AN EMPIRICAL ANALYSIS OF THE IMPACT OF BANK-BASED FINANCIAL DEPTH ON ECONOMIC GROWTH IN ZIMBABWE

Mr. Tapiwa MANGWIRO

Department of Economics, Midlands State University, Gweru, Zimbabwe

Mr. Takudzwa. C. MARADZE

Department of Economics, Midlands State University, Harare, Zimbabwe

Mr. Thabani NYONI

Department of Economics, University of Zimbabwe, Harare, Zimbabwe

ABSTRACT

The research examines the impact of bank-based financial depth on economic growth of Zimbabwe. The Ordinary Least Squares method was used with time series data obtained from the World Bank, RBZ and ZIMSTATS. The results indicate that domestic credit to private sector expressed as a percentage of GDP and exports expressed as a percentage of GDP are significant in positively influencing economic growth of Zimbabwe. However financial liberalization dummy and foreign direct investment revealed that there is a negative impact on economic growth of Zimbabwe. Interest rate spread, inflation rate, government expenditure and deposit money bank assets to deposit money bank assets and central bank assets were insignificant on influencing economic growth of Zimbabwe from the results obtained. Recommendations were made on how the government may employ different strategies to improve bank-based financial depth of the country.

 Keywords: - *Economic Growth, Financial Depth, Zimbabwe*

1.0 INTRODUCTION

The research argues how financial deepening provides an establishment for economic growth in Zimbabwe. Financial depth, according to Abazi and Aliu (2015) is defined as the quantity of financial resources accumulated in the economy. The more the financial assets in the economy the higher the rate at which the economy grows. On financial depth, there is an argument from different studies by different researchers on this area which converges on whether there is a direct or indirect relationship between the two is of what character and why was it of that nature

(whether financial depth directly or indirectly influences financial depth) applying different econometric models by different authors and scholars (Mukherjee, 2013). Having knowledge of how financial depth and financial development influence economic growth, this will help provide an idea of what an economy like Zimbabwe can do when implementing policies that suit its aims of achieving the ZIMASSET cluster goals.

1.1 Relevance of the Study

Zimbabwe has well established policies which are ZimAsset and the Indigenization policy which is fully backed up by the fiscal policy and monetary policy statements. Even though all these policies look enticing on paper, they may seem to be implemented effectively and the country is still facing liquidity challenges. With the way Zimbabwe's financial sector is established by having a capital account which is partially liberalized and a fully liberalized financial sector which are one of the characteristics to improve the country's financial depth but still liquidity challenges are being faced. The purpose of this research is to address solutions of how the economy may implement better policies that may improve financial depth which may positively improve economic growth of the country and if financial depth of this country does not influence of the country of study. Policymakers may need to partially revise their policies on improving financial depth and seek on improving sectors that influence growth. How will growth of Zimbabwe be achieved?, that will be all up to the current policymakers and the policies they implement.

2.0 LITERATURE REVIEW

2.1 Theoretical Literature Review

2.1.1 Supply-Leading Hypothesis

This theory asserts that financial development promotes economic growth. It argues that financial deepening is the driver of economic growth assuming there is presence of efficient financial markets. The improvement of banks and non-bank institutions will be a necessity to achieve economic growth. Financial depth is improved by influencing savings rates, investment decisions, technological advancement and innovation, hence promoting economic growth in the long run. Based on this theory it therefore means that financial depth has a positive impact on economic growth because there is a positive relationship between the two whereby financial depth causes or influences economic growth. The supply-leading hypothesis uses the economic growth variable as the dependent variable while financial depth proxies are the independent variables. This theory contradicts with the demand-following hypothesis which states that economic growth influences financial depth. It fully concludes that it is rare for an economy to follow the supply-leading and demand-following hypothesis in the same period.

2.1.2 Demand-Following Hypothesis

It states that as the economy grows, demand for financial assets also increases. Therefore financial depth follows economic growth. This means that policies implemented by the country's

governing bodies to improve financial depth would be a waste of resources which will need to be utilized in other productive sectors. Demand-following hypothesis conclusively posits that economic growth promotes for the expansion of financial institutions. This theory states that financial depth is influenced by economic growth and this conclusively means that financial depth has a negative impact on economy growth. If the dependent variable is economic growth whereby the results from the study provide that there is a negative or insignificant influence growth, it means that financial depth has no or little impact on economic growth.

2.1.3 The Theory of Financial Liberalization

Financial liberalization is the process of transforming the financial sector of a country to increase financial resources which increase money demand and also creating a favourable economic environment for investment in the economy. This is in support with the Keynesian economists where they vindicated financial deepening occurs when there is autonomous spending by the government. Increasing government expenditure stimulates the economy to achieve full employment. Aggregate income and demand increases by increasing government expenditure which conclusively raises the demand for money. The theory of financial liberalization as propounded by McKinnon (1973) and Shaw (1973) argue that financial liberalization is an efficient way to increase the economy's growth rate. It is based on the point that financial depth is stimulated more when real interest rates are high. The theory proposed that reducing the levels of uncertainties occurring in the financial markets, foreign investment levels rise and this is done by reducing the level of intervention by the government. This concludes that financial depth promotes economic growth and for financial deepening to be promoted, financial liberalization has to be implemented. On the other hand, neo-structuralism argue that financial liberalization reduces the level of investment in the presence of unorganized money markets (UMM) and also the availability of credit in the financial system falls, which is caused by substitution of loans of the UMM for the deposits in the organized markets. Financial depth has a negative impact on economic growth when the financial sector is liberalized in the presence of UMMs. The theory of financial liberalization also states that if developing country is financially liberalized, interest rates and prices also increase due to higher production cost. This then concludes also that financial depth negatively affects economic growth.

