

## The Impact of Financial Intermediation on the Economy of Ghana



David Kwashie Garr<sup>1</sup>, David Mensah Awadzie<sup>2</sup>

<sup>1</sup>Presbyterian University College, Ghana: Department of Business Administration and Economics

<sup>2</sup>Accra Institute of Technology, Accra Business School

**ABSTRACT:** This study investigated the impact of financial intermediation on economic performance using data from sixteen (16) universal banks in Ghana. This investigation is carried out using five popular indicators of financial sector intermediation, which are deposit mobilisation, customer credit, operating cost, reserve requirement and interest rate spread. Gross Domestic Product Per Capital (GDPPC) was used as a measure of economic sector growth or performance. The causal research design was used in this analysis. The unit root was estimated using the Augmented Dickey Fuller (ADF) test. The relationship between the dependent and independent variables was also determined using basic statistics tests and multiple regression analysis. The results reveal that bank deposits have an insignificant positive effect on the economy. Bank credit, however, has a negative significant effect on economic growth. The results also suggest that operating cost has a negative effect on the economic growth but the result is not significant. However, bank reserves have a positive significant effect. Finally, the results suggest that interest rate spread has a positive effect on the economy, but the relationship is not significant.

**KEYWORDS:** Financial Intermediation, Economic Growth, financial systems, Gross Domestic Product Per Capita (GDPPC), Universal banks.

### I. INTRODUCTION

Using data from sixteen (16) universal banks in Ghana, this study examines the effects of financial intermediation on economic performance. Since the beginning of financial history, the role of the financial sector in economic growth has been the subject of heated policy discussion. It should be stressed that there is a bit of confusion with the terms used in existing research on financial intermediation and economic growth. Terms which appear in most research works are: financial intermediation, financial deepening, financial development, financial system, financial markets and so on. Although authors use different terms, in almost all papers the same indicators are used – those that refer to financial intermediation by banks. Furthermore, even though existing research encompasses different functions of the financial system, through which it can influence growth, financial intermediation dominates. It is considered to be the main function of banks. Banks act as intermediaries between savers and persons who are able and willing to borrow money. This relationship is often described as that between savers and investors. Financial development should, at least in principle, imply that financial resources are made available for the growth and development of the real sector of the economy.

In developing countries like those in Sub-Saharan Africa (SSA), however, financial systems have not been well-developed to play this vital role of intermediation. There is a growing body of theoretical and empirical literature linking financial sector development and economic growth. Schumpeter (1911) who asserts that financial markets play an essential role in the expansion of the real economy, was the first to recognize a significant and positive relationship between financial development and economic growth. He emphasizes the banking sector's significance as a catalyst for economic growth due to its role as a financier of productive projects.

When it comes to the relationship between the financial sector and economic growth, there are two main schools of thinking. One school, the Schumpeter group, believes that the financial sector influences economic growth, whereas the other believes that the economy influences the financial sector. As a result of the outcome of their works, some researchers such as Kar and Pentecost (2000) and Boulika and Trabelisi (2002) who belong to the first group argue that financial development has a positive effect on economic growth. They argue that financial development is indispensable for economic growth. Others with this same view are Goldsmith (1969), McKinnon (1973), Levine (1997) and Demircuc-Kunt (2006). According to them, generally,

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finance affects growth by influencing the saving, investment and technological innovations. A well-functioning financial system is considered as one of the key foundations on which sustained economic development can be built (Demirguc-Kunt, 2006). Larger economic growth, on the other hand, according to Said and Tumin (2011), stimulates banks to lend more and allows them to charge higher margins while enhancing the quality of their assets. In line with this, Robinson (1952), Singh (1997), and Ductor and Grechyna (2015) provide some arguments and evidence for an inverse relationship between financial sector development and the economic growth. They suggest that the financial system develops in response to improved economic growth. Again, there are others who are of the view that there is no relationship between the financial system and the economy. Lucas (1988) and Stern (1989) belong to this third group. There is, therefore, no consensus on the relationship between financial development and economic growth. This research investigates how financial sector development or intermediation impacts economic growth.

