Chapter

Effects of Some Monetary Variables on Fixed Investment in Selected Sub-Saharan African Countries

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Abstract

Monetary variables are not only important for the attainment of stable inflation but also for exercising influences in various ways on the behavior of the real economy, including the level of investment activity. Investment is very crucial in improving a country's productivity and growth and increasing its competitiveness in the long run. The study aims to investigate how monetary variables such as lending rates, exchange rate, and money supply affect investment actions in some selected Sub-Saharan African countries in the period 1980–2018. Using the panel autoregressive distributive lag method in the long run, a negative and significant relationship between lending rates and investment was discovered. Also, investment is positively related to both money supply and exchange rate in the long run. It is recommended that when central banks take contractionary measures, they must always consider the resulting change in investment as it is an essential part of aggregate demand. In a sluggish economy, interest rates should not be raised to the point where investment is discouraged and assets are suppressed.

Keywords: lending rates, exchange rate, money supply, investment, sub-Saharan Africa, panel autoregressive distributive lag

1. Introduction

The linkage between the monetary sector and the real sector plays a huge role in addressing the ills of economies such as achieving the price stability goal of the country's monetary policy, boosting economic growth, and reducing unemployment among the others [1]. Understanding the link between these sectors is important for the general economies, policymakers, and even households. For example, the use of both monetary and fiscal policy affects interest rates and has been seen after the global financial crisis that developed economies reduced interest rates until short-term rates were almost zero as a way to ease monetary policy. This led to household borrowing more than they could afford and suddenly, most households were indebted [2]. Thus, the demand side of many of the world's largest economies was affected to the point that the International Monetary Fund (IMF) and the World Bank downgraded their economic growth forecasts twice during 2008, mid-year [3]. Monetary variables are not only important for price stability

only but also for influencing in various ways in the real economy, especially improving the level of investment activity [1].

Investment is very crucial in improving a country's productivity, growth and increasing its competitiveness in the long-run. To find the benefits of linking the monetary and real sector, it is imperative to investigate how monetary variables such as the lending rates, exchange rate and money supply can affect investment actions (a real sector variable). The investigation is conducted in a panel set-up of some selected Sub-Saharan African (SSA) countries such as Kenya, Mozambique, Nigeria, South Africa and Tanzania. The countries and study period are selected on the data availability basis. In Sub-Saharan Africa, there is limited literature addressing the linkage between the two sectors, as most studies stick to the relationship between variables of the same sector [4–6].

In the economic literature, one of the measures of investment activities is the gross fixed capital formation (GFCF) representing a total increase in fixed capital and is crucial to the economy because it builds an important part in gross domestic product. GFCF has always been identified as an important factor and an enhancer of economic growth in Sub-Saharan African countries [7–9]. It has three main components namely GFCF general government sector, GFCF private sector and GFCF public sector [10]. The GFCF government sector comprises of investment by the state; GFCF private sector includes investment by private enterprises; while GFCF public sector involves investment by public enterprises [11]. Ali [10] argues that because private investment is less associated with corruption, it has a more favorable effect on economic growth in comparison to public investment. Therefore, the investment needs to be handled carefully in that there are monetary policy instruments that assist in boosting investment, especially private investment. That is one of the reasons that a country's monetary policy should be designed in a manner that attracts investors. For example, in South Africa, business confidence and investment are mutually reinforcing, implying that for investment to take place business owners as investors must have the confidence to invest looking at policies adopted by the country and at the performance of the economy [12].

Business confidence is one of the factors that can contribute in boosting the economy in the sense that, owners have confidence and are certain about their growth and thus hire more staff, leading to increased employment and investment. However, it is distressing when Ndikumana [13] mentions that more than 30 of SSA countries experienced a decline in investment activities since the beginning of the 1980s. This has brought some concerns as an investment is a major enhancer of economic growth. For example, the Nigeria Bureau Statistics [14] report a yearly decline Nigeria's GCFC at the beginning of 2014. In the middle of 2015, Nigeria experienced negative growth in real terms which was for the first time since 2013 [13]. Changes in GCFC are regarded as a sign of economic incompetence. Thus, identifying how and to what extent monetary variables affect GCFC is of critical importance. This is because monetary variables are not only important for the attainment of stable inflation but also for exercising influences in various ways on the behavior of the real economy, including the level of investment activity.