2.1.4 The Theory of Financial Intermediation

The theory explains that financial intermediation has a vital role on the economy's growth because financial intermediaries have a responsibility to influence investment in the country by promoting borrowing. Borrowing is increased by concentrating financial instruments from saving to borrowing which in turn influence investment that accelerates economic growth. Financial intermediaries also have a role of solving information asymmetry between borrowers and lenders which causes an increase in transaction costs. Schumpeter (1911) vindicated that efficiently operating financial intermediaries positively affect economic growth. Gurley and Shaw (1960) also stated that if a financial sector is highly intermediated, levels of savings increase and so is the level of investment which increase rate of growth of an economy. Economic growth is positively stimulated in the presence of well-established financial intermediaries because financial resources are efficiently allocated to the firms and the individuals who are able to effectively use them fully to yield the highest returns on capital (Goldsmith, 1969). This concludes that financial intermediaries positively affect financial depth

of the country by reducing transaction costs which in turn promote economic growth. Financial depth positively affects economic growth if financial intermediaries are well established.

2.1.5 The Neoclassical Growth Theory

The neoclassical theory developed by Solow (1956), states that economic growth can be achieved by employing the factors namely capital, labour and technology which are the main factors of production. Employing these factors in right proportions will cause the economic growth rate to increase. Capital Accumulation in the economy and effective use of capital by individuals is vital for economic growth. From this study which is concerned with the effect of financial depth on economic growth, capital obtained from the banking sector in form of loans and financial assets by individuals positively influence economic growth. This theory is therefore in support with the supply-leading hypothesis which also asserts that financial development positively affects economic growth.

2.2 Empirical Literature Review

Empirical researches on financial depth came up with different conclusion on its contribution to economic growth. These different conclusions may not only be due to the stages of development that the countries have but also due to the data sets and indicators used to measure financial depth. King and Levine (1993) used the ratios M3/GDP, M2/GDP, M1/GDP and market capitalization/GDP to measure financial sectors size of an economy. Other measures of financial depth (Antzoulatos *et al.,* 2008) on the research about financial development and asymmetric information included financial sector efficiency measures which are turnover ratio, net interest margins and bank overhead costs. Conclusions of how financial depth affects economic growth vary due to the panel data used across countries, sub-regions and time series of individual countries. Most studies concentrated more on the causality between financial depth and economic growth. From the research done by Abazi and Aliu (2015) on assessing the impact of financial deepening on economic growth in western Balkan countries for the period 1980 to 2014 concluded that from the panel regression which was tested for both fixed and random effects to diagnose for heterogeneity on the West Balkan countries (Croatia, Montenegro, Albania, Macedonia, Serbia, Bosnia and Herzegovina, and Kosovo) being sampled. Financial depth had a significant impact on economic growth. The variables measuring financial depth were stock traded, interest rate spread, domestic credit to private sector and bank depth. The results from the empirical study are in support with the supply-leading hypothesis which posits that financial depth causes economic growth.

 However liquid liabilities expressed as a percentage of GDP (M3) were statistically insignificant because it had a negative co-efficient. All the variables were regressed separately to avoid high correlation. Stock market capitalization was found to be positively significant to economic growth which was also evident in countries Croatia, Macedonia and Montenegro which had more active stock markets achieved a high level of economic growth. The research also found from the results that domestic credit to the government had an insignificant impact on economic growth. This meant that finance channelled to assist government and its institutions does not improve the country's financial depth and economic growth which is in line with the demand-following hypothesis even though market-based financial depth influences growth than bank-based financial depth. King and Levine (1993) on examining the relationship between financial

development and economic growth using both time series and pooled data on 80 countries which was almost similar to the one applied by Goldsmith (1969) for the period 1960 to 1989, the financial development measures used were liquid liabilities to GDP, ratio of credit to private sector, ratio of bank credit to the sum of bank and central bank assets and the ratio of private credit to GDP. The findings of the research concluded that financial development has a high impact on economic growth. From the variables used on the study one would conclude that bank-based financial depth and economic growth are positively correlated thereby being in affirmation with the supply leading hypothesis.

A research by Arestis *et al.*, (2001) used time series data on 5 developed countries (France, Germany, Japan, United Kingdom and the United States of American). Financial depth variables used in the research were both from bank-based and market-based which are banking sector size, credit provision, volume, activity and size of stock market. The results obtained concluded that financial depth positively influenced economic growth. The author further pointed out that bank-based financial depth has a more contributory effect to economic growth than market-based financial depth. This then provides an emphasis that the banking sector creates a better and efficient foundation to implement financial development even though it contradicts with the theory that developed economies' growth is influenced by financial markets more than financial institutions. Cross sectional regression method on liquidity, volatility and stock market size by Levine and Zervos (1998b) for the period 1976 to 1993 on 40 countries indicated that market-based financial depth contributes more to the economy's growth if financial liberalization is implemented. The variables that measured financial depth were volume of stocks traded, volatility of stock market prices and size of the stock market. The results are in support with the theory of financial liberalization mentioned as one of the theoretical literature reviews of this study and it states that a financially liberalized country has a well-developed financial system which accelerates the growth of an economy.