In Ghana, universal banks are an integral part of the formal financial system. Banks can either actively search out and draw idle funds that will be distributed to entrepreneurs for investment in projects with a high rate of social return, or they can passively leverage their quasi-monopolistic position by squandering investment opportunities with unproductive loans. Gross Domestic Product (GDP) growth is a key indicator of a country's macroeconomic performance. It is one of the most important metrics for determining a country's economic health. It is the market value of all goods and services generated by an economy in a given Financial Year. In the majority of the countries, banks are the most important financial institutions, since they can stimulate economic growth. The most important argument that supports financial liberalization is to improve financial development and get higher economic growth. Growth in GDP raises the expectation of banks and their customers; it influences a bank's portfolio of assets based on the direction of growth of the economy and affects the various market segments. A growing economy will also promote the desire for liquidity for transaction, speculative and precautionary motives. Closely related to economic growth is economic development which means an improvement in the quality of life and living standards, e.g., measures of literacy, life-expectancy and health care. *Ceteris paribus*, we expect economic growth to lead to more economic development. Higher real GDP enables more to be spent on health care and education etc. Some scholars use the two terms interchangeably. In this work economic growth is used even though reference has been made to other works that used economic development to represent economic performance.

Financial intermediaries are responsible for facilitating the transfer of funds from lenders to borrowers. Since they act as a link between savers and borrowers, banks are referred to as financial intermediaries. Savers invest money with banks and then collect interest and they must be able to withdraw money whenever they want. Banks provide loans to borrowers, who must repay the loans with interest. Companies that rely on banks are denied the funds they need if the intermediation process is disrupted. Many that are unable to raise funds elsewhere would be forced to reduce their savings, resulting in a reduction in overall economic activity.

Using data from sixteen banks in Ghana from 1996 to 2018, the aim of this paper is to investigate whether financial sector development, as reflected by financial intermediation factors, has any effect on economic growth. Sackey and Nkrumah (2012) examine the effects of Financial Sector Development on Economic Growth in Ghana using the Johansen Co-integration analysis. Their research used a quarterly time series set of data on Ghana over a ten-year period (2000 – 2009). They used the ratio of M2/GDP which they referred to as the most classic and practical indicator related to financial deepening. The result of their study shows that, there is a statistically significant positive relationship between the Financial Sector Development and Economic Growth in Ghana.

The following are the banks whose data have been used in this research: Agricultural Development Bank, CAL Bank, Fidelity Bank, GCB Bank Ghana Limited, Universal Merchant Bank, and Prudential Bank. The rest are Access Bank, Barclays/absa Bank, Ecobank Ghana Limited, Guaranty Trust Bank, Ghana Limited, Société General, Ghana (formerly SSB, SG-SSB), Stanbic Bank, Ghana, Standard Chartered Bank, Ghana, United Bank of Africa, Bank of Africa, Ghana and Zenith Bank, Ghana.

This investigation is carried out using five popular indicators of financial sector intermediation, which are deposit mobilisation, customer credit, operating cost, reserve requirement and interest rate spread. Gross Domestic Product Per Capital (GDPPC) is used in this research as a measure of economic sector growth. It represents the average income level of the population. It is expected that business activities increase with growth in income levels and supply of funds from the public. The banking sector has proved to be one of the most profitable sectors of the economy of Ghana. Large profits, however, by themselves do not guarantee that banks intermediate efficiently.

The rest of the paper is organized as follows: Section 2 reviews the literature, Section 3 presents the methodology, Section 4 which is about the empirical findings, discusses the data and the results of the econometric analysis, while Section 5 concludes the study with its implications.

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## II. LITERATURE REVIEW

### A. Theoretical Literature

The causality or relationship between financial development and economic growth can be traced from both theoretical and empirical perspective. In the endogenous growth literature, both theoretical and empirical studies of financial development and growth have nearly always focused on the role of banks in the rate of financial market development (Cameron, 1967 and McKinnon, 1989). According to Liang and Reichert (2006) the empirical results indicate a strong supply-leading relationship between financial sector development and aggregate output. At the same time, the findings show that the influence of financial sector development now is less pronounced than in previous research. This evidence of a reduced emphasis on a “supply-leading” relationship may reflect a changing role for financial sector development in the economic development process. Furthermore, the results indicate that at some point in the economic growth cycle, the driving force turns into a “demand-following” relationship.