The three monetary variables (exchange rates, money supply, and lending rates) selected for this study are crucial to explaining the link in the monetary-real sector nexus. The exchange rate is defined as a price relation of a country's currency to another country [14]. Its importance lies in the fact that they affect the relative prices of both the domestic and foreign countries. It is known that an appreciation in a country's currency leads to its goods abroad more expensive, and foreign goods in that country become cheaper, ceteris paribus [9]. Sub-Saharan African

economies have at some point experienced appreciation in their currencies due to factors such as decreased trade barriers, decreased productivity and a rise in their price levels.

The following are the trends of the currencies in selected countries against the United States dollar; the Nigerian Naira has been reported to have reached an all-time high of 380 in March of 2020 [13]. The drop on oil prices in Nigeria put pressure on the monetary authorities to devalue the Naira to protect foreign exchange reserves. The Kenyan Shilling reached an all-time high of 106.80 in October of 2011, which might be due to the 2011 terrorist attacks in Kenya [15]. The Mozambique Metical reached an all-time high of 81.50 in October of 2016. The International Monetary Fund (IMF) discover that Mozambique has hidden some loans in three state-owned companies and this resulted in the IMF stopping its support [15]. Due to the declaration of a lockdown in South Africa as a way of preventing Corona Virus disease 2019 (COVID-19), the South African Rand reached an all-time high of 19.35 in April of 2020 [16].

One of the ways used by central banks to control the money supply is through the required reserves the banks ought to keep. For example, in South Africa, the South African Reserve Bank requires commercial banks to keep 2% of their total liabilities; the Bank of Ghana requires 10%; the Central bank of Kenya requires 5.25% and the Bank of Tanzania 7% [15, 16]. Reserve ratios in SSA have been accelerating since the mid-1990s and are quite high. In many SSA countries, the cash reserve requirements are accompanied by a liquid asset requirement (LAR) to finance the costs of deficits in banks. It should be noted that when central banks undertake policy decisions, expected inflation plays a huge role than the current rate of inflation. Inflation forecasting can be considered a comparative advantage of a central bank as it maintains information about the state of the economy over the public [17].

It had been argued that higher lending rates distort a country's level of investment, reduce the rate of economic growth and are an obstacle to smooth transmission of monetary policy impulse [18, 19]. Altman et al. [20] support this argument by adding that in response to a country's high lending rates, foreign investors reduce their investments. This is because consumer and business confidence in taking out risky investments is discouraged. Therefore, maintaining lower levels of lending rates will improve a country's investment levels. Comparing lending rates with an investment of 2008 in the selected countries, it can be seen in **Figure 1** that Mozambique is the only country that had lending rates exceeding gross fixed capital formation in 2008. Kenya, Nigeria and South Africa all have gross fixed capital formation levels higher than lending rates. In SSA, generally, this can be due to the stock of bank credit to the private sector that remains very low [21]. Several studies suggest that among others, monetary policy actions and macroeconomic uncertainty constrain bank lending rates [21–23].

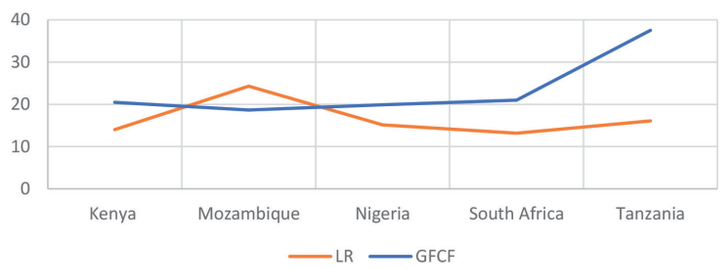

Figure 1.
Gross fixed capital formation (GFCF)-lending rate nexus, 2008.

2. Literature review

2.1 Theoretical literature

The effects of monetary policy variables on investment are based on the Keynesian theory of investment. The theory was developed by Keynes [24] who state that investment decisions are determined by a conducive environment for the investor and a long run survival behavior of an investor. For this to happen the investor need to consider the accumulation of capital which is influenced by lending rates [25–27]. The longer the investor survive in business, the more the economy can grow [26].

Keynes theory of investment further compares the marginal efficiency of capital (MEC) with interest rates [26, 28, 29]. If the MEC exceeds the rates, the investment will be increased. But because the production process demands the use of more and more capital, the MEC will suddenly fall. Once the MEC equals to the level of interest rate, there will not be any additional investments on income-earning assets. Additionally, Duesenberry [28] developed the financial theory of investment which assumes that there is a relationship between the cost of capital and interest rates.

The Keynesian theory of investment can be extended to include the effects of all the selected monetary variables on investment. For instance, according to Nucci and Pozzolo [30], investment is a function of the cost of capital and exchange rate. Also in Amiti and Weinstein [31] investment can be determined by money supply through bank supplies.