Not all studies are in support that financial depth positively affects economic growth. Favara (2003) did a panel regression on 85 countries covering periods from 1960 to 2000 and came up with results that showed that there is no linear relationship between financial depth and economic growth. This was due to the reason that financial depth positively affects economic growth but at some point it had a negative effects and it depends on the stage of development and growth that the country is at. This is also similar to the results obtained for the study by Thornton (1996) where a Granger Causality test was adopted on 22 developing countries (Latin American, Caribbean and Asian) which concluded that financial depth has an insignificant impact on economic growth. Both variables used by these researchers were bank-based financial depth indicators which were money supply, credit from financial sector, credit to private sector and liquid liabilities for the former and liquid liabilities and money supply for the latter. These results gave a review that financial depth also took into account the country's level of growth for it to have a greater impact on the growth of the economy. It also showed that the impact of financial depth on economic growth of developing countries is different from economic growth induced by financial depth on developed countries.

From the theory of financial intermediation mentioned on the theoretical literature review, Boyd and Prescott (1986) made a research on financial intermediaries (agents) by mathematically inducing variables that account for the agents. The indicators used where the number of intermediaries and borrowers and they represented financial depth of the country. The results

concluded that financial intermediaries assist on the efficient allocation of financial resources by reducing the degree of information asymmetry in the financial sector. A reduction in information asymmetry in the financial sector leads to financial efficiency which positively affects economic growth. Greenwood and Jovanovic (1990) assumed that financial intermediaries are on a competitive equilibrium on the study and the financial intermediation variables were financial agents and asset prices. The findings showed that financial intermediation positively influence economic growth because the higher the accessibility of information in the financial sector on financial resources by consumers permits a rise on earnings from capital returns. From the two studies above on financial intermediation one may obviously agree that financial agents have a positive impact on financial depth which in overall promotes economic growth.

In Malaysia, a study was done by Ang (2008) assessed the degree that financial development has to the country's output using the Autoregressive Distributed Lag (ARDL) model for the period 1960 to 2003. The study concluded that financial development, labour force and private capital stocks have a positive effect on the country's economic development. It also provided evidence that accumulation of public capital has a restrictive effect on the economy's long run output. For the study it therefore means that financial depth is fully achieved from the private sector than from the public sector because capital accumulated from the private sector has a positive influence on economic growth of Malaysia. Another study which tested the causality and linkage between financial development and economic growth of Northern Cyprus for the period 1986 to 2004, (Guryay *et al.*, 2007). The study used Ordinary Least Squares approach and the results reported that there was an insignificant although a positive impact was there on financial development and economic growth. However the results also concluded that economic growth caused financial development. The findings follow the demand-following hypothesis where the theory states that economic growth influence financial development and not vice versa.

Klein and Olivei (1999) researched on the effect of capital account openness on financial depth and economic growth of selected 21 OECD and 74 non OECD countries for the years 1986 to 1995. Liquid liabilities, ratio of claims on non-financial private sector to GDP and the ratio of deposit money bank domestic assets to the sum of deposit money bank domestic assets and central bank domestic assets are the financial depth measures and the three stage least squares regression method was adopted. The study's findings gave a conclusion that countries with liberated capital accounts experience a higher financial depth contribution to economic growth. It also concluded that capital account liberalization and financial depth is more common in industrialized countries. The results are in support with the theory of financial liberalization which states that a country whose capital account is unrestricted experiences a higher rate of financial depth which accelerates the rate at which economy is growing. Industrialized countries with unrestricted capital accounts have it easy to achieve financial deepening compared to developing countries with restricted capital accounts. A research by Ndebbio (2004) which conducted the association between financial deepening, economic development and growth of thirty four sub-Saharan African countries using M2/GDP and growth rate in per capita real money balances as the main measures of financial depth. The research adopted the Ordinary Least Squares multiple regression approach for the period 1980 to 1989. The research findings revealed that financial intermediaries and per capita real money balances had a positive impact on per capita growth of output. However the result was close to being positively insignificant to influence output. This generally highlighted that the financial sectors of Sub-Saharan African

countries are not well-developed to fully influence economic growth. Policymakers of these countries have to come up with suitable policies that widen the level of finance.

For the period 1965 to 2007, Jalil *et al.* (2010) on the research of whether financial development was monotonic, positively associated with economic growth. The study adopted the ARDL model and the financial depth measures were liquid liabilities to GDP ratio (M2/GDP), commercial/central bank assets ratio and credit to private sector to GDP ratio. The results obtained provided verification that financial development has a positive impact on South Africa's economic growth. Furthermore trade openness was one of the main contributing variables to the country's economic growth. These results are in line with the theoretical implication of trade openness that a country without trade restriction has a higher rate to increase its financial depth to positively influence economic growth. The impact of financial depth on Nigeria's economic growth as presented by Onwumere *et al.* (2012) supported the supply-leading hypothesis using variables: money stock diversification, market capitalization, broad money velocity, economic volatility and market liquidity as the financial depth proxies. The period of the study was from 1992 to 2008 and the Multiple Regression Model (MRM) was adopted. The results from the study revealed that market liquidity and broad money velocity positively contributed to the country's economic growth while market capitalization, money stock diversification and economic volatility had no effect for the period under study. Bank-based financial assets which are market liquidity and broad money velocity had an impact on economic growth than market-based financial assets which is in line with theory that bank-based financial depth spurs economic growth in developing countries than market-based financial depth. This will provide a guideline for policymakers in Nigeria to promote bank-based financial depth because it provides a positive influence on economic growth based on the results from this study.

