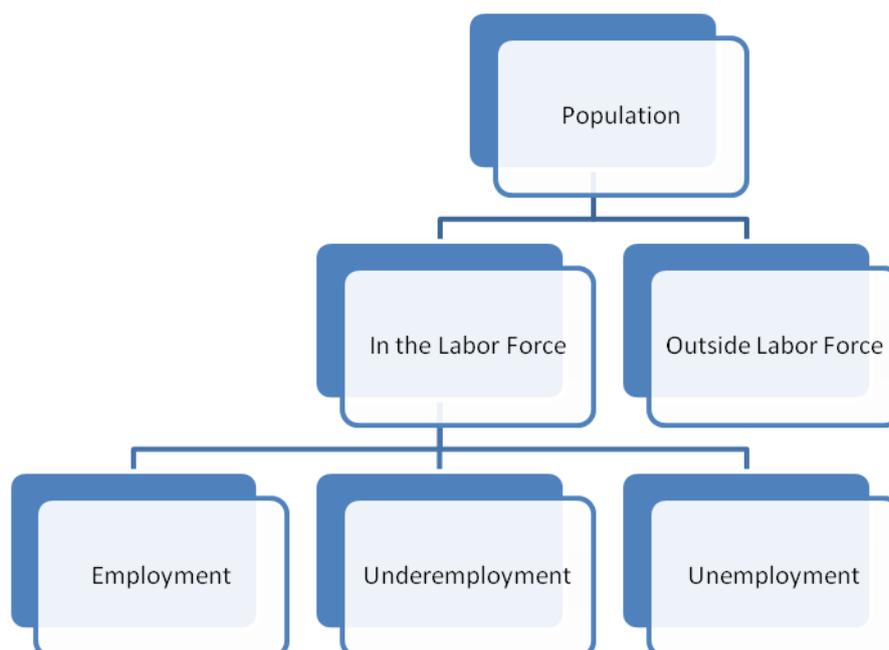


Figure 4-4 Labour Force Status (source: PCBS, 2013)

### **Employment:**

Persons in employment comprise all persons above a specified age who during a specified brief period, either one week or one day, were in the following categories: paid employment; self employment.

In this study we will focus on Employment as indicator for Labour Force in Palestine which is defined by PCBS: Persons in employment comprise all persons above a specified age who during a specified brief period, either one week or one day, were in the following categories: paid employment; self employment. According to this definition employment in percentage over the period (1996 - 2013) shown in figure (4-5) below as the following:

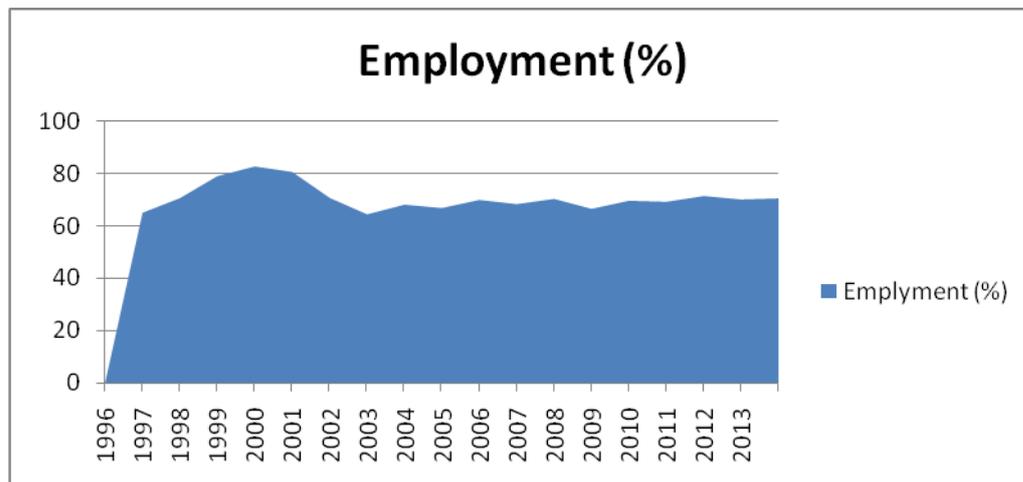


Figure 4-5 Employment in percentage over the period of 1996 – 2013 (source: PCBS, 2013)

#### **4.5.4 Gross Capital Formation:**

According to the definition of PCBS (2013), gross capital formation is the total value of producers acquisitions less disposals of fixed asset during the accounting period plus certain addition to the value of non-produced assets released by the productive activity of institutional units, fixed assets are tangible or intangible assets produced as from process of production that are themselves used repeatedly or continuously in other process of production for more than one year.

Gross Capital Formation over the period of 1996 – 2013 shown in figure (4-6) below as the following:

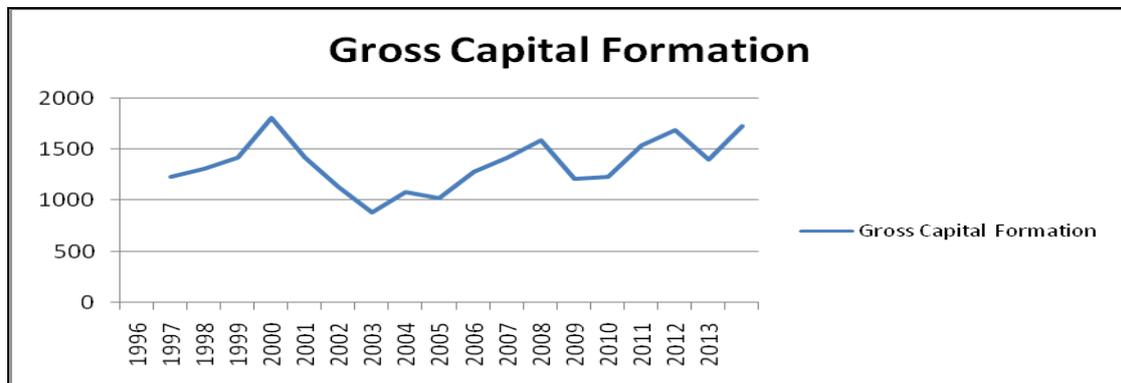


Figure 4-6 Gross Capital Formation over the period of 199 – 2013 (SOURCE: PMA, 2014)

## 4.6 Methodology:

### 4.6.1 Introduction:

This study intends to examine the impact of bank lending on economic growth during the period from Q1 1996 to Q4 2013. The model equation will be as the following:

$$\text{Log}(GDP_t) = \beta_1 \text{Log}(K_t) + \beta_2 \text{Log}(L_t) + \beta_3 \text{Log}(BL_t) + \varepsilon_t \quad (2)$$

Or

Where:

$\text{Log}(GDP_t)$  : The natural logarithm of the real GDP

$\text{Log}(K_t)$  : The natural logarithm of the Gross Capital Formation.