2.2 Empirical literature

It is vital to investigate the influence of monetary variables on investment activities as an investment is an important economic resource needed for economic growth. Literature suggests that monetary variables such as exchange rate do affect investment levels of a country in several setups. For instance, Osemene and Arotiba [32] advocate for a stable exchange rate environment to have positive effects of volatile exchange rate on foreign portfolio investment. Therefore, it can be argued that monetary authorities should formulate policies that result in a stable exchange rate as a way of boosting investors' confidence. These findings are enforced in Teddy [33] that a high volatile (highly unstable) exchange rate in Zambia harmed private capital inflows.

There are several conditions found in the literature on how the exchange rate can affect investment. These conditions vary depending on the developing state of the country. In Harchaoui, Harchaoui et al. [34], the exchange rate can influence investment through three channels: domestic and foreign demand, prices of variable inputs and the investment price. When a domestic currency depreciates, sales of goods and services yield higher revenues and profits. At the same time, the variable cost and imported capital increase to counterbalance the positive effects of higher revenues [34, 35]. This is because revenue from both domestic and foreign sales is increased. Nucci and Pozzolo [30] supported this argument when they investigated the exchange rate- investment nexus for some selected Italian manufacturing firms. The authors discovered that exchange rate depreciation impacts investment positively through revenue channel and negatively through the cost channel, and added that businesses need monopoly power to achieve this relationship.

The most important factors deliberated in the literature about what can cause positive effects of exchange rate on investment are stable exchange rate, monopoly power, the openness of trade, amount of imported inputs and developing level of a country [32, 34, 36, 37]. For instance, Atella et al. [36] emphasized that for a country's

investment level to benefit from the exchange rate, the exchange rate has to be stable. Therefore it can be argued stable exchange rate can benefit any economic system through investment and profits due to its ability to strength firm market power. Servén [37] found a negative relationship between real exchange rate and investment in a highly open and less developed country scenario. This enlightens reasons why African countries depreciation of exchange rate would reduce investments as they use a lot of imported inputs with high variable input price. This explains why a country can benefit from its investment under stable exchange rates with high market power.

Money supply shocks can have differentiated effects on the real economy in several ways including investment. For example, Amiti and Weistein [31] found that money supply in bank loan can significantly determine investment activities, though there was a negative relationship. To identify the causal effect of money on the real economy, Brzezinski et al. [38] noted that reducing money supply can decrease real output. The study made use of local projections and autoregressive models to discover that clean identification requires that the money shock is not correlated with other shocks either contemporaneously, or across time. Karras and Stokes [39] also found a positive relationship in the money supply investment nexus and argued that investment is governed by asymmetries in money supply shocks which are similar to the ones that affect output.

Many studies established a positive relationship between money supply shocks and investment activities [31, 40, 41]. It is noted that the use of the money supply channel more financial markets and works well to positively influence investments where there are developed financial institutions [40]. Chen et al. [42] indicated that an increase in the money supply would increase money demand. This implies that the money supply can be one of the predictors of investment activities [42]. However, Gertler and Grinos [43] have the opposite that reducing money supply can enhance investment.

The relationship between lending rates (interest rates) and investment is widely understood in the macroeconomic sphere because the interest rate is one of the prospective determinants of investment [44–48]. It has been established in the literature that high-interest rates stimulate savings but harm investment especially of small businesses [44, 49–51]. The reasons for these harmful effects are because high-interest rates increase capital cost, and thus discourage investment [44]. Another view from Malawi and Bader [44] is that in less developed financial institutions private investment is inhibited by savings. Those are the instances where there is a positive relationship between the interest rate and investment.

Li and Khurshid [45] used the vector error correction model to investigate the effects of interest rate on investment in a Chinese province named Jiangsu. The study observed that in Jiangsu, interest rate and investment are positively related only in the short-run and negatively related in the long-run. It should be noted that some scholars believe that interest rates and investment have a one-way relationship. Onwumere et al. [46] revealed that, for Nigeria, the interest rate had a negative significant impact on investment for the period 1976 to 1999. In support of these findings, Muhammad et al. [47] also found that investment has an inverse association with the real interest rate in Pakistan for the period 1964 to 2012. Hyder and Ahmed [48] investigated the reasons for the fall of private investment in Pakistan. Their study concluded that a rise in the real interest rate causes a reduction in private investment.