Odhiambo (2008) applied the dynamic causality model in a research about the causality between financial development and economic growth of Kenya. The proxies used to measure financial development where currency ratio, credit to private sector and broad money (M2) for the period 1968 to 2002. The results showed that causality tends from economic growth to financial development. This opposed the other studies which supported that bank-based financial depth cause economic growth. However the study confirms to be in line with the demand-following hypothesis where economic growth determines financial depth of the country. On the research done by Nzotta and Okereke (2009) on the article of financial deepening and economic development of Nigeria covering period 1986 to 2007 where financial depth was measured by eight variables which are value of cheques to money supply, value of cheques cleared to GDP, real lending rates, rate of inflation, currency outside banks to money supply and deposit money bank assets to GDP using the two stage least squares approach. The research presented that financial depth is insignificant to Nigeria's Economic development even though four of the variables which are financial savings ratio, lending rates deposit money bank assets to GDP ratio and cheques to GDP ratio gave a significant impact on economic development of the country.

Wolde-Rufael (2009) also investigated the causality between financial development and economic growth of Kenya using a quad-variate Vector Autoregressive (VAR) model for the period 1966 to 2005. Total domestic credit provided by the banking sector and liquid liabilities as the financial depth measures. The country's imports and exports were also added into the model as control variables. The results obtained from the investigation indicated that there was

bi-directional Granger causality between financial development and economic growth of Kenya. These results concluded that regardless of whether the policies to be implemented in the future concentrated on achieving economic growth, financial depth is later improved. Also if financial depth is improved first economic growth is achieved. But it seems to be a bit odd for an economy to be in line with both the demand-following and supply-leading hypothesis because most of the results from previous studies did not produce a bi-directional causality between financial depth and economic growth. The other researchers to apply Granger causality test with modern multivariate technique between financial development and economic growth of Uganda for the period 1970 to 2005 were Bwire and Musiime (2006). The research used the variables: financial intermediation ratio and bank credit to the private sector as a ratio of GDP as financial development proxies. The research suggested that financial development has a positive impact on GDP and that necessary financial sector reforms can increase Uganda's economic growth. However it further concluded that financial development follows the supply-leading hypothesis. They further pointed out that financial development is a necessary but not a sufficient factor to stimulate the country's economic growth. The government has to support other sectors to work hand in glove with the financial sector to stimulate economic growth.

Waiyaki (2013) carried out a research assessing financial development, economic growth and poverty of Kenya covering periods 1997 to 2012. The study used Ordinary Least Squares method with the PARCH model to assess the direction of causality between financial may development and economic growth of Kenya using variables credit to private sector, broad money supply, stock market capitalization, bank deposits, volume of stocks traded and stock market turnover. The results concluded that financial development does not lead to growth even though bank deposits did. This therefore means that from this study market-based financial depth has no influence on economic growth especially for a developing country like Kenya. The effect of financial depth from the banking sector perspective of Kenya on its economic growth as researched by Bakang (n.d) using quarterly time series data for the period 2000 to 2013. The financial depth proxies where credit to private sector to GDP ratio, liquid liabilities to GDP ratio, commercial bank deposits to GDP and commercial bank assets as ratio to commercial bank assets plus central bank assets. The Error Correction Model (ECM) was adopted and concluded that the financial depth of Kenya's banking sector has a significant impact on the country's economic growth. Improving the country's bank-based financial depth will have a positive impact on its economic growth which therefore follows the supply-leading hypothesis.

Ibadin *et al.* (2014) on the empirical study about the financial system development and economic growth found that credit to private sector by banks had a positive impact on economic growth of Nigeria. Value of stocks traded on the stock market also had positive impact on economic growth. The study included stock market variables as the main indicators of financial development because time series data for banking sector variable measuring financial depth were unavailable for the period 1980 to 2014. The researchers used the Ordinary Least Square approach which perfectly matched the time series data for long-run impact of financial depth on Nigeria's economic growth. Persuading the private households and firms to receive credit from banks and increasing the volume or value of shares traded on the Nigerian Stock Exchange will positively affect the bank-based and market-based financial depth of the country which conclusively promotes economic growth.

Jecheche (2011) assessed the connection of financial development and economic growth of Zimbabwe for the period 1999 to 2008 whereby the Autoregressive Distributed Lag (ARDL) model was adopted. It concluded that ratio of investment to GDP and real deposit rate (financial depth measures) had a positive impact on the country's economic growth both in the short and long run periods. The monetary policy's aim to promote foreign investment is a way to improve the country's financial depth and this is evident when the governor of the Reserve Bank of Zimbabwe announced from the 2016 monetary policy increased the limit for a single foreign investor from 10% to 15% per counter of listed shares on the ZSE. This was done to stimulate financial depth of Zimbabwe. Assessment on the direction of causality of banking sector development and economic growth of Zimbabwe adopting the Granger causality along with the vector error correction model by Sibindi and Bimha (2014) indicated that bank-based financial depth obeys the demand-following hypothesis. The banking sector indicators where real domestic credit to real GDP ratio and real broad money to real GDP ratio for the years 1980 to 2004 and results from the study concluded that the country's financial depth from the banking sector is in line with the demand-following hypothesis whereby economic growth promotes banking sector development in Zimbabwe. Efforts to improve the position of the banking sector are termed to be a waste of resources because they will not positively contribute to the growth of the country's economy as proven by Lucas (1988) also. But improving economic growth will then improve the financial position of the financial sector in a better way.

Tyavambiza and Nyangara (2015) also investigated the causality between financial development and economic growth of Zimbabwe adopting the Granger causality test with the multivariate co-integration and error correction model. The research used time series data from 1980 to 2012 and the financial development measures used were stock market capitalization as a share of GDP, domestic credit by banking sector to GDP ratio, liquid liabilities to GDP ratio and these indicators expressed financial intermediary size, indirect and direct finance activities and size. Granger causality results showed that there was a two way directional causality on variables domestic credit by banking sector and money supply to economic growth. However it was a different story on stock market capitalization which obeyed the demand-following hypothesis which did not prove that it did not cause economic growth.