$\text{Log}(L_t)$  : The natural logarithm of the percentage Labour.

$\text{Log}(BL_t)$  : The natural logarithm of Bank Lending.

Also we will test the hypothesis of causal relationship between both Private and Public Bank Loans and GDP. The models will be as the following:

$$\text{Log}(GDP_t) = \beta_1 \text{Log}(K_t) + \beta_2 \text{Log}(L_t) + \beta_3 \text{Log}(\text{Private } BL_t) + \varepsilon_t \quad (3)$$

$$\text{Log}(GDP_t) = \beta_1 \text{Log}(K_t) + \beta_2 \text{Log}(L_t) + \beta_3 \text{Log}(\text{Public } BL_t) + \varepsilon_t \quad (4)$$

Since time series variables normally exhibit non-stationary and their linear combination can be stationary, we first subject each series to the standard unit root and cointegration tests. In the study, we apply the widely used augmented Dickey Fuller (ADF) unit root test to determine the variables' stationarity properties or integration orders. To see whether they share a common path over the long run, i.e. whether they are cointegrated, we adopt a VAR-based cointegration test as suggested by Johansen (1988) and Johansen and Juselius (1990). With the finding of cointegration, we first estimate their long run relation. Then, the dynamic interactions among the variables are evaluated using the vector error-correction model (VECM). Apart from the Granger causality tests, we also simulate impulse-response functions to further assess the variables' dynamic interactions.

#### 4.6.2 Stationarity Test (Unit Root Test)

In order to determine the relationship unit root tests are important in detecting the stationary behaviour of a time series data. If the data is non stationary after first difference it means that the data follows a random walk and according to the Gauss-Markov theorem the series will not have a finite variance. In this case the ordinary least squares (OLS) will not yield consistent bound estimates. This study used test of unit root on the time series data which is the Augmented Dickey-Fuller test (ADF)

While the equation with trend and intercept is as under:

$$\Delta X_t = \beta_0 + \beta_1 t + \beta_2 X_{t-1} + \sum_{i=1}^{k-1} \beta_i \Delta X_{t-i} + \varepsilon_t \quad (5)$$

For the model the Null and Alternative hypothesis are given as under,

H0:  $\beta_2 = 0$  Data is Non Stationary

H1:  $\beta_2 < 0$  Data is Stationary

The H0 hypothesis has a unit root that mean that data is non stationary and H1 hypothesis do not contain a unit root so data is stationary. In order to determine the presence of unit root problem, t-statistics and p- values are computed and matched with critical values at levels and first difference. If the critical values are more than t-

statistic at levels that mean that we cannot reject the null hypothesis and the data is non-stationary. While at first difference if the t-statistics is greater than the critical values at first difference we reject  $H_0$  that mean data is stationary.

We can find two motives behind unit root tests. The first knows the order of integration is crucial for setting up an econometric model and do inference. The second motive is that economic theory suggests that certain variables should be integrated a random walk or a martingale process. In this situation, it is motivated to perform very detailed tests, and take great care in finding exact critical values. The unit root test is motivated by theory; it will be one test in combination with other tests. In this case, unit root tests are mainly a descriptive tool performed to classify series as stationary and non-stationary.

#### **4.6.3 Lag Order Selection Criteria:**

The second step involves the determination of lag lengths to be included in the cointegration test and subsequent VECM. The choice of lag length is determined by using the Akaike information criterion (AIC), Schwartz Bayesian criterion (SBC) and Hannan-Quinn information criterion (HQ).

#### **4.6.4 Test for Co-integration:**

When the issue of unit root has been established now the co-integration test shall be applied. Co integration describes that, even though the variables under study are non-stationary individually but the linear relation between two or more may still be stationary. Granger (1981) theory of co integration extended by Engle and Granger (1987) examines the long run relation by co integrating short term and long term relationship. If co-integration exists that would mean that there is a long run linear relationship among variables. This study uses multivariate co-integration method by Johansen and Juselius (1990). Some of the advantages of the Johansen's procedure are as the following:

- It can estimate more than one cointegration relationship, if the data set contains two or more time series;
- It permits the testing of cointegration as a system of equations in one step;
- Do not carry over an error from one step into the rest ;
- It does not require the prior assumption of endogeneity or exogeneity of the variables (Bashir, 2003);

- Gonzalo (1994) concludes that Johansen’s approach performs better than the other approaches even when the errors are not normally distributed, or the dynamics of the vector error-correction model (VECM) are unknown, and additional lags are included in the VECM;
- And Hargreaves (1994) compares Johansen’s approach to other methods of estimating long-run relationships and concludes that the Johansen’s method is the best if the sample size is fairly large (about 50 observations or more), the model is well specified, and the residuals are not highly auto correlated.

This method tests the long term relationship among the non-stationary variables and hence tells the number of co-integrating vectors among the variables under study. Johansen test produces two types of statistical results the first one is Unrestricted Co-integration Rank Test (Trace) and the second is Unrestricted Co-integration Rank Test (Maximum Eigenvalue). Trace test with H0 that there is at most “S” co-integrated equations and H1 that there is “S” or more co-integrating vectors. The other is Max-Eigen statistics with H 0 that there exist “x” co-integrating vectors against H1 hypothesis of x +1 co-integrating vectors. Johansen co-integration is sensitive towards lag length selection so this study uses optimum lag length. Johansen’s methodology takes its starting point in the vector auto regression (VAR) of order  $p$  given by:

$$\Delta X_t = \beta_1 \Delta X_{t-1} + \dots + \beta_{p-1} \Delta X_{t-p-1} + \beta_p X_{t-1} + \varepsilon_t \quad (6)$$

The study has made decisions on the basis results of trace statistic and Maxeigen values obtained from applying Johansen co integration test.

We adopt, in this study, Johansen and Jueslius approach as in the following studies: (Nasir, Ali, & Khokhar, 2014), (Precious & Palesa, 2014), (Gani & Musa, 2013), (Maduka & Onwuka, 2013), (Murty, Sailaja, & Demissie, 2012), (Hussain & Chakraborty, 2012), (Yazdi & Khanalizadeh, 2013), (Jordaan, 2010), (Egbetunde & Akinlo, 2010), (Ndlovu, 2013) and (Carby, Craigwell, Wright, & Wood, 2012).

#### **4.6.5 The vector autoregressive (VAR) Model :**

The vector autoregressive (VAR) model as considered in this study is:

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_p Y_{t-p} + \varepsilon_t \quad (7)$$

Where  $Y_t = \begin{bmatrix} \text{Log}(GDP_t) \\ \text{Log}(K_t) \\ \text{Log}(L_t) \\ \text{Log}(BL_t) \end{bmatrix}$  is a k-vector of non stationary I(1) endogenous

variables(here k=4),  $A_1, A_2, \dots, A_p$  are matrices of coefficients to be estimated and  $\varepsilon_t$  is a vector of innovations that may be contemporaneously correlated but are uncorrelated with their own lagged values and uncorrelated with all of the right hand side variables.