The current theory of economic growth is based on Robert Solow's (1956) seminal work, which emphasizes the relevance of capital and labor availability in the growth process but completely ignores the function of the financial system. Maddison (1995) considers the economic growth performance over the long-term to be due to three main causal influences which increase per capita output: technology progress; accumulation of physical capital; integration of global economies vis-à-vis trade in goods and services, investment, intellectual and entrepreneurial interaction. According to Swan (1960), the goal of economic growth theories is to improve human welfare and, as a result, to determine the growth in a country's population's standard of living.

Creane, Goyal, Mobarak and Sab (2004), also indicate that there is a theoretical argument for linking financial sector development to economic growth. A well-developed financial system enhances the efficiency of intermediation by reducing information, transaction, and monitoring costs. It promotes investment by identifying and funding good business opportunities, mobilises savings, monitors the performance of managers, enables the trading, hedging, and diversification of risk, and facilitates the exchange of goods and services. These functions result in a more efficient allocation of resources which in turn feed economic growth

The fact that strong correlation exists between finance and economic growth has been well documented in the economic development literature. Theoretically, studies by Schumpeter (1911, 1912, 1934), Goldsmith (1969), McKinnon (1973) and Shaw (1973) have established a strong relationship between financial intermediation and economic growth. In addition to his earlier views, Schumpeter (1912) emphasizes the importance of the banking system in economic growth by indicating that financial institutions support innovation and creativity and therefore enhancing future growth by identifying and funding productive investments. As a result, it fosters the creation of wealth, trade, and capital formation (Ahmed 2006). Park (1994) backs up previous studies on the role of intermediation by establishing that it aids aggregate investment by moving non-diversifiable risks from risk-averse savers to risk-neutral entrepreneurs and bankers.

Another line of argument in favor of the concept that countries with efficient financial systems expand quicker, whereas those with inefficient financial systems have bank collapses and trail behind in economic growth and development, is found in the finance literature (Shaw, 1973). A well performing banking sector increases economic efficiency, supports investment and encourages growth. Development economists have recognised that the financial system helps in the economic development process. Most importantly, they hold the view that the financial system serves as an intermediary that ensures the optimal allocation of savings for investment.

Transaction costs and asymmetric information are central to traditional intermediation theories. They are intended to keep track of institutions that accept deposits, issue insurance policies, and channel funds to businesses. The primary function of a bank is to mobilize financial savings and invest them in appropriate credit and other goods and services so that it can benefit and indirectly support economic growth and development. A strong banking sector boosts economic productivity, encourages investment, and boosts growth. Economic growth is supported by the financial system, according to development economists. Most significantly, they believe that the financial system acts as an intermediary, ensuring that savings are allocated to investment in the most efficient manner possible.

Studies by Chan (1983), Diamond (1984), Ramakrishnan and Thakor (1984) and Boyd and Prescott (1986) find that financial intermediation reduces monitoring costs arising from information asymmetry between borrowers and lenders. According to Park (1994), the traditional notion is that the value of banking is derived from financial intermediation cost efficiency. According to Frankel (2001), what a financial system should be able to deliver is the ability to work properly, to seamlessly sustain acceptable levels of investment, and to withstand adverse economic shocks. Allen and Santomero (1998) add to this theory by stating that, theories of intermediation are built on the models of resource allocation based on perfect and complete markets and that it is frictions such as transaction costs and asymmetric information that are important in understanding intermediation.

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Sologoub (2006), building on previous works, asserts that efficient financial intermediation is a critical aspect in the economic growth process because it affects the successful mobilization of investible resources.