The causality between financial development and economic growth of Zimbabwe for the period 1980 to 2006 was done by Ndlovu (2013). The variables measuring financial development were liquid liabilities to GDP ratio, stock market capitalization to GDP ratio and domestic credit to private sector to GDP ratio. The researcher used Granger causality and concluded from the results that economic growth causes financial depth to increase which means the demand-following hypothesis applies for Zimbabwe. It therefore means that increasing the liquidity of the country, domestic credit to the private firms and households did not have a positive effect on the rate of economic of the country. From the findings of Sibindi and Bimha (2014) and Ndlovu (2013) improving financial depth will be total misappropriation of resources based on the researcher's emphasis. One of the pioneers to test the relationship between financial depth and economic growth was Goldsmith (1969). The study analysed the impact that the financial system had on economic growth on a cross sectional data analysis of 35 (developed and developing) countries between years 1860 and 1963. The study used credit provided by the banks to GDP ratio, credit provided by the financial sector to GDP ratio, liquid liabilities, interest rate spread, and bond and stock markets sizes expressed in amounts transactions as the main indicators of financial depth. The findings obtained showed that there was a positive relationship between

financial development and economic growth even though no later researchers and scholar wanted to support his study and the reason was due to the limitations of data available. The available data on his research that was complete was of USA but for the remaining countries; some of the data was missing on some variable used. It furthermore concluded that financial depth caused economic growth. This study was more concentrated on the bank-based financial system because most of the financial depth variables are from the banking sector of the financial system. Maybe it is due to the reason that stock markets were no that fully developed during the study was undertaken as they current are now where there is now a variety of market-based financial resources.

3.0 METHODOLOGY

3.1 Model Specification

To assess the impact of financial depth on economic growth of Zimbabwe, the study adapted a model by Abazi and Aliu (2015). Using data covering the period 1980 – 2014, the study employed the Ordinary Least Squares (OLS) approach:

$$EG_t = \beta_0 + \beta_1 Priv + \beta_3 BD + \beta_5 RS + \beta_6 Exprts + \beta_7 FDI + \beta_8 INF + \beta_9 GovExp + \beta_{10} FinRef + \varepsilon_t$$

Where:

EG – Economic growth

Priv – Domestic credit to private sector expressed as a percentage of GDP.

BD – Deposit money bank assets to deposit money bank assets and central bank assets (%)

RS – The interest rate differential between lending and deposit rates.

Exprts – Exports as a percentage of GDP.

FDI – Foreign Direct Investment as a percentage of GDP.

INF – Inflation rate.

GovExp – Government expenditure expressed as a percentage of GDP.

FinRef – Dummy for financial liberalization in 1991 where: 0 – before financial liberalization

<div align="right">1– after liberalization</div>

ε_t– Error term.

β_0- A constant

From the model of Abazi and Aliu (2015), the researcher only adapted the variables: Priv, BD, RS, Exprts, FDI and INF. The researcher excluded variables: net domestic credit provided by the government and other government institutions because the research only is more concerned

about the bank-based financial depth of Zimbabwe than the overall financial depth of the country's financial sector. The other reason is that financial depth is more stimulated by credit issued to the private sector so there tends to be no need to include credit issued by the government institutions. Deposit depth (demand, time and saving deposit money banks and other financial institutions as a percentage of GDP) is another excluded variable because time series of that variable was not available for Zimbabwe. Domestic credit provided by the financial sector as a percentage of GDP was excluded by the researcher because it accounts for credit to firms and household issued by banks and the stocks markets of which this study is more concerned with capturing credit provided by banks and not by the stock markets and other financial institutions even though it excludes credit issued to the government and its institutions. The researcher excluded net domestic credit issued to the government and other governmental agencies because as the research previously highlighted, it is focusing more on the financial depth of the country contributed by the economy's banking institutes to the firms in the private sector.

The study adapted exports (Exprts), foreign direct investment (FDI) and inflation (INF). These variables do not directly affect financial depth but they act as control variables because they are factors that affect the growth of an economy both in a negative or positive way. The dummy for financial liberalization was the new variable added by the researcher and it captures the period before and after the financial sector of Zimbabwe was liberalized. The error term ε_t will capture the problems of measurement errors of endogenous variables, omitting of relevant variables and inclusion of irrelevant variables.

4.0 RESULTS AND INTERPRETATION

4.1 Results Presentation

4.1.1 Unit Root Test

Table 4.1: Unit Root Test Results

	ADF Statistic				
Variable	Level	1st Diff	2nd Diff	Order of Integration	Remarks
Priv	0.0003	-	-	I (0)	Stationary at level
INF	0.0017	-	-	I(0)	Stationary at level
FDI	0.0422	-	-	I(0)	Stationary at level
Exprts	0.0115	-	-	I(0)	Stationary at level

RS	0.1370	0.0001	-	I(1)	Stationary at order 1
GovExp	0.1480	0.0000	-	I(1)	Stationary at order 1
BD	0.0431	-	-	I(0)	Stationary at level
EG	0.0088	-	-	I(0)	Stationary at level

Unit root test was performed using the Augmented Dickey-Fuller (ADF) and the null hypothesis was rejected at different levels of integration at 5% significance level for different variables used by the researcher. Variables domestic credit to private sector (*Priv*), inflation rate (*INF*), foreign direct investment (*FDI*), exports (*Exprts*), deposit money bank assets to deposit money bank assets and central bank assets (*BD*) and economic growth (*EG*) were stationary at level while interest rate spread (*RS*) and government expenditure (*GovExp*) were stationary at first difference.