#### 4.6.6 Vector Error Correction Model (VECM):

If in the results the set of variables are all of the order of I (1), we should not estimate them using ordinary regression analysis as there may be one or more equilibrium relationships between them. If the study finds in Johansen co integration to have one or more co-integrating vectors then the appropriate estimation method is a VECM. This technique rectifies to both short term variations in variables and divergences from equilibrium. The following is the general equation for the VECM:

$$\begin{aligned} \Delta GDP_t = & \beta_0 ECT + \sum_{i=1}^{p-1} \beta_{1i} \Delta GDP_{t-i} + \sum_{i=1}^{p-1} \beta_{2i} \Delta K_{t-i} + \sum_{i=1}^{p-1} \beta_{3i} \Delta L_{t-i} \\ & + \sum_{i=1}^{k-1} \beta_{4i} \Delta BL_{t-i} + \varepsilon_t \end{aligned} \quad (2)$$

Where p is the optimum lag number and ECT is the error correction term. If the coefficient ( $\beta_0$ ) of the ECT is negative and significant at the same time, then we can find the adjustment speed or the speed to reach the equilibrium, and we can emphasize causality in the long run, then using the Wald test we can determine the significance of explanatory variables to emphasize causality in the short run in the statistical model.

If the coefficient of test is a negative value and is significant at the same time than we can find the short run relationships by taking the coefficients of independent variables and applying a Wald test to ensure results. The study has used the Wald test is to determine the significance of explanatory variables in the statistical model.

Wald test is a statistical tools used for parametric analysis. Where an association among data variables can be stated as a statistical model in order to estimate parameters from a sample, this test can be applied to check the true value of the parameter based on the available sample estimate.

#### 4.6.7 Granger Causality Test :

After finding co-integration from Johanson results the study applied granger causality test in order to determine the direction of causality. Granger causality may have more to do with prediction, than with causation in the usual sense. It suggests that while the past can cause/predict the future, the future cannot cause/predict the past. According to Granger, X causes Y if the past values of X can be used to predict Y more accurately than simply using the past values of Y.

The traditional Granger test for testing causality between Bank Loans (BL) and economic growth (GDP) can be represented as follows:

$$GDP_t = \sum_{i=1}^p \beta_i BL_{t-i} + \sum_{i=1}^p \lambda_i GDP_{t-i} + \delta_t \quad (9)$$

$$BL_t = \sum_{i=1}^p \mu_i BL_{t-i} + \sum_{i=1}^p \theta_i GDP_{t-i} + \varepsilon_t \quad (10)$$

Where  $\delta_t$  and  $\varepsilon_t$  are uncorrelated.

## Chapter 5

### 5 Estimation of Results

#### 5.1 Introduction:

We will introduce the results of estimation for the model of the study. We used time series analysis procedures: the unit root test of variables, Co integration Tests, VAR model estimation, Lag Order Selection, VECM procedures with Wald Test, diagnostic tests and the Granger causality test.

#### 5.2 Unit Root Tests:

Table (5-2) shows the results of unit root test indicating that at levels null hypothesis of no unit root cannot be rejected because the value of t-statistics is fewer than the critical value and p-value is insignificant in Augmented Dickey-Fuller (ADF) test. This is not the case at first difference where the t-statistic is greater than the critical values and the p-values are significant so the null hypothesis rejected at their first difference. Consequently all the variables are stationary and integrated which means they are of the order one  $I(1)$  as show in figure (5-1).

**Table 5-1** Unit Root Test

Series	$H_0$ :unit roots $I(1)$			$H_0$ :unit roots $I(0)$		
	Log level			First difference		
	Test statistics	Critical value	p-value	Test statistics	Critical value	p-value
GDP	0.854145	-1.945823	0.8923	-2.228159	-1.945823	0.0260
TOTALBL	1.298411	-1.945525	0.9497	-2.620761	-1.945525	0.0094
K	0.553814	-1.945823	0.8333	-2.763163	-1.945823	0.0064
L	-0.153110	-1.945823	0.6271	-2.358341	-1.945823	0.0188
Private BL	1.552725	-1.945823	0.9694	-2.325434	-1.945823	0.0204
Public BL	1.052878	-1.946161	0.9219	-2.895378	-1.946161	0.0044

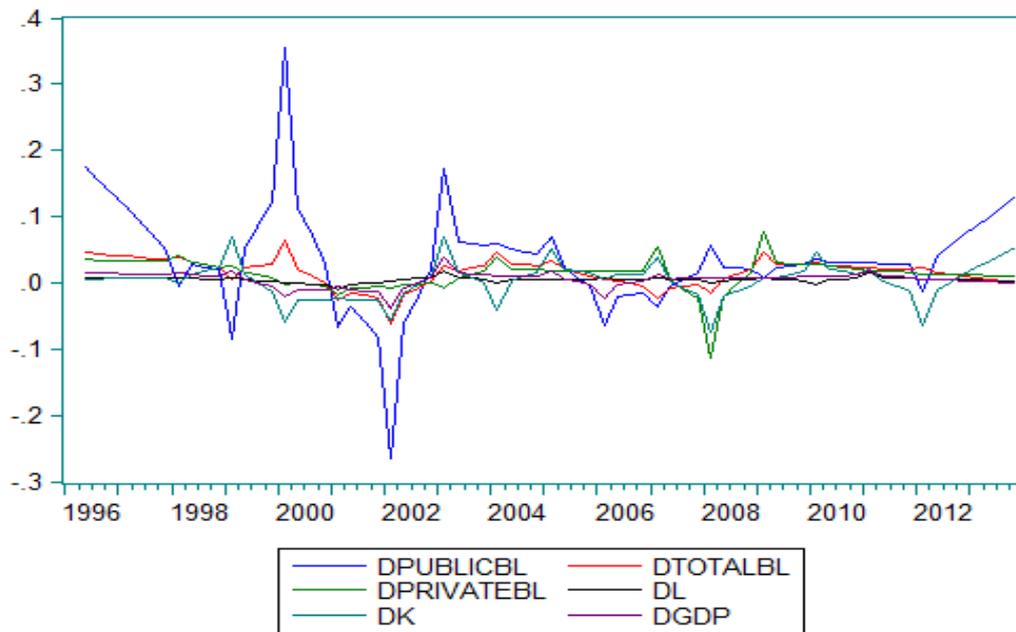


Figure 5-1 Unit Root Test

### 5.3 Lag Order Selection Criteria:

The model is sensitive to lag length therefore the study utilized lag length criteria to get the optimal lag length for the VECM. After getting the results as shown in the Table (5-3), the optimal lag length appropriate for this is lag order 6 as suggested by all of the selection criteria.