### ***B. Empirical Literature and Definition of Variables***

The effectiveness of financial intermediation, according to Akoto and Nabieu (2014), is determined by how well surplus funds are matched against deficit funds, or how well surplus funds are used to compensate for deficit funds. Other empirical studies in which it is concluded that financial development is a stimulant for higher economic growth and productivity growth, include the studies by Iimi (2004) and Mensah (2003). Mensah (2005), writing on Ghana, supports the proposition of a positive relationship between the development of financial institutions and economic growth. Supporting earlier works Creane, Goyal, Mobarak, and Sab (2004), also indicate that policies aimed at improving financial sector performance would result in lower information, transaction, and monitoring costs, resulting in increased allocative efficiency and production. Ngugi (2001) agrees, saying that inefficiency in the intermediation process is an indicator of a repressed financial system. This is because limited lending policies with high administrative expenses and fixed interest rates do not reflect the true cost of capital in a control policy environment. Such a policy regime restricts the financial system's growth in terms of institution diversity and financial assets while encouraging non-price competition. Adenutsi (2011) reports that financial development does not immediately promote growth in the Ghanaian economy unless it is successful in attracting non-debt foreign capital in the form of remittances through the formal sector. Migrant remittance inflows increase as a result of financial development, which boosts growth. Financial development, again, according to Adenutsi (2011), is harmful to economic growth unless it succeeds in mobilizing risk-free foreign resources such as remittances. Recent authors such as Entrop, Memmel, Ruprecht, and Wilkens (2012) add new dimensions to the debate by claiming that the competitive structure of the industry is dictated by how inelastic the market for loans and deposit supply is in relation to the intermediation fees charged.

### **Bank Customer Deposit**

The ability of the financial sector to collect and attract deposits from savers is critical to economic progress. Individuals deposit money with banks, which they are guaranteed to be repaid with interest. The bank derives its authority from the backing it receives from the government. The bank can then lend these funds to firms desiring to invest in a risky project. If a firm attempt to raise funds directly from the risk-averse surplus spending units, it would have difficulties in guaranteeing the level of safety that the surplus units demand. Kolb and Rodriguez (1993) emphasise that gathering the relevant information about borrowers requires capital, effort, and expertise.

Saving is one of the crucial determinants for economic development that has arisen as a fundamental concern in developing countries, according to Rahman and Uddin (2012), for at least two reasons. First, in recent years, foreign aid to emerging economies has decreased. Second, saving has a positive impact on economic growth and development. The higher a country's saving rate is, the higher its growth rate can be. Growth is necessary for economic development, but it cannot be achieved without investment or capital accumulation, and saving through investment is an important part of this process. Although external capital inflows can be used to fund investments, they come with a lot of risk, politically humiliating terms, and economically unfavorable conditions. Apart from that, according to Rahman and Uddin (2012), the amount of such assistance is insignificant in comparison to the developing countries' needs. So, it will be beneficial to achieve the ability to move in the direction of increasing self-reliance in terms of financing investment or capital formation. It is the savings, which plays a dominant role in achieving self-reliance and then growth and stability. It can help a developing economy to get rid of the so-called low-level equilibrium trap or vicious cycle of poverty by creating a big push. Again, according to Rahman and Uddin (2012), banks mobilise deposits as their primary source of funds. Having optimal deposits level, banks shall be able to lend the funds to generate interest on lending. In addition to lending, the deposits fund can be placed in certain investments avenues which suits the banks or the depositors' objectives.

Deposits bring costs to the banks, either on the maintenance of the deposits and its transactions or on the interest payout onto the deposits upon deposit maturity. Financial systems that are more effective at mobilizing the savings of individuals can profoundly affect economic development by increasing savings, exploiting economies of scale and overcoming investment indivisibilities. Besides the direct effect of better savings mobilization on capital accumulation, better savings mobilization can improve resource allocation and boost technological innovation (Sirri and Tufano 1995). This implies that deposit mobilization and bank lending are related. Akoto and Nabieu (2014) discover that banks that mobilized the most deposits also post the most loans and advances on average. However, their study discovers that banks that make the most loans and advances do not actually make the most money. The ratio of bank customer deposits to Gross Domestic Product (GDP) is used in this study.