4.1.2 Cointegration Test

The Johansen Cointegration test was used by the researcher of this study at the results were illustrated on the following table.

Table: 4.1.2 Cointegration Rank Test (Trace)

Number of Cointegration Equations	Eigen Value	Trace Statistic	Critical Value (0.05)	Probability
None	0.937413	309.9037***	197.3709	0.0000
At most 1	0.895884	221.2254***	159.5297	0.0000
At most 2	0.759594	148.8333***	125.6154	0.009
At most 3	0.696122	103.2197***	95.75366	0.0139

*** shows that the values are significant at 1%, 5% and 10%

The results found from obtaining the cointegration rank test showed that there are only four cointegrating equations at all levels of significance. This will give a conclusion for policymakers

to implement 4 years policies because if any policy implemented exceeds the four years it will be inconsistency.

4.1.3 Multicollinearity Test

Using the Ordinary Least Squares (OLS) approach, the model used by the researcher was tested for multicollinearity. Multicollinearity occurs when some or all of the variables in a model have an exact linear relationship (Gujarati and Porter, 2009). It is tested and analysed using the correlation matrix illustrated below.

Table 4.1.3: Correlation Matrix

Correlation Prob	BD	DGovExp	DRS	EG	Exprts	FDI	FinRef	INF	Priv
BD	1								
DGovExp	-0.008456	1							
DRS	-0.149712	-0.341013	1						
EG	0.444291	0.041449	-0.247997	1					
Exprts	0.637133	-0.035859	-0.05111	0.593181	1				
FDI	-0.088217	0.039345	-0.056077	0.18121	0.09167	1			
FinRef	-0.180118	-0.025244	0.00614	-0.26086	-0.021727	0.472618	1		
INF	0.087467	0.244183	-0.588996	0.05521	-0.03021	-0.089833	0.121923	1	
Priv	-0.169616	0.182659	-0.031231	0.236289	-0.139195	0.248282	0.079286	0.22828	1

From the table above, there is no severe correlation between variables used in the study. Correlation is mostly present between variable but it has to be acceptable only to a certain limit which is that it must not exceed 0.08 (80%) for it to be acceptable and not considered as being severe (Barnes *et al.*, 1978). The variables show that there is no severe correlation between them because it was evident from the table that the correlation probabilities have not exceeded 0.8.

4.1.4 Normality Test

The Jarque-Bera was used by the researcher to test for normality using the OLS approach which was adopted for the study. Normality tests assume that that the large sample is normally distributed if the statistic is less than 0.05. For the model to be normally distributed, skewness must be close to 0 and kurtosis must be less than 3. Normality of this model is shown on the table below.

Table 4.1.4: Jarque-Bera Statistic

Jarque-Bera	Skewness	Probability	Kurtosis
8.670661	-1.062976	0.013098	4.465226

From the results shown on the previous table, the model used by the researcher is not normally distributed because kurtosis is greater than 3.

4.1.5 Heteroscedasticity Test

The researcher used the Breush-Pagan-Godfrey test to test to diagnose for heteroscedasticity of the model used in the study.

Table 4.1.5: Breusch-Pagan-Godfrey Test for Heteroscedasticity

Test	p-value	Chi square	Conclusion
Breusch-Pagan-Godfrey	0.6784	0.6123	No Heteroscedasticity

From the hypothesis in chapter 3 on testing for heteroscedasticity, we reject the null hypothesis if the model's residuals are homoscedastic. From the results above, the residuals are homoscedastic because the p-value is greater than 0.05.

4.1.6 Autocorrelation Test

Even though the Classical Linear Regression assumptions state that autocorrelation does not exist, it tends to be violated sometime when autocorrelation tests are done. The researcher tested for autocorrelation using the Breusch-Godfrey test.

Table 4.1.6: Breusch-Godfrey Serial Correlation LM Test

F-Statistic	Obs* R-Squared	Prob. F(2.24)	Prob. Chi Square
1.756423	4.341128	0.1941	0.1141

From the results shown, there was no autocorrelation between variables used by the researcher in his study because the F-statistic and the chi square obtained were greater than the critical value which is 0.05. Therefore the researcher rejected the alternative hypothesis that autocorrelation is present.

4.2 Interpretation of Results

After performing the OLS regression on the model used in this study presented that four variables were significant while the other four variables were insignificant. The table below shows the regression results, DW test and the R-Squared and the Adjusted R-Squared.

Table 4.2.1: OLS Regression Results

Variable	Coefficient	Standard Error	T-Statistic	Prob.
C	-12.38268	6.629880	-1.867707	0.0736
BD	0.009462	0.66220	0.142884	0.8875
DGovExp	-0.147548	0.216214	-0.682419	0.5012
DRS	-0.016398	0.011592	-1.414639	0.1695
Exprts	1.751504	0.419503	4.175190	0.0003
FDI	-1.787122	0.691317	2.585099	0.0160
FinRef	-7.091056	2.233636	-3.174669	0.0040
INF	-0.005437	0.069018	-0.078772	0.9378
Priv	0.061822	0.028003	2.207720	0.0367

R-Squared   0.679965

Adjusted R-Square   0.577554

F-Statistic   6.639550

The regression model came out as:

$$EG_t = -12.38268 + 0.061822Priv + 0.00946BD + 1.751504Exprts - 0.016398RS - 1.787122FDI - 0.005437INF - 0.14754GovExp - 7.091056FinRef + \varepsilon_t$$

4.2.1 Domestic Credit to Private Sector (Priv)

This variable is the main measure that captures the bank-based financial depth of Zimbabwe. The p-value of domestic credit to private sector is statistically significant at 5% level of significance. The variable has a positive effect on economic growth which was shown by a positive coefficient of 0.061822 and it is consistent with the theory mentioned in chapter three of this study which stated that the expected sign of this variable to be positive. Holding other macroeconomic economic variables (ceteris paribus), increasing domestic credit to private sector by 1% will cause economic growth to increase by 6.1822%. The character of this variable on positively affecting economic was also supported by Bwire and Masiime (2006) as they also did an empirical research and vindicated that domestic credit to private sector positively affect economic growth.