3. Methodology

To analyze the effects of monetary variables on investment in the selected Sub-Saharan African countries (Kenya, Mozambique, Nigeria, South Africa and

Tanzania), the study used panel annual data collected from the World Bank. The study period 1980–2019 and countries are selected due to obtainability of data, the chosen variables are based on the Keynesian theory of investment and some reviewed empirical literature [25, 30, 31]. The selected three monetary variables are money supply, lending rates, and exchange rate and investment is measured by gross fixed capital formation as stipulated in the following equation:

$$GFCF_{it} = \alpha + \beta_1 MS_{it} + \beta_2 LR_{it} + \beta_3 ER_{it} + \mu_{it} \quad (1)$$

where GFCF measures gross fixed capital formation (investment); MS measures money supply; LR measures lending rates and ER measures exchange rates; α measures the constant of the model; β_{1-3} measures the estimates of monetary policy variables, and μ the error term to make the model more accurate and cater for any input variable omissions.

This study employs a panel analysis that is more time-series than cross-sectional. The first step is to check for stationarity of variables as it is the common characteristics in time series dominated analysis [52, 53]. To test for stationarity, three tests were used to ensure the inexistence of unit root in the study data namely Levin-Lin-Chu (LLC) test, the Im-Pesaran-Shin (IPS) test and the Fisher-ADF. The LLC test allows for heterogeneity in the intercept terms, the IPS and the Fischer are less restrictive as they allow coefficients to be heterogeneous [54, 55]. The Fischer outperforms the IPS when it comes to the size-adjusted power [56]. Therefore, all the tests are used to reinforce each other and allow us to make robust decisions about which panel type to use for the analysis. If there are different orders of integration, an autoregressive panel is eligible [52, 57].

Panel cointegration is useful to determine if there are long term effects between investment and the monetary variables. Additionally, panel cointegration can address issues of heterogeneity in the panel by looking at the parameters, how many cointegrating relationships across countries and if there is cointegration in different countries [57, 58]. For the cointegration exercise, the Pedroni, Kao and Johansen-Fisher tests are employed [52, 57]. The Pedroni consider four-panel statistics and three group panel statistics to test the presence of cointegration [59]. The advantage for the within-dimension-based four panels is to identify a first-order autoregressive process which is assumed to be the same in all countries in the series, and the three group panels are between-dimension-based and allow for parameters to vary across countries [59]. The Kao test reinforces the Pedroni as it uses the same approach but differs by specifying country-specific intercepts and homogeneous estimates on the first stage regressors. The Fischer combines individual cross-sections and gives results of the full panel [57, 60].

After the realization that there is cointegration (long-run relationship) and variables are integrated at different orders, a panel autoregressive distributed lag (ARDL) model is employed. The ARDL regression is necessary to find the nature of coefficients, whether the negative or positive relationship and significant or not. If variables show different orders of integration in the unit root analysis and cointegration exist, then the ARDL is the best estimator to find short-run, long-run and error correction estimates in a single model [59, 60]. In this model, the error correction term can be determined by integration of short-run adjustments with long-run equilibrium maintaining the long-run information. The advantage of having a large panel ARDL starting from 1980 to 2019 is to address the bias problem caused by correlating error terms with the mean-differenced regressors. The cointegrating form of the ARDL model called the pooled mean group estimator permits estimates to differ across sections [53].

4. Results and discussions

Brooks [61] emphasizes that variables should be free from a unit root to avoid spurious regression, therefore this study needed to difference the variables to attain stationary variables. **Table 1** provides panel stationarity tests as estimated using three stationarity test, LLC; IPS; and Fisher ADF.

Variable	Test	Test equation	Level p-value	1st order p-value
GFCF	LLC	I&I	0.0011	—
		II&T	0.0350	—
		None	0.0155	—
	IPS	I&I	0.0116	—
		II&T	0.0491	—
	Fisher-ADF	I&I	0.0124	—
		II&T	0.0304	—
		None	0.0342	—
MS	LLC	I&I	0.0138	—
		II&T	0.0000	—
		None	0.7522	0.0000
	IPS	I&I	0.0000	—
		II&T	0.0000	—
	Fisher-ADF	I&I	0.0000	—
		II&T	0.0000	—
		None	0.0000	—
ER	LLC	I&I	0.9968	0.0000
		II&T	0.1617	0.0000
		None	0.9999	0.0000
	IPS	I&I	1.0000	0.0000
		II&T	0.3255	0.0000
	Fisher-ADF	I&I	0.9999	0.0000
		II&T	0.3980	0.0000
		None	1.0000	0.0000
LR	LLC	I&I	0.4142	0.0000
		II&T	0.0376	—
		None	0.3539	0.0000
	IPS	I&I	0.3366	0.0000
		II&T	0.0967	0.0000
	Fisher-ADF	I&I	0.2363	0.0000
		II&T	0.0567	0.0000
		None	0.8643	0.0000

I&I: individual and intercept; II&T: individual, intercept, and trend.