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## Bank Credit to Customers

Banks are important in their role in providing loans to encourage investment and production. Credit is a major aspect of financial intermediation. Majority of bank assets take the form of loans, so credit decisions represent a critical bank function. When bank deposits are mobilized and borrowers are not eligible to contract loans, the cost of the deposits becomes too much for the banks to bear. In most developing countries the option left for investing surplus funds is Government securities whose returns are lower compared to loans. Investing in Government securities does not support the development of the financial sector (Garr and Awadzie, 2021) because this money denies the private sector funds for business development. Loanable funds theory assumes that interest rates are determined by supply of loanable funds and demand for credit (Fry, 1995). Kindleberger (1984), identifies three aspects of financial intermediation: borrowing at retail and lending at wholesale, lending long and borrowing short, and diversification of risks. The research of Lombardi, Mohanty, and Shim (2017) is focused on how household debt affects private consumption and GDP growth. Mian, Sufi, and Verner (2015) already refuted the neoclassical model's key claim that debt buildup is accompanied with predicted future productivity increase. According to their findings, an increase in household debt-to-GDP ratio affects consumption across countries with a three-year lag. In other words, after a certain lag, the unconditional link between household debt and growth is negative. Borio, Kharroubi, Upper, and Zampolli (2016) show that loan booms, notably in the construction industry, are accompanied by severe resource misallocation and a slowdown in productivity development, both of which have long-term negative consequences for the real economy. They argue that when considering the macroeconomic implications of financial booms and busts, it is important to go beyond the current focus on aggregate demand effects. In his paper on the Czech Republic, Černohorský (2017) analyzed the relationship between bank loans and economic development. The purpose of his article was to look at the effects of the banking sector's development of various forms of loans on economic development, The findings of his research show that various types of bank loans have an impact on economic growth as measured by GDP growth. Consumer loans are the only exception, as this link has yet to be established. Instead, he explained that consumer loans are influenced by economic growth. Other types of loans, which are, loans to non-financial businesses, loans to households, mortgage loans and total loans, influence the development of gross domestic product.

The increase in the intermediation process, all things being equal, would increase the availability of credit and vice versa. As stated above, recent writers like Entrop, Memmel, Ruprecht and Wilkens (2012) add new dimensions to the discussion and suggest that the industry's competitive structure is determined by the extent to which the demand for loans and deposit supply are inelastic with respect to the intermediation fees charged. In this research, the ratio of credit to total deposits is used as a variable for measuring the ability and willingness by banks to advance credit to their customers, an aspect of the development of the financial sector. A higher ratio is an indication of improved financial sector development.

## Operating Cost

The cost of financial intermediation explains operating costs. The financial intermediation theory and the loanable funds theory can be used to explain how rising operating costs lead to rising intermediation costs, resulting in a large interest rate spread as a result of the high expenses that lending financial institutions face in their everyday operations. Since improved management of the operating expenses would increase efficiency and therefore raise profits of banks, the ratio of these expenses to total assets is expected to be negatively related to profitability (Said and Tumin, 2011; Athanasoglou, Brissimis and Delis, 2005). An efficient cost management will be efficient in portfolio selection and allocation of resources. The banking industry's efficiency at minimizing costs relative to income and assets broadly improve bank profitability and generally a growth of the economy. Dietrich and Wanzenried (2011) reveal that the smooth running of a country's economic activities depends on the efficient banking system. Levine and Zervos (1998) and Athanasoglou, Brissimis and Delis (2008) suggest that a well-functioning and profitable banking sector is necessary to drive economic growth. Operating efficiency is viewed as the ability of the company to reduce operating costs in attaining its objective through combination of right people, process and technology. With the right combination of resources, business operation of any company will enhance productivity of services or goods offered (Shawk, 2008). Banks operate efficiently by channeling savings from deposits mobilized toward those companies with high expected social and economic returns. After lending them, banks monitor these resources to ensure effective and efficient utilization. On the other hand, commercial banks which are wasteful and inefficient in channeling savings tend to slowdown economic growth and community welfare (Athanasoglou, Brissimis, and Delis, 2008). Banking system which is efficient enables financial resources to be channeled in the highest productive areas within the economy. This idea is proposed by Beck et al. (2010) who argue that economic growth and high productivity are associated with efficiency of the financial system in allocating financial resources in the economy. Banks measure their own efficiency mainly through the Cost/Income indicator, expressing the ratio of operating costs over the net income of the bank or the total bank income. However, in this research cost over total assets is used to express the cost of managing assets.