Table 5-2 VAR lag order selection criteria

Total BL-Equation						
Lag	Log L	LR	FPE	AIC	SC	HQ
0	136.1564	NA	0.000973	-4.097121	-3.996765	-4.057524
1	204.5579	128.3843	0.000122	-6.171012	-6.037204	-6.118216
2	220.6991	29.79916	7.68e-05	-6.636896	-6.469635	-6.570901
3	221.1764	0.866461	7.80e-05	-6.620812	-6.420100	-6.541618
4	221.4003	0.399627	8.00e-05	-6.596933	-6.362769	-6.504540
5	226.7999	9.470050	6.99e-05	-6.732305	-6.464688	-6.626713
6	233.0105	10.70128*	5.95e-05*	-6.892630*	-6.591561*	-6.773839*
7	233.0173	0.011590	6.14e-05	-6.862072	-6.527551	-6.730082
Private BL-Equation						

Lag	Log L	LR	FPE	AIC	SC	HQ
0	135.4474	NA	0.000995	-4.075304	-3.974948	-4.035707
1	202.9401	126.6786	0.000129	-6.121234	-5.987425	-6.068438
2	221.3178	33.92800	7.53e-05	-6.655931	-6.488671	-6.589936
3	222.2820	1.750491	7.54e-05	-6.654831	-6.454119	-6.575637
4	222.3311	0.087683	7.77e-05	-6.625574	-6.391409	-6.533181
5	227.2157	8.566779	6.90e-05	-6.745099	-6.477482	-6.639507
6	233.4386	10.72255*	5.88e-05*	-6.905804*	-6.604735*	-6.787013*
7	233.4401	0.002478	6.06e-05	-6.875080	-6.540559	-6.743090
Public BL-Equation						
Lag	Log L	LR	FPE	AIC	SC	HQ
0	103.7540	NA	0.002637	-3.100123	-2.999767	-3.060526
1	203.9020	187.9701	0.000125	-6.150831	-6.017023	-6.098035
2	221.2593	32.04414	7.55e-05	-6.654131	-6.486870	-6.588136
3	221.7571	0.903867	7.67e-05	-6.638681	-6.437969	-6.559487
4	221.9307	0.309765	7.87e-05	-6.613253	-6.379088	-6.520860
5	227.0548	8.986784	6.93e-05	-6.740147	-6.472530	-6.634555
6	233.8268	11.66865*	5.81e-05*	-6.917746*	-6.616677*	-6.798955*
7	233.8821	0.093747	5.98e-05	-6.888682	-6.554160	-6.756691

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan -Quinn information criterion

#### 5.4 Johansen's Cointegration Test:

The study then proceeds with the Johansen multivariate co integration test having established that all the series are integrated of the same order, I (1). This co integration test allows for the testing of the long-run equilibrium relationships (co integration) among the series. The results obtained from the Johansen method is presented in Tables shown below for the three groups of variables (the group of BL equation, the group of Private BL equation and the group of Public BL equation). Table(5-4), Table(5-6), Table(5-8) present the results based on the trace test to determine the number of co integrating vectors (r) for these specifications, suggested

by selection criteria while Table(5-5), Table(5-7), Table(5-9) present the results based on the maximum eigenvalue test also to determine the number of co integrating vectors.

**The results of Johansen’s Co integration Test for Co integrating Vectors:**

Table 5-3 The Trace Test (Total BL Eq.)

Hypothesis		Eigen value	Trace Statistic	5% Critical Value	Probability
H0	H1				
r=0	r $\geq$ 1	0.315004	55.25620	47.85613	0.0086
r $\leq$ 1	r $\geq$ 2	0.241633	29.15060	29.79707	0.0592
r $\leq$ 2	r $\geq$ 3	0.131562	10.06602	15.49471	0.2757
r $\leq$ 3	r $\geq$ 4	0.004814	0.332934	3.841466	0.5639

Table 5-4 The Maximum Eigenvalue Test (BL Eq.)

Hypothesis		Eigen value	Max eigen Statistic	5% Critical Value	Probability
H0	H1				
r=0	r= 1	0.315004	26.10561	27.58434	0.0763
r $\leq$ 1	r= 2	0.241633	19.08458	21.13162	0.0944
r $\leq$ 2	r= 3	0.131562	9.733084	14.26460	0.2301
r $\leq$ 3	r= 4	0.004814	0.332934	3.841466	0.5639

Table 5-5 The Trace Test (Private BL Eq.)

Hypothesis		Eigen value	Trace Statistic	5% Critical Value	Probability
H0	H1				
r=0*	r $\geq$ 1	0.314177	56.92152	47.85613	0.0056
r $\leq$ 1	r $\geq$ 2	0.235122	30.89915	29.79707	0.0372
r $\leq$ 2	r $\geq$ 3	0.162720	12.40449	15.49471	0.1385
r $\leq$ 3	r $\geq$ 4	0.002177	0.150350	3.841466	0.6982

Table 5-6 The Maximum Eigenvalue Test (Private BL Eq.)

Hypothesis		Eigen value	Max eigen Statistic	5% Critical Value	Probability
H0	H1				
r=0*	r= 1	0.314177	26.02238	27.58434	0.0781
r $\leq$ 1	r= 2	0.235122	18.49465	21.13162	0.1124
r $\leq$ 2	r= 3	0.162720	12.25414	14.26460	0.1015
r $\leq$ 3	r= 4	0.002177	0.150350	3.841466	0.6982

Table 5-7 The Trace Test (Public BL Eq.)

Hypothesis		Eigen value	Trace Statistic	5% Critical Value	Probability
H0	H1				

$r=0^*$	$r \geq 1$	0.357418	61.71907	47.85613	0.0015
$r \leq 1$	$r \geq 2$	0.240828	31.20304	29.79707	0.0342
$r \leq 2$	$r \geq 3$	0.161745	12.19168	15.49471	0.1480
$r \leq 3$	$r \geq 4$	0.000258	0.017824	3.841466	0.8937

Table 5-8 The Maximum Eigenvalue Test (Public BL Eq.)