Table 1.
Summary of panel unit root test results.

In **Table 1** gross fixed capital formation (GFCF) and money supply (MS) are generally shown to be integrated at levels I(0), while exchange rates (ER) and lending rates (LR) are integrated of order one I(1). Therefore, the variables used in the study are a mixture of I(0) and I(1) and none of them is I(2) which paves a way to run the panel ARDL [52, 60]. It is stated in Nkoro and Uko [60] that variables that show different orders of integration can be estimated best with ARDL. Moreover, cointegration results indicate the existence of a long-run relationship but do not give estimates, hence in addition to the cointegration analysis, there is a need for a robust estimation technique like ARDL.

Tables 2–4 provide results of panel cointegration tests as estimated for the model specified in Eq. 1 under the Pedroni, Kao and Fisher-ADF tests for cointegration, respectively.

The Pedroni test results presented in **Table 2** confirm cointegration in three out of seven statistics. One out of four within dimensions accept the alternative hypothesis of cointegration at 10% significance levels (Panel v-Statistics) whereas two out of three between dimensions accept the alternative hypothesis of cointegration at 1% significance level (Group PP- statistics and Group ADF statistics). The Kao panel cointegration tests results, as shown in **Table 3** also confirm cointegration by rejecting a null hypothesis of no cointegration at 1% level of significance. **Table 4** illustrates a strong cointegration between the variables in the Fisher-ADF test. This is displayed by both the trace and the max Eigenvalues which both detect at least two cointegrated relationships between investment and the selected independent variables. All three cointegration tests reveal that a long-run relationship exists between the variables for the selected panel. This implies that investment has a long-run relationship with the selected monetary variables in the chosen panel of five Sub-Saharan countries. **Table 5** provides estimates of the model specified in Eq. 1, where investments are regressed against monetary variables such as lending rates, money supply and exchange rate.

Panel	**T-statistics**	**P-value**
v-Statistic	1.316356*	0.0940
rho-Statistic	0.863098	0.8060
PP-Statistic	−0.312544	0.3773
ADF Statistic	−0.132706	0.4472
Group	**T-statistics**	**P-value**
rho-Statistic	0.350217	0.6369
PP-Statistic	−2.365533***	0.0090
ADF-Statistic	−2.938605***	0.0006

** and *** indicate that the p-values are significant at 10 and 1% level of significance, respectively.*

Table 2.
Summary of Pedroni cointegration test results.

Variable	**T-statistics**	**P-value**
ADF	−2.77887***	0.0027
Residual variance	26.11567	
HAC variance	21.89175	

**** indicates that the p-values are significant at 1% level of significance.*

Table 3.
Summary of Kao panel cointegration test results.

Table 5 shows the summary of panel ARDL long-run and short-run results. As depicted in **Table 5**, lending rates, money supply and exchange rates all have a strong long-run relationship significant at 1% level with investment. Lending rates, as economic theory suggests, have been found to have a negative relationship with investment in this study [25, 44, 51]. The results are found to be in line with those of Malawi and Bader [44] and Ashraf et al. [50] where an increase in the real interest rate by 1% reduces the investment. It has been found that interest rate plays an important role in investment decision making.

It turns out that the money supply is positively related to investment for our selected panel (**Table 5**). According to the results, when the money supply is increased, a relative increase in investment follows. Many scholars established that money supply has a positive long-run relationship with investment [38, 42, 62]. On the contrary, it has been discovered that there may exist a negative relationship between money supply and investment [31, 40, 43]. Li and Yang [40] further add that money supply is a weak instrument to be used to influence real estate investment in an inflation targeting environment.

The exchange rate also shows a significant and positive long-run relationship with investment in **Table 5**. It has been argued in the literature review section that a country's investment level can benefit from the exchange rate, provided exchange rate is stable [25, 30, 34, 36]. The argument is based on the fact that a depreciating exchange rate is associated with a stable environment and strong market power [36].