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### The Reserve Requirement

The importance of reserve requirements in bank financial intermediation is significant due to the function they play in determining bank liquidity. Raising reserve requirements forces banks to keep back a larger amount of their cash, limiting the money supply, whilst lowering reserve requirements has the reverse effect, increasing the money supply. Economic theory dictates that the reserve requirement negatively impacts financial sector development as it directly limits the bank's ability to grant new loans, limits deposit creation possibilities and increases lending rates (Schiller 2003; Colander 1995). The reserve requirement sets the minimum reserves each bank must hold to demand deposits and bank notes. The reserve/deposits variable is calculated by dividing the banking system's aggregate central bank reserves by the banking system's aggregate deposits. One of the early writers, Fama (1980), theorizes that the reserve requirement is a direct tax on deposit returns since it reduces deposit returns by the portion of deposits that must be maintained as reserves. By keeping interest rates high, large liquidity reserve requirements act as an implicit financial tax. According to Fama (1985), bank borrowers bear the brunt of the implicit tax imposed by reserve requirements.

The reserve requirement in the banking sector, may, therefore constrain credit supply and for that matter bank profitability. Navneet, Boopen, Sawkut, Shalini, and Binesh (2009) observe that increase in non-interest-bearing reserve requirements results in a widening of banking spread as banks face reduced liquidity. Sarpong, Winful and Ntiamoah (2011) also confirm that in Ghana, banks respond to increases in reserve requirements by increasing the margin between lending and deposit rates. Supporting Fama's position, Chirwa and Mlachila (2004) note that the opportunity cost of holding reserves increases the economic cost of funds above the recorded interest expenses that banks tend to shift to customers. Francis and Osborne (2009) propose that the imposition of higher reserve requirements reduces lending. Studies by Demircuc-Kunt and Huizinga (1999), indicate that the reserve requirement may also affect the portfolio holding of banks as they try to avoid funds which attract large reserves. Reserve requirement therefore limits financial intermediation.

### Interest Rate Spread

Most developing countries are characterized by persistently high interest rate spreads and loan losses. This has important implications for the growth and development of these poorer economies. The difference between the risk of its deposits and its loans is a major contributing factor to the size of the spread the bank is able to earn (Kolb and Rodriguez, 1993). The mismanagement of these two intermediation functions has been the major cause of failure in depository institutions (Sinkey, 1992).

Because interest rate spreads are widely accepted as an adequate indicator of bank intermediation efficiency, a high interest rate spread is suggestive of inefficiency in the banking sector. The efficiency of the intermediation process is proxied by the wedge between lending and deposit rates. Unlike Kolb and Rodriguez (1993) and Brownbridge (1998), who believe that the size of the interest rate spread is determined by the risk of a bank's deposits and loans, Ngugi (2001) believes that the type of market (perfect or imperfect) is a contributing element.

The interest rate spread is defined by Folawewo and Tennant (2008) as the difference between the average lending rate and the average deposit rate. Following their lead, the difference between the average lending rate and the average borrowing rate is used to define the interest rate spread in this study. The loanable fund, which is driven by demand and supply and whose price is established at the point of equilibrium, also has an impact on the interest rate spread. Deposit rates should be high enough to attract depositors, while lending rates should be low enough to stimulate business borrowing, resulting in the spread shrinking.

## III. RESEARCH METHODOLOGY

### A. Model Specification

An earlier work by Garr and Awadzie (2021), establishes the relationship between financial intermediation and bank performance using similar bank data with the results confirming that operating cost and reserve have significant relationship with bank performance. The difference between that work and this one is that bank borrowing rate and bank lending rate have been replaced by the interest rate spread. However, like with earlier analyses, the causal research design was applied in this one. Causal research examines the interaction of variables, or the effect of one item on another, and, more specifically, the effect of one variable on another (Mugenda and Mugenda, 2003). The study's target population was sixteen (16) universal banks in Ghana.

The unit root was estimated using the Augmented Dickey Fuller (ADF) test. ADF tests are often used to verify the stationarity of a series, with the null hypothesis of unit root in the series being dismissed if the ADF statistics surpass the critical value. The relationship between the dependent and independent variables was also determined using basic statistics tests and multiple regression analysis. For this analysis, the following model has been developed:

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$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \mu_t$$

where Y stands for the dependent variable of Gross Domestic Product Per Capital (GDPPC),  $\beta_s$  stand for the coefficients of the different independent variables, and  $X_1$  to  $X_5$  stand for the independent variable values: deposit (BDEP), Credit (CCREDIT), Operating Cost (OCOST), Reserve Requirement (RESERVE), Interest Rate Spread (IRS) and  $\mu$  are the residual terms.