Hypothesis		Eigen value	Max eigen Statistic	5% Critical Value	Probability
H0	H1				
$r=0^*$	$r= 1$	0.357418	30.51603	27.58434	0.0204
$r \leq 1$	$r= 2$	0.240828	19.01136	21.13162	0.0965
$r \leq 2$	$r= 3$	0.161745	12.17385	14.26460	0.1043
$r \leq 3$	$r= 4$	0.000258	0.017824	3.841466	0.8937

The trace test tests the null hypothesis that the number of co integrating vectors is less than or equal to  $r$ , where  $r$  is 0, 1, 2 or 3. In each case, the null hypothesis is tested against a general alternative. The maximum eigenvalue test on the other hand, tests the null hypothesis  $r = 0$  against the alternative that  $r = 1$ ,  $r = 1$  against the alternative  $r = 2$ , and so on. The reported trace test statistic for the null hypothesis of no co integration ( $H_0 : r = 0$ ) is (55.25620) which is above the critical value of (47.85613) at the 5 percent (5%) significance level, thus, it rejects the null hypothesis of no co integration ( $r = 0$ ) in favour of the general alternative  $r \geq 1$ . On the other hand, the null hypothesis of  $r \leq 1$ , that the system contains at most one ( $r \leq 1$ ) co integrating vector cannot be rejected at the 5% significance level since the reported trace statistic of (29.15060) is less than the critical value of (29.79707) at the 5% significance level. This test concludes that there is only one co integrating relationship among the GDP, K, L and BL. The maximum eigenvalue statistic testing the null hypothesis of no co integration ( $H_0 : r = 0$ ) is accepted at the 5% significance level as the reported maximum eigen statistic of (26.10561) is less than the critical value at the 5% significance level. In essence, the trace test statistics reject the null hypothesis of  $H_0: r = 0$  at the 5% significance level and suggest that there is only one co integrating vector. Therefore, our quarterly data from 1996-2013 appears to support the existence of long-run relationship among GDP and the other indicators (K, L and BL) based on the Johansen's co integration procedure. This further implies that, GDP maintain a stable equilibrium with K, L and BL in the long-run for the entire period of the study.

By the same way and based on the Johansen's co integration results shown in Tables above, we conclude the existence of long-run relationship among the group (GDP, K, L and Private BL) and the group (GDP, K, L and Public BL).

### 5.5 VAR Estimation of the Long-Run Relationship:

As mentioned before, the co integration test examines the long-run equilibrium relationship between the variables. Now we estimate the VAR model which represents the Long-Run Relationship. The results of VAR model estimation are presented in Table (5-10) for each group of variables.

Table 5-9 VAR Results

BL Equation: $\ln GDP = f(\ln K, \ln L, \ln BL)$				
Repressors	Coefficients	Std.Error	t-Statistics	Prob.
LnK	0.293870	0.086220	3.408375	0.0011
LnL	0.954095	0.130703	7.299699	0.0000
LnBL	0.306883	0.020504	14.96697	0.0000
R-squared	Adjusted R-squared	Sum sq. resides	S.E. of equation	F-statistic
0.824473	0.819385	0.116309	0.041056	162.0509
Log likelihood	Akaike AIC	Schwarz SC	Mean dependent	S.D. dependent
129.2507	-3.506963	-3.412102	3.660591	0.096606
Private BL Equation: $\ln GDP = f(\ln K, \ln L, \ln \text{Private BL})$				
Regressors	Coefficients	Std.Error	t-Statistics	Prob.
LnK	0.154433	0.095207	1.622077	0.1093
LnL	1.098959	0.139220	7.893690	0.0000
Ln Private BL	0.373084	0.026145	14.26982	0.0000
R-squared	Adjusted R-squared	Sum sq. resides	S.E. of equation	F-statistic
0.811350	0.805882	0.125004	0.042564	148.3782
Log likelihood	Akaike AIC	Schwarz SC	Mean dependent	S.D. dependent
126.6551	-3.434863	-3.340002	3.660591	0.096606
Public BL Equation: $\ln GDP = f(\ln K, \ln L, \ln \text{Public BL})$				
Repressors	Coefficients	Std.Error	t-Statistics	Prob.

Ln K	0.731384	0.093873	7.791194	0.0000
Ln L	0.565526	0.155704	3.632054	0.0005
Ln Public BL	0.133157	0.012137	10.97146	0.0000
R-squared	Adjusted R-squared	Sum sq. resides	S.E. of equation	F-statistic
0.728413	0.720541	0.179961	0.051070	92.53103
Log likelihood	Akaike AIC	Schwarz SC	Mean dependent	S.D. dependent
113.5370	-3.070474	-2.975612	3.660591	0.096606

The results of the BL-equation in table (5-10) show that all the coefficients are highly statistically significant at the five percent significance level. We have positive relationship between real GDP and K(Gross Capital Formation) and L(Labour) and also BL(Total Bank Lending).The adjusted coefficient of determination(Adjusted R-squared=0.819385) indicates that the explanatory variables(K, L and BL) explaining about 82% of real GDP variability. The elasticity (coefficient) of GDP relative to K (0.293870) indicates that increasing Gross Capital Formation by 1% implies to increase the Real GDP by 0.29%; the elasticity of GDP relative to BL (0.306883) indicates that increasing the total Bank Lending by 1% implies to increase the Real GDP by 0.31%. The elasticity of GDP relative to L (0.954095) indicates that increasing the Labour by 1% implies to increase the Real GDP by 0.95%.

The results of the Private BL-equation in table (5-10) show that all the coefficients are highly statistically significant at the five percent significance level except K. We have positive relationship between real GDP and K(Gross Capital Formation) and L(Labour) and also Private BL(Private Bank Lending).The adjusted coefficient of determination(Adjusted R-squared=0.805882) indicates that the explanatory variables(K, L and Private BL) explaining about 81% of real GDP variability. The elasticity (coefficient) of GDP relative to K (0.154433) indicates that increasing Gross Capital Formation by 1% implies to increase the Real GDP by 0.15%, the elasticity of GDP relative to Private BL (0.373084) indicates that increasing the total Private Bank Lending by 1% implies to increase the Real GDP by 0.37%. The elasticity of GDP relative to L (1.098959) indicates that increasing Labour by 1% implies to increase the Real GDP by 1.09%.

The results of the Public BL-equation in table (5-10) show that all the coefficients are highly statistically significant at the five percent significance level. We have positive relationship between real GDP and K(Gross Capital Formation) and L(Employment) and also Public BL(Public Bank Lending).The adjusted coefficient of determination(Adjusted R-squared=0.720541) indicates that the explanatory variables(K, L and Public BL) explaining about 72% of real GDP variability. The elasticity (coefficient) of GDP relative to K (0.731384) indicates that increasing Gross Capital Formation by 1% implies to increase the Real GDP by 0.73%; the elasticity of GDP relative to Public BL (0.133157) indicates that increasing the total Public Bank Lending by 1% implies to increase the Real GDP by 1.33%. The elasticity of GDP relative to L (0.565526) indicates that increasing Labour by 1% implies to increase the Real GDP by 0.57%.