Hypothesized no. of CE(s)	Fisher stat. (from trace test)	P-value	Fisher stat. (from max-Eigen test)	P-value
None	75.81***	0.0000	47.55***	0.0000
At most 1	15.57**	0.0490	15.96**	0.0429
At most 2	7.841	0.4492	6.332	0.6101
At most 3	9.222	0.3239	9.222	0.3239

*** and **** indicate that the p-values are significant at 5% and 1% level of significance, respectively.*

Table 4.
Summary of Johansen-Fisher panel cointegration test results.

Variables	Coefficient	Std. Error	t-Statistic	P-value
Long run estimates				
Lending rates	−3.523144	0.677454	−5.200565***	0.0000
Money supply	18.87173	2.946935	6.403849***	0.0000
Exchange rates	0.012514	0.001282	9.763669***	0.0000
Short-run estimates				
Error correction term	−0.834634	0.371897	−2.244262**	0.0274
D(Investment)	0.133988	0.370028	0.362103	0.7182
D(Lending rates)	10.51841	3.009819	3.494700***	0.0008
D(Money supply)	14.16886	24.00636	0.590213	0.5566
D(Exchange rates)	0.019939	0.111209	0.179291	0.8581

, and * indicate that the p-values are significant at 5% and 1% level of significance, respectively.*

Table 5.
Summary of long-run and short-run panel ARDL estimates.

Market power effects tend to offset the volatility nature of exchange rate, hence it can positively affect investments.

The panel ARDL results in **Table 5** confirm that lending rates are positively related to investment in the short run at a 1% level of significance. Money supply and exchange rate, on the other hand, showed no significant short-run relationship with investment (**Table 5**). Most importantly, the error correction term met the requirement of being negative and is very high at 83% and significant at 5% level. This implies that investment will be very fast to go back to equilibrium following a change in the selected monetary variables. These results are valid and reliable as mentioned in Nkoro and Uko [60] that panel ADRL has Gaussian error terms implying normal distribution, no autocorrelation and no heteroscedasticity in error terms.

5. Conclusions and recommendations

The study investigated the effects of lending rates, money supply, and exchange rate on investment activities in selected Sub-Saharan African countries for the period of 1980–2018 using panel ARDL. To test for stationarity, Levin-Lin-Chu (LLC), the Im-Pesaran-Shin (IPS), and the Fisher-ADF tests were used, and variables were found to be integrated differently with a mixture of I(0) and I(1). Pedroni, Kao, and Johansen-Fisher tests for cointegration proved that all three monetary variables were cointegrated with investment and therefore have a long-run relationship.

The ARDL long-run results revealed a negative and significant relationship between lending rates and investment. Additionally, investment is positively related to both money supply and exchange rate in the long run. It can be concluded that the Sub-Saharan African region need to maintain low lending rates, increase the money supply, and keep a stable exchange rate to influence investments, which will ultimately affect the growth of the economy.

The study recommends that when central banks take contractionary measures, they should consider the resulting change in investment as it a crucial part of economic growth. For example, when an economy is sluggish, interest rates must not be raised to the point where investment is discouraged and assets are suppressed. The study concludes the role played by monetary variables on investment activities that there is a strong link between the monetary sector and the real sector.

Conflict of interest

We, as authors, declare that there is no conflict of interest concerning this study.

DOI: http://dx.doi.org/10.5772/intechopen.93656

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References

[1] Mishkin FS. Exchange Rate Pass-through and Monetary Policy. National Massachusetts, Cambridge, MA: Bureau of Economic Research; 9 May 2008

[2] Cardak BA, Martin VL. Once in a lifetime? The effects of the global financial crisis on household willingness to take financial risk. The Economic Record. 2019;**95**(311):442-461

[3] Walter S. Globalization and the demand-side of politics: How globalization shapes labour market risk perceptions and policy preferences. Political Science Research and Methods. 2017;**5**(1):55-80

[4] Kagochi J. Inflation and financial sector development in sub-Saharan African countries. Journal of Economic Studies. 2019;**46**(4):798-811

[5] Ibrahim M, Alagidede P. Financial sector development, economic volatility and shocks in sub-Saharan Africa. Physica A: Statistical Mechanics and its Applications. 2017;**484**:66-81

[6] Hartmann D, Guevara MR, Jara-Figueroa C, Aristarán M, Hidalgo CA. Linkingeconomiccomplexity,institutions, and income inequality. World Development. 2017;**93**:75-93

[7] Uneze E. The relation between capital formation and economic growth: Evidence from sub-Saharan African countries. Journal of Economic Policy Reform. 2013;**16**(3):272-286

[8] Ncanywa T, Makhenyane L. Can investment activities in the form of capital formation influence economic growth in South Africa? In: SAAPAM Limpopo Chapter 5th Annual Conference Proceedings; October 2016; Mokopane. 2016. pp. 270-279