### IV. DATA PRESENTATION AND ANALYSIS OF FINDINGS

#### A. Descriptive Statistics

Table 1 shows the results of the descriptive statistics for the dependent and independent variables. The growth of the economy is measured in terms of GDP per capita. GDPPC, BDEP, CCREDIT, OCOST, RESERVE, and IRS are among the variables included in the descriptive statistics of the results, which are displayed in six columns.

GDPPC has a mean of 3.43 percent, with a maximum of 20.2 percent and a minimum of -37.0 percent, as shown in the table. BDEP is 19.09 percent on average, with a maximum of 26.72 percent and a minimum of 7.15 percent. CCREDIT obtained 68.7 percent on average, with a maximum of 143.3 percent and a minimum of 42.11 percent. The mean of OCOST was 6.05 percent with a maximum of 7.91 percent and a minimum rate of 4.31 percent. RESERVE obtained a mean rate of 17.58 percent, with a maximum of 39.24 percent and a minimum of 7.06 percent. The mean of IRS was 15.49 percent, a maximum of 20.69 percent, with a minimum rate of 12.50 percent.

TABLE I. Descriptive statistics.

	GDPPC	BDEP	CCREDIT	OCOST	RESERVE	IRS
Mean	0.034300	0.190926	0.687035	0.060555	0.175882	15.49950
Median	0.073500	0.213682	0.616936	0.060287	0.152669	15.02500
Maximum	0.202000	0.267295	1.433318	0.079126	0.392434	20.69000
Minimum	-0.370000	0.071492	0.421164	0.043160	0.070639	12.50000
Skewness	-1.290309	-1.200159	1.758788	-0.177813	1.544574	0.803254
Kurtosis	4.164479	3.356317	5.344980	3.099575	4.123116	2.738214
Observations	20	20	20	20	20	20

#### B. Correlation Matrix

The correlation analysis was used to determine the intensity and direction of the two variables' linear relationship. The correlation statistics in table 2 reveal a positive relationship between the dependent and independent variables. CCREDIT and OCOST, on the other hand, have a negative relationship with GDPPC. This suggests that when these two explanatory variables fall, the growth of the banking sector rises.

TABLE II. Correlation matrix.

	GDPPC	BDEP	CCREDIT	OCOST	RESERVE	IRS
GDPPC	1.000000	0.157753	-0.148289	-0.136549	0.085019	0.216153
BDEP	0.157753	1.000000	-0.884979	-0.072326	-0.893702	0.420265
CCREDIT	-0.148289	-0.884979	1.000000	-0.061799	0.901493	1.698443
OCOST	-0.136549	-0.072326	-0.061799	1.000000	-0.132723	-0.334807
RESERVE	0.085019	-0.893702	0.901493	-0.132723	1.000000	-0.032195
IRS	0.216153	0.420265	-0.334807	-0.032195	-0.328130	1.000000

#### C. Stationarity Tests

The Augmented Dickey Fuller Test was used to test the stationarity or unit root of the data as used in this analysis, and the results are shown below. The study compared test statistic value with that of test critical value at 5% significance and considering p-value and it has been indicated that BDEP and OCOST had unit roots. This is because the ADF test statistics' absolute values for each of these variables were less than the absolute variables of the test essential values at 5%. Furthermore, the p-values for the ADF test statistics for these variables were both greater than 5% (0.83 and 0.21, respectively). The null hypothesis of no unit roots in the data series could not be rejected in this situation, so it was accepted. The variables with unit

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root, on the other hand, have been transformed into first differences in order to achieve stationarity in these data. Following that, the updated data was used in the study's regression model.

**TABLE III. Result Of Augmented Dickey -Fuller (Adf)**

	ADF Test Statistics	Test Critical Value at 5%	*P -Value
GDPPC	3.137355	3.029970	0.0406
BDEP	0.681008	3.029970	0.8288
CCREDIT	3.494159	3.029970	0.0033
OCOST	2.211308	3.029970	0.2088
RESERVE	3.167187	3.065585	0.0415
IRS	5.078578	3.029970	0.0007

\*MacKinnon (1996) one-sided p-value

**Table IV. Result Of Augmented Dickey -Fuller (Adf) Stationarity Test 1<sup>st</sup> Difference.**

	ADF Test Statistics	Test Critical Value at 5%	*P -Value
BDEP	0.681008	3.029970	0.8288
OCOST	2.211308	3.029970	0.2088

\*MacKinnon (1996) one-sided p-value.