## 5.6 Vector Error Correction Model (VECM):

**Table 5-10** VECM results

VECM with BL				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.111775	0.200075	0.558664	0.5797
C(2)	-0.29403	0.278622	-1.05528	0.298
C(3)	-0.02108	0.272495	-0.07737	0.9387
C(4)	0.010799	0.215547	0.0501	0.9603
C(5)	-0.65693	0.218624	-3.00482	0.0047
C(6)	-0.14596	0.274297	-0.53214	0.5977
C(7)	0.005532	0.257091	0.021519	0.9829
C(8)	0.029622	0.103369	0.286568	0.776
C(9)	0.026607	0.101165	0.263007	0.794
C(10)	0.016347	0.085444	0.191315	0.8493
C(11)	-0.08261	0.087422	-0.94492	0.3507
C(12)	-0.00223	0.093141	-0.02399	0.981
C(13)	0.020712	0.085992	0.240855	0.811
C(14)	0.029924	0.544141	0.054993	0.9564
C(15)	0.010035	0.542425	0.018501	0.9853
C(16)	-0.01179	0.251673	-0.04683	0.9629
C(17)	0.533995	0.252185	2.117475	0.0408
C(18)	0.150154	0.450251	0.333489	0.7406

C(19)	0.005346	0.442311	0.012086	0.9904
C(20)	0.01977	0.139385	0.141834	0.888
C(21)	0.016553	0.135927	0.121776	0.9037
C(22)	0.026797	0.097867	0.273809	0.7857
C(23)	-0.04501	0.098733	-0.4559	0.6511
C(24)	-0.00251	0.10951	-0.02295	0.9818
C(25)	0.000757	0.105993	0.00714	0.9943
C(26)	-0.00033	0.001081	-0.3003	0.7656
R-squared	0.470935	Mean dependent var		-0.00021
Adjusted R-squared	0.122866	S.D. dependent var		0.00903
S.E. of regression	0.008457	Akaike info criterion		-6.41648
Sum squared residue	0.002718	Schwarz criterion		-5.53943
Log likelihood	231.3273	Hannan -Quinn criter.		-6.07097
F-statistic	1.352993	Durbin-Watson stat		1.990608
Prob (F-statistic)	0.196087			
VECM with Private BL				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.25876	0.223641	-1.15701	0.2545
C(2)	-0.03472	0.285423	-0.12165	0.9038
C(3)	0.211147	0.279666	0.754997	0.4549
C(4)	0.250844	0.229678	1.092157	0.2816
C(5)	-0.43229	0.234011	-1.84732	0.0725
C(6)	0.072733	0.26403	0.275473	0.7844
C(7)	0.166096	0.247537	0.670994	0.5063
C(8)	-0.05771	0.094881	-0.60823	0.5467
C(9)	-0.05556	0.094515	-0.58782	0.5601
C(10)	-0.06775	0.078068	-0.86783	0.3909
C(11)	-0.14772	0.079665	-1.85429	0.0715
C(12)	-0.08016	0.095544	-0.83901	0.4067
C(13)	-0.04026	0.089529	-0.44971	0.6555
C(14)	0.020855	0.409282	0.050956	0.9596
C(15)	0.008967	0.41273	0.021727	0.9828
C(16)	-0.05442	0.248583	-0.21891	0.8279
C(17)	0.403385	0.248196	1.625267	0.1124
C(18)	0.132223	0.402151	0.328789	0.7441
C(19)	0.017642	0.397068	0.04443	0.9648
C(20)	-0.00676	0.090784	-0.07444	0.941
C(21)	0.003784	0.091165	0.041512	0.9671
C(22)	0.01169	0.068734	0.170074	0.8659
C(23)	0.009348	0.068854	0.13577	0.8927

C(24)	0.025278	0.087122	0.29014	0.7733
C(25)	0.020315	0.085794	0.236791	0.8141
C(26)	-1.13E-05	0.001074	-0.0105	0.9917
R-squared	0.479734	Mean dependent var		-0.00021
Adjusted R-squared	0.137453	S.D. dependent var		0.00903
S.E. of regression	0.008386	Akaike info criterion		-6.43325
Sum squared residue	0.002672	Schwarz criterion		-5.5562
Log likelihood	231.864	Hannan -Quinn criter.		-6.08774
F-statistic	1.401581	Durbin-Watson stat		2.047383
Prob (F-statistic)	0.170216			
VECM with Public BL				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.10208	0.248553	0.410696	0.6836
C(2)	-0.27132	0.294949	-0.9199	0.3634
C(3)	0.00085	0.286419	0.002967	0.9976
C(4)	0.026159	0.240257	0.108878	0.9139
C(5)	-0.63301	0.243633	-2.5982	0.0133
C(6)	-0.11894	0.288861	-0.41176	0.6828
C(7)	0.024391	0.26752	0.091173	0.9278
C(8)	0.032477	0.118851	0.273256	0.7861
C(9)	0.023998	0.112085	0.214104	0.8316
C(10)	0.011699	0.098785	0.118426	0.9064
C(11)	-0.0776	0.100282	-0.77383	0.4438
C(12)	-0.00607	0.108713	-0.05586	0.9557
C(13)	0.015206	0.098011	0.155147	0.8775
C(14)	0.038297	0.376314	0.10177	0.9195
C(15)	0.0312	0.379558	0.082201	0.9349
C(16)	0.030837	0.219616	0.140412	0.8891
C(17)	0.4699	0.219469	2.141075	0.0387
C(18)	0.124148	0.395612	0.313813	0.7554
C(19)	-0.00139	0.390046	-0.00357	0.9972
C(20)	0.003446	0.0192	0.179488	0.8585
C(21)	0.002182	0.01774	0.123011	0.9027
C(22)	0.003367	0.013572	0.248065	0.8054
C(23)	-0.00032	0.013672	-0.02326	0.9816
C(24)	-0.00089	0.014933	-0.05949	0.9529
C(25)	-0.0011	0.013765	-0.07983	0.9368
C(26)	-0.00031	0.001087	-0.28221	0.7793
R-squared	0.465124	Mean dependent var		-0.00021
Adjusted R-squared	0.113232	S.D. dependent var		0.00903

S.E. of regression	0.008503	Akaike info criterion	-6.40556
Sum squared reside	0.002748	Schwarz criterion	-5.52851
Log likelihood	230.9778	Hannan -Quinn criter.	-6.06004
F-statistic	1.321782	Durbin-Watson stat	1.98956
Prob (F-statistic)	0.214425		

The Table (5-11) states the results of VECM. For the VECM with BL, the first coefficient(Error correction term) is in positive with a value of 0.141249 and it is significant with p-value of 0.0025 that means there exist long run causality but it is not running from capital, labour and bank lending to the economic growth. The value of R squared (coefficient of determination) states that variables included in VECM explain almost 77% of the response in the dependent variable economic growth. The F- statistics is also significant at 5% level with the value of 5.181794 and corresponding probability of 0.000003 which shows significance of the model.