[9] Ajose K, Oyedokun GE. Capital formation and economic growth in Nigeria. Accounting and Taxation Review. 2018;**2**(2):131-142

[10] Ali G. Gross fixed capital formation & economic growth of Pakistan. Journal of Research in Humanities, Arts and Literature Applied. 2015;**1**(2):21-30

[11] Ugochukwu US, Chinyere UP. The impact of capital formation on the growth of the Nigerian economy. Research Journal of Finance and Accounting. 2013;**4**(9):36-42

[12] Deloitte R. Closing the Infrastructure Gap: The Role of Public-Private Partnerships. London: Deloitte Development LLP; 2006

[13] Ndikumana L. Capital Flows, Capital Account Regimes, and Foreign Exchange rate regimes in Africa. Political Economy Research Institute. University of Massachusetts Amherst; 2003

[14] Nigerian Bureau of Statistics. Macro-Economic Data in Nigeria. Nigeria: NBS; 2013

[15] International Monetary Fund [IMF] [Internet]. 2020. Available from: http://www.imf.org [Accessed: 09 April 2020]

[16] South African Reserve Bank [SARB] [Internet]. 2020. Available from: http://www.resbank.co.za [Accessed: 14 February 2020]

[17] Narayan PK, Narayan S, Prasad AD. Modelling the Relationship between Budget Deficits, Money Supply and Inflation in Fiji. Pacific Economic Bulletin. Griffith University. 2019

[18] Mansour M, Sghaier A, Bannour B, Jabeur S. The interactions between the lending rates, deposit rates and money market rates. Iranian Economic Review. 2019;**23**(1):163-189

[19] Montiel PJ. Policies and Economic Growth: Theory, Evidence and Country-Specific Experience from Sub-Saharan Africa. Financial Nairobi, KE: African Economic Research Consortium; 1995

[20] Altman EI, Gande A, Saunders A. Bank debt versus bond debt: Evidence from secondary market prices. Journal of Money, Credit and Banking. 2010;**42**(4):755-767

[21] Amidu M. What influences banks' lending in sub-Saharan Africa? Journal of Emerging Market Finance. 2014;**13**(1):1-42

[22] Dymski GA. "New Markets" or old constraints? Financing community development in the post-"War on Poverty" era. In: National Economic Association Conference; 2 January 2005; Philadelphia

[23] VanHoose DD. Bank capital regulation, economic stability, and monetary policy: What does the academic literature tell us? Atlantic Economic Journal. 2008;**36**(1):1-4

[24] Keynes JM. The General Theory of Interest, Employment and Money. London: MacMillan; 1936

[25] Chick V. Keynes's theory of investment and necessary compromise. In: Dow SC, Hillard J, editors. Keynes, Uncertainty and the Global Economy: Beyond Keynes. Vol. 2. 2002. pp. 55-67

[26] Gordon MJ. The neoclassical and a post-Keynesian theory of investment. Journal of Post Keynesian Economics. 1992;**14**(4):425-443

[27] Crotty JR. Neoclassical and Keynesian approaches to the theory of investment. Journal of Post Keynesian Economics. 1992;**14**(4):483-496

[28] Duesenberry JS. Business Cycles and Economic Growth. San Francisco: University of Michigan Press; 1958

[29] Modigliani F, Miller MH. The cost of capital, corporation finance and the theory of investment. The American Economic Review. 1958;**48**(3):261-297

[30] Nucci F, Pozzolo AF. Investment and the exchange rate: An analysis with firm-level panel data. European Economic Review. 2001;**45**(2):259-283

[31] Amiti M, Weinstein DE. How Much Do Bank Shocks Affect Investment? Evidence from Matched Bank-Firm loan data. Journal of Political Economy. 1 Apr 2018;**126**(2):525-587

[32] Omorokunwa OG, Ikponmwosa N. Exchange rate volatility and foreign private investment in Nigeria. Asian Journal of Business Management. 15 Oct 2014;**6**(4):146-154

[33] Teddy KF. The effect of exchange rate volatility on private inflows in Zambia [Master's dissertation]. Lusaka: Department of Economics University of Zambia; 2015

[34] Harchaoui TM, Tarkhani F, Yuen T. The Effects of the Exchange Rate on Investment: Evidence from Canadian Manufacturing Industries. Ottawa, ON: Bank of Canada; 2005

[35] Campa JM, Goldberg LS. Investment, pass-through, and exchange rates: A cross-country comparison. International Economic Review. 1999;**40**(2):287-314