### **D. Result of the Impact of Explanatory Variable on GDPPC**

The result of the multiple linear regression is shown in table 5 below. In the table, deposits have an insignificant positive effect on GDPPC with a coefficient value of 0.1391. This means that a percentage increase in the deposit by one percent will lead to an increase in GDPPC by 13.91%, but the result does not produce a significant effect. With a coefficient value of -0.8114, credit has a negative significant effect on GDPPC. A percentage decrease in bank credit would result in an 81.14% increase in economic development. The results also suggest that operating cost has a negative effect on the GDPPC with the coefficient value of -5.825. This implies that a percentage decrease in operating cost will lead to an increase in the GDPPC by 5.83%, but the result is not significant. However, bank reserves have a positive significant effect on GDPPC with a coefficient value of 2.119. This means that a percentage increase in bank reserves by one percent will lead to an increase in GDPPC by 2.12%. Finally, the result suggests that interest rate spread has a positive effect on GDPPC with a coefficient value of 0.0075, that a percentage increase in interest rate spread causes GDPPC to increase by 0.75% but the result is not significant.

**TABLE V. Result of the Impact of Explanatory Variable on GDPPC**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.115540	0.277971	0.415655	0.6844
BDEP	0.139108	0.908105	0.153184	0.8806
CCREDIT	-0.811489	0.303052	-2.677719	0.0190
OCOST	-5.825635	5.113429	-1.139282	0.2751
RESERVE	2.119292	0.789543	2.684200	0.0188
IRS	0.007569	0.014330	0.528152	0.6063
R-squared	0.391049	Durbin-Watson stat		1.900733

## **V. IMPLICATIONS OF THE FINDINGS AND CONCLUSION**

This study investigates causality between financial intermediation and economic growth using multiple linear regression. The financial sector intermediation variables used are, bank deposits, customer credit, operating cost, reserve requirement and interest rate spread. Economic growth is represented by Gross Domestic Product Per Capital. The findings are that bank deposit



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does not impact economic growth significantly and this implies that growth of the economy is impacted by funds other than internally mobilized funds by banks. An example could be external borrowing by the country which, however, could be the subject of another investigation. Again, that operating cost of banks does not affect economic growth at 5% significance level implies that there are other important costs that affect economic growth. Also, the interest rate spread may be an important factor in bank performance but not very important in economic growth.

The finding, however, reveals that customer credit impacts negatively on economic growth. This result is contrary to expectation as the purpose of credit is to expand and grow the business sector which in aggregate would lead to the growth of the economy. However, this supports the position of Adenutsi (2011) that financial development does not immediately promote growth in the Ghanaian economy unless it is successful in attracting non-debt foreign capital in the form of remittances through the formal sector and also it is harmful to economic growth unless it succeeds in mobilizing risk-free foreign resources such as remittances. We can also conclude that most bank loans to customers in Ghana belong to the consumer category partially confirming the position of Černohorský (2017), that consumer loans rather are influenced by the economy and not vice versa. Again, this implies that bank loans in Ghana are diverted from the productive sector to the consumer sector of the economy. Further research into this relationship needs to be conducted for empirical evidence. Again, the high levels of non-performing loans and high interest rates on loans are some of the reasons why customer credit may have negative impact on the performance of the economy of Ghana. The result of this work is an indication that the Ghanaian economy has not reached the stage where the growth and development of the economy can be left in the hands of the private sector which is regarded as the engine of growth.

Finally, the findings confirm that the reserve requirement is significant in relation to economic growth. The reserve money enables the Government to have access to a certain percent of total bank deposit mobilized. Research shows that the reserve affects bank performance negatively by limiting the bank's ability to grant credit and become profitable. However, with this result of significantly impacting economic performance positively, it means that policies that put more money in the hands of the government are better for the economy. That is, if the government has access to more funds, it can help drive the Ghanaian economy to growth more positively than the private sector. The findings of this study, therefore, demonstrate that the Ghanaian economy is dominated by the public sector rather than the private sector.

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