For the VECM with Private BL, the first coefficient(Error correction term) is in positive with a value of 0.113599 and it is insignificant with p-value of 0.1124 that means there is not exist long run causality running from capital, labour and private bank lending to the economic growth. The value of R squared (coefficient of determination) states that variables included in VECM explain almost 71% of the response in the dependent variable economic growth. The F- statistics is also significant at 5% level with the value of 3.787359 and corresponding probability of 0.0001 which shows significance of the model.

Finally, for the VECM with Public BL, the first coefficient(Error correction term) is in positive with a value of 0.215287 and it is significant with p-value of 0.0007 that means there exist long run causality but it is not running from capital, labour and public bank lending to the economic growth. The value of R squared (coefficient of determination) states that variables included in VECM explain almost 77% of the response in the dependent variable economic growth. The F- statistics is also significant at 5% level with the value of 5.366244 and corresponding probability of 0.000002 which shows significance of the model.

**Table 5-11** Wald Test

BL Equation/Lag variables	Test Statistic	Value	df	Probability
K	F-statistic	0.877437	(6, 39)	0.5203
	Chi-square	5.264624	6	0.5103
L	F-statistic	1.595843	(6, 39)	0.1743
	Chi-square	9.575057	6	0.1437
BL	F-statistic	0.465072	(6, 39)	0.8298
	Chi-square	2.790431	6	0.8347
Private BL Equation/Lag variables	Test Statistic	Value	df	Probability
K	F-statistic	0.916487	(6, 39)	0.4935
	Chi-square	5.498922	6	0.4816
L	F-statistic	0.980623	(6, 39)	0.4514
	Chi-square	5.883738	6	0.4363
Private BL	F-statistic	0.291091	(6, 39)	0.9376
	Chi-square	1.746548	6	0.9415
Public BL Equation/Lag variables	Test Statistic	Value	df	Probability
K	F-statistic	1.823439	(6, 39)	0.1197
	Chi-square	10.94063	6	0.0902
L	F-statistic	1.155443	(6, 39)	0.3496
	Chi-square	6.932659	6	0.3271
Public BL	F-statistic	1.271456	(6, 39)	0.2928
	Chi-square	7.628738	6	0.2666

The Wald test in Table (5-12) show the procedure can be used to test the existence of the short run causality. For the VECM with BL, the F- Statistics and chi square statistics are insignificant with p-values > 0.05 that means there is no short run causality between the variables under consideration. As shown from table (5-12), we got the same results for the VECM with Private BL and for the VECM with Public BL.

**Table 5-12** Residual Diagnostics Tests

Diagnostic	BL Equation		Private BL Equation		Public BL Equation	
	Test Statistic	P-Value	Test Statistic	P-Value	Test Statistic	P-Value
Serial correlation	0.02635	0.9791	1.044369	0.3033	0.08365	0.9338
Normality	3.23055	0.19883	3.73843	0.154245	2.961250	0.227459
Heteroscedasticity	0.68679	0.4973	0.292674	0.7717	0.03863	0.9694

In order to test the validity of the model and to ascertain any discrepancies, the study applied diagnostic tests in Table (5-13) for serial correlation, heteroscedasticity and normality. The results show that model is free from problem of serial correlation at 5% level of significance. There are also no issues of heteroscedasticity and normality in the model. The results Shows the overall validity and reliability of the model.

### 5.7 Granger Causality Test:

The study now turns to examine the Granger-causality relationships between the variables under study. Granger-causality may have more to do with prediction, than with causation in the usual sense. It suggests that while the past can cause or predict the future, the future cannot cause or predict the past.

Table 5-13 the results of Granger Causality Test

<b><u>Direction of Granger Causality</u></b>	Total BL Equation	Private BL Equation	Public BL Equation
	Decision	Decision	Decision
K ⇒ GDP	No Causality	No Causality	No Causality
GDP ⇒ K	No Causality	No Causality	No Causality
L ⇒ GDP	No Causality	No Causality	No Causality
GDP ⇒ L	No Causality	No Causality	No Causality
BL ⇒ GDP	No Causality	No Causality	No Causality
GDP ⇒ BL	Causality	No Causality	Causality
L ⇒ K	No Causality	No Causality	No Causality
K ⇒ L	No Causality	No Causality	No Causality
BL ⇒ K	No Causality	No Causality	No Causality
K ⇒ BL	No Causality	No Causality	No Causality
BL ⇒ L	No Causality	No Causality	No Causality
L ⇒ BL	No Causality	No Causality	No Causality

Table (5-14) gives a summary of results of Granger Causality Test over the entire period of study; the findings indicate just a unidirectional Granger causal relationship from the economic growth (GDP) to Bank Lending and a unidirectional Granger causal relationship from the economic growth (GDP) to Public Bank

Lending. According to these results, we conclude that the past values of GDP can be used to predict both BL and Public BL more accurately than only using the past values of BL or Public BL, but the inverse direction is not true. For this test, we used the first log difference of the variables because the Granger-Causality test works on the assumption of stationary variables and as already discussed, these first log differences are stationary.

### 5.8 Discussion of Results:

The main objective of this study is to determine the impact of bank lending on economic growth and identify the causality relationship over the period (1996 - 2013). The summary of empirical findings from the results of analysis is presented as follows:

As shown in figure (5-2) below, the explanatory variables (K, L and Total BL) explaining about 82% of real GDP variability. (Increasing Gross Capital Formation by 1% implies to increase the Real GDP by 0.29%. - Increasing the Total Bank Lending by 1% implies to increase the Real GDP by 0.31%. - Increasing the Labor by 1% implies to increase the Real GDP by 0.95%). The causality relationship between GDP and total bank lending runs from GDP to total bank lending, supporting the demand - following hypothesis.

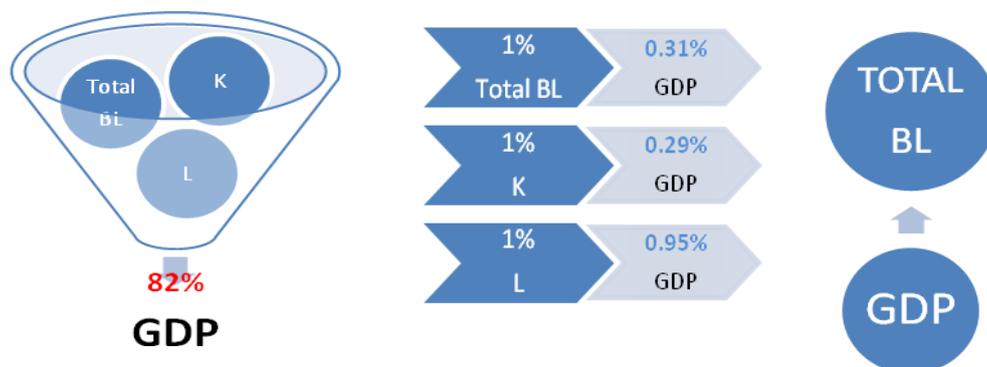


Figure 5-2 Total Bank Lending Results

As shown in figure (5-3) below, the explanatory variables (K, L and Private BL) explaining about 81% of real GDP variability. (Increasing Gross Capital Formation by 1% implies to increase the Real GDP by 0.15% - Increasing the Private Bank Lending by 1% implies to increase the Real GDP by 0.37% - Increasing Labour by 1% implies to increase the Real GDP by 0.10%. There is no causality relationship between GDP and private bank lending. As a result, the volume of loan actually given to invertors is insignificant, and could not add meaningful contribution to the GDP, may be attributed to the fact that banks exhibit apathy in lending to the production sector of the economy due to high level of risk involved.