[36] Atella V, Atzeni GE, Belvisi PL. Investment and exchange rate uncertainty. Journal of Policy Modeling. 2003;**25**(8):811-824

[37] Servén L. Real-exchange-rate uncertainty and private investment in LDCs. The Review of Economics and Statistics. 2003;**85**(1):212-218

[38] Brzezinski A, Chen Y, Palma NP, Ward F. The Vagaries of the Sea: Evidence on the Real Effects of Money

from Maritime Disasters in the Spanish Empire. London: Centre for Economic Policy Research; 2019

[39] Karras G, Stokes HH. Why are the effects of money-supply shocks asymmetric? Evidence from prices, consumption, and investment. Journal of Macroeconomics. 1999;**21**(4):713-727

[40] Li YJ, Yang Y. The effect of interest rate and money supply impose on real estate investment in China: An empirical analysis. Journal of Xi'an Institute of Finance and Economics. 2005;**18**(5):47-51

[41] Moore BJ. How credit drives the money supply: The significance of institutional developments. Journal of Economic Issues. 1986;**20**(2):443-452

[42] Chen MC, Chang CO, Yang CY, Hsieh BM. Investment demand and housing prices in an emerging economy. Journal of Real Estate Research. 2012 Jan 1;**34**(3):345-373

[43] Gertler M, Grinols E. Monetary randomness and investment. Journal of Monetary Economics. 1982;**10**(2):239-258

[44] Malawi AI, Bader M. The impact of interest rate on investment in Jordan: A cointegration analysis. Journal of King Abdulaziz University: Economics and Administration. 2010;**105**(3055):1-26

[45] Li S, Khurshid A. The effect of interest rate on investment; Empirical evidence of Jiangsu Province, China. Journal of International Studies. 2015;**8**(1):81-90

[46] Onwumere JU, Okore OA, Ibe IG. The impact of interest rate liberalization on savings and investment: Evidence from Nigeria. Research Journal of Finance and Accounting. 2012;**3**(10):130-136

[47] Muhammad SD, Lakhan GR, Zafar S, Noman M. Rate of interest and its impact on investment to the extent of Pakistan. Pakistan Journal of Commerce and Social Sciences (PJCSS). 2013;**7**(1):91-99

[48] Hyder K, Ahmed QM. Why Private Investment in Pakistan Has Collapsed and how it can be restored. Pakistan: Lahore Journal of Economics. 2003;**9**(1):107-128

[49] Badar M, Javid AY. Impact of macroeconomic forces on nonperforming loans: An empirical study of commercial banks in Pakistan. Transactions on Business and Economics. 2013;**10**(1):40-48

[50] Ashraf BN, Arshad S, Hu Y. Capital regulation and bank risk-taking behaviour: Evidence from Pakistan. International Journal of Financial Studies. 2016;**4**(3):16

[51] Moudud-Ul-Huq S, Ashraf BN, Gupta AD, Zheng C. Does bank diversification heterogeneously affect performance and risk-taking in ASEAN emerging economies? Research in International Business and Finance. 2018;**46**:342-362

[52] Ncanywa T, Mabusela K. Can financial development influence economic growth: The sub-Saharan analysis? Journal of Economic and Financial Sciences. 2019;**12**(1):1-3

[53] Pesaran MH. On the interpretation of panel unit root tests. Economics Letters. 2012;**116**(3):545-546

[54] Levin A, Lin CF, Chu CS. Unit root tests in panel data: Asymptotic and finite-sample properties. Journal of Econometrics. 2002;**108**(1):1-24

[55] Im KS, Pesaran MH, Shin Y. Testing for unit roots in heterogeneous panels. Journal of Econometrics. 2003;**115**(1):53-74

[56] Nell C, Zimmermann S. Panel unit root tests term paper [PhD course: Panel data]. Lecturer: Prof. Dr Robert Kunst.

Department of Economics at University of Vienna; 2011

[57] Maddala GS, Wu S. A comparative study of unit root tests with panel data and a new simple test. Oxford Bulletin of Economics and Statistics. 1999;**61**(S1):631-652

[58] Verbeek M. Pseudo-panels and repeated cross-sections. In: The Econometrics of Panel Data. Berlin, Heidelberg: Springer; 2008. pp. 369-383

[59] Ramirez MD. Are foreign and public capital productive in the Mexican case? A panel unit root and panel cointegration analysis. Eastern Economic Journal. 2010;**36**(1):70-87

[60] Nkoro E, Uko