4.2.2 Financial Liberalization Dummy (FinRef)

It is a dummy variable which measures the effect of financial liberalization of the financial sector on the economic growth of Zimbabwe. It is statistically significant at 5% level of signification and it has a negative impact of economic growth of the country because it a negative coefficient whereby liberalizing the financial sector by an additional 1%, economic growth will fall by a huge magnitude of 709.1056%. It therefore contradicts with the theory of financial liberalization which states that a financially liberalized country has an improved financial depth which positively affects economic growth. The result may have been due to the fact that the country is not industrialized which will be of no use to liberalize a country's financial sector for it will have a positive effect on the financial depth thereby negatively affecting the country GDP growth (Klein and Olivei, 2005).

4.2.3 Foreign Direct Investment (FDI)

Foreign direct investment was found to be significant at 0.05 level of significance even though it contradicted with the theory that it positively influences economic growth. It is not a main variable that directly measure financial depth but it is a macroeconomic variable that affects economic growth and from this study it negative affects Zimbabwe's economic growth because a single percentage increase in foreign direct investment in Zimbabwe will lead to a 178.7122% fall in GDP growth of the country which is opposes the study by Denisia (2010).

4.2.4 Exports (Exprts)

Exports are goods or services provided by the domestic economy to other economies or countries in exchange for foreign currency. An increase in exports holding imports constant is a benefit to

the GDP of the country. Exports variable was significant at 5% level of significance. From the finding of this study the researcher asserted that increasing exports by 1%, GDP of the Zimbabwe will increase by 175.1504%. This variable is in line with the theoretical perspective on exports which states that exports positively improve GDP. The mathematical sign of exports was positive as expected by the researchers.

5.0 CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Conclusion

The major objective of this research was to assess the impact of bank-based financial depth on economic growth of Zimbabwe. Ordinary Least Squares Approach was employed for a period of 1980 to 2014. The findings obtained were used for recommending policy that may promote economic growth of the country. Apart from assessing the impact of bank-based financial depth on economic growth of Zimbabwe, the researcher's secondary objectives were to come up with other factors that affect economic growth apart from bank-based financial depth and to come up with policies and recommendations that improve the banking sector and stimulate overall growth of the economy.

5.2 Policy Recommendations

From the findings obtained by the study, the country must try to assist firms to export more since exports tend to stimulate growth and also enforce the restriction of imports which cripple the economy from industrializing itself through the Indegenisation Policy which is currently being implemented. Zimbabwe is a bank-based economy so it has to develop the banking sector more until it has enough resources to development the financial market that is increasing the quality of assets provided in the market sector which only achieved by making sure that the financial sector is financial stable. Stability will be achieved by being able to withstand the financial shocks that the sector may face for example the Asian crisis which affected Zimbabwe more. For a developing country like Zimbabwe, the banking sector contribute more to growth than the market sector therefore promoting firms and individual to be active more in the banking sector than in the market sector. This can be achieved when the financial sector provide more information of playing a role in the banking sector which will raise the financial literacy rate. The country must try by all means to shun away from foreign direct investment and this is being achieved by the indigenisation policy and concentrate more on value addition from the gold, diamonds and platinum mined in the country so that the quality of exported minerals increases which lastly promotes the growth of Zimbabwe's economy.

REFERENCES

[1] Abazi, S., and Aliu, Aliu., (2015). Financial deepening and economic growth in the Western Balkans. Lund University, School of Economics and Business Management.

[2] Adusei, M. (2012), Financial Development and Economic Growth: is Schumpeter right? *British Journal of Economics, Management and Trade*, 2(3), 265-278.

[3] Ang, J., B., (2008). What are the mechanisms linking financial development and economic growth in Malaysia? *Economic Modelling*, 25, 38–53.

[4] Arestis, P, Demetriades P.O. & Luintel, K.B (2001). Financial development and economic growth: The Role of Stock Markets. *Journal of Money, Credit and Banking*, 33 (1): 16 – 41

[5] Bakang, M., L., N., (n.d). Effects of Financial Deepening on Economic Growth in Kenya. *International Journal of Business and Commerce,* 4(7): 1-50.

[6] Balago, G., S., (2014). Financial Sector Development and Economic Growth in Nigeria: An Empirical Investigation. *International Journal of Finance and Accounting*, 3(4): 253-265.

[7] Beck, T., & Levine, R. (2002). "Industry growth and capital allocation: Does having a Market or Bank-based system matter?". *Journal of Financial Economics*, 64 (2): 147 – 180.

[8] Beck, T., and Levine, R., (2004). "Stock markets, banks and growth: Panel evidence". *Journal of Banking and Finance*, 28 (3): 423 – 442.

[9] Borensztein, E., De Gregorio, J., and Lee J., W., (1998). How Does Foreign Direct Investment Affect Economic Growth? *Journal of International Economics* 45, p.115–135.