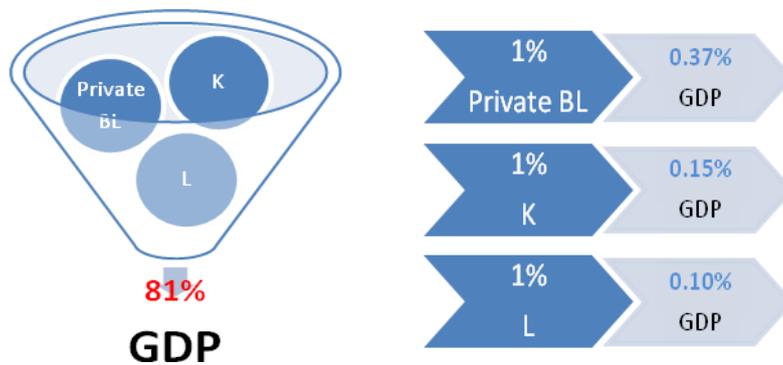


Figure 5-3 Private Bank Lending Results

As shown in figure (5-4) below, the explanatory variables (K, L and Public BL) explaining about 72% of real GDP variability. (Increasing Gross Capital Formation by 1% implies to increase the Real GDP by 0.73% - Increasing the Public Bank Lending by 1% implies to increase the Real GDP by 1.33% - Increasing Labour by 1% implies to increase the Real GDP by 0.57%. The causality relationship between GDP and public bank lending runs from GDP to public bank lending, supporting the demand - following hypothesis.

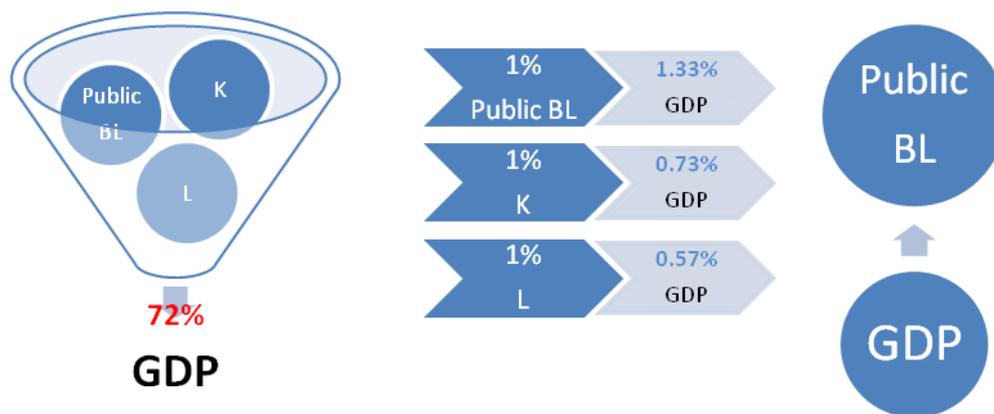


Figure 5-4 Public Bank Lending Results

Evidence from the study does not support the view that bank lending promotes economic growth in Palestine. Developing countries have their own socioeconomic, political and institutional history which makes them different from each other as well as their developed counterparts, and thus the existence of a reverse causality between finance and growth (Yanique Carby, 2012).

Results show that there are positive and significant relationship between bank lending and economic growth in the long-run, this finding supports the work carried out by (Ndubuisi M. Nwaru and Okorontah, 2014), (Owolabi Sunday A., 2013), (Ndlovu, 2013), (Sami, 2013), (ALFara, 2012), (Yanique Carby, 2012), (Kisu Simwaka, 2012) and (Liang, 2011). This relationship however does not seem to hold in the short-run, this finding supports the work carried out by (Najeeb Muhammad Nasir, 2014), (Kisu Simwaka, 2012) and (Ekone, 2010). By appealing to Granger causality tests however, it is found that economic growth drives bank lending. These results imply that economic growth is vital for development of the banking sector in Palestine. The lack of causality of bank lending on economic growth could be attributed to the less developed banking sector in Palestine. There is need to put in place policies to support development of growth-enhancing banking sector. For banking development to have a positive effect on economic growth, it is necessary that the expansion of banking system be accompanied by an increase in the flow of funds towards productive investment activities.

## Chapter 5

### 6 Conclusions, Policy Implications and Further Research

#### 6.1 Conclusion:

This study examines the impact of bank lending on economic growth in Palestine for the period (Q1 1996 – Q4 2013) and identifies the mechanism through which bank lending affects economic growth. This study uses multivariate co-integration method by Johansen and Juselius (1990). Following a detailed time series analysis and the findings reveal that bank lending has a positive impact on economic growth in Palestine.

It was also discovered that causality based on VAR-VECM and runs from GDP to bank lending, supporting the demand - following hypothesis described. The insignificant contribution of bank lending to GDP may be attributed to the fact that banks exhibit apathy in lending to the production sector of the economy due to high level of risk involved.

#### 6.2 Policy Implications:

From the findings of this study, a number of policy issues stand out clearly. The empirical evidence presented above has important implications for the conduct of economic and financial reforms in Palestine, with particular attention being paid to her banking sector. Indeed, with an empirical evidence a causal effect runs from GDP to bank lending, the Palestinian monetary authorities must be oriented towards, not only, the promotion of manufacturing output growth, but also continuing banking development processes that focus on performance of the real sector generally, and manufacturing sector in particular.

The policy implication of these results is this, financial reforms and policies should focus on how to narrow the gap between savings and lending rates, banks should also be encourage to lend to the entire economy as against favouring some

specific sectors and government should avoid excessive deficit and borrowing from the private sector, which prove to be crowding out private investment.

### **6.3 Suggestions for Further Research:**

The impact of bank lending on economic growth is a very interesting study, it involves many areas thus on further research it is better to consider some of the following areas:

- The Impact of External Debt on Economic Growth.
- The Relationship between Credit Growth and the Expected Returns of Bank Stocks.
- The Role of Banks in Small and Medium Enterprises Financing.
- Does Leverage Always Mean Risk?

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