[10]   Boyd, J., H., and Prescott, E., C., (1986), Financial Intermediary-Coalitions, *Journal of Economics Theory*, Vol. 38: 210-230.

[11]   Denisia, V., (2010). Foreign Direct Investment Theories: An Overview of the Main FDI Theories. *Academy of Economic Studies.* 2(2).

[12]   Dickey, D., A., and Fuller, W., A., (1979). Distribution of Estimators for Autoregressive Time Series with a Unit Root. *Journal of American Statistical Association*, 74:427-431.

[13]   Favara, G. (2003), "An Empirical Reassessment of the Relationship between Finance and Growth", IMF Working Paper, WP/03/123, pp: 1-46.

[14]   Goldsmith, R. (1969). Financial Structure and Development. New Haven: Yale University Press.

[15]   Granger, C. W. J. (1981). Some Properties of Time Series Data and their Use in Econometric Model Specification. *Journal of Econometrics*. 16, 121-30.

[16]   Greenwood, J., and Jovanovic, B., (1990), Financial Development, Growth, and the Distribution of Income, *Journal of Political Economy*, Vol. 98: 1076-1107.

[17]   Ibadin, A., L., Moni, M., O., and Eikhomun, D., E., (2014). Development of Financial System and Economic Growth: An Empirical Evidence from Nigeria. *European Journal of Business and Management,* 6(30): 137-152.

[18]   Jecheche, P. (2011). An empirical investigation of the financial development-economic growth nexus: the case of Zimbabwe.

[19]   Johansen, S., (1988). Statistical Analysis of Cointegrating Vectors. *Journal of Economic Dynamics and Control*, 12, 231-254.

[20]   King, R., G., and Levine, R., (1993) "Finance and growth: Schumpeter might be right", *quarterly journal of economics,* 108(3), 717-737.

[21]   King, R., G., and Levine, R., (1993) "Finance entrepreneurship and growth: theory and evidence". *Journal of monetary economic*, 32(3), 513-542.

[22]   Klein, M., and Olivei, G., (2005). "Capital Account Liberalization, Financial Depth, and Economic Growth". National Bureau of Economic Research Working Paper 7384. ". National Bureau of Economic Research.

[23]   Koivu, T., (2002). "Do Efficient Banking Sector Accelerate Economic Growth in Transition Countries?". Bank of Finland, Institute of Economies in Transition, BOFIT Discussion papers, No. 14.

[24]   Levine R., (2005). Finance and Growth: Theory and Evidence. *Handbook of Economic Growth,* Volume 1A.

[25]   Levine, R., (1996). Stock markets: A Spur to Economic Growth. *IMF Finance and Development (Fe-D) Quarterly Magazine*, 33 (1): 7 – 10.

[26]   Levine, Ross and Sara Zervos, "Stock Markets, Banks and Economic Growth," *American Economic Review*, vol. 88 (3), June 1998, pp. 537 – 558.

[27]   Lucas, R., E. (1988), On the Mechanics of Economic Development, *Journal of Monetary Economics*, Vo. 22: 3-40.

[28]   McKinnon (1973) Money and Capital in Economic Development. Washington DC: Brookings Institution.

[29]   Ndebbio, J., E., U., (2004). "Financial Deepening, Economic Growth and Development. Evidence from Selected Sub-Saharan African Countries." AERC Research paper.14

[30]   Ndlovu, G., (2013). Financial Sector Development and Economic Growth: Evidence from Zimbabwe. *International Journal of Economics and Financial Issues.* Vol. 3, No. 2, 2013, pp.435-446.

[31]   Nzotta, S. M and E. J. Okereke (2009), Financial Deepening and Economic Development in Nigeria. *African Journal of Accounting, Economics, Finance and Banking Research.* Vol 5, No 5.

[32]   Odhiambo, N.M. (2008). Financial Depth, Savings and Economic Growth in Kenya: a Dynamic Causal Linkage, *Economic Modelling*, 25(4) pp 704-713.

[33]   Odhiambo, N.M. (2009), "Financial Deepening and Poverty reduction in Zambia. An Empirical Investigation." *International Journal of Social Economics*, Vol 37.

[34]   Schumpeter, J. (1911). The Theory of Economic Development. Oxford: Oxford University Press.

[35]   Shaw, E.S. (1973) Financial Deepening in Economic Development. New York: Oxford University Press.

[36]   Sibindi, A., B., and Bimha, A., (2014). Banking sector development and economic growth: evidence from Zimbabwe. *Banks and Bank Systems*, Vol 9(2).

[37]   Thornton, J., (1996). Financial deepening and economic growth in developing economies, *Applied Economic Letter, Taylor and Francis Journals*, Vol. 9: 869–873

[38]   Tyavambiza, T., and Nyangara, D., (2015). Financial and Monetary Reforms and the Finance-Growth Relationship in Zimbabwe, *International Journal of Economics and Financial Issues,* 5(2), 590-602.

[39]   Vera, K., (2010). The Effect of Finance System on Export Performance of Firms. Kyiv School of Economics.

[40]   Waiyaki, N. I. (2013). Financial development, Economic Growth and Poverty in Kenya. Retrieved from http://www.Erepository.uonbi.ac.ke.

[41]   Wolde-Rufael, Y. (2009). Re-examining the Financial Development and Economic Growth Nexus in Kenya. *Economic Modelling*, 26 (6), 1140-1146.

[42]   World Bank Group (2012). World Development Indicators 2012, World Bank Publications.

[43]   World Bank, (2001). World Development Indicator 2001. World Bank, Washington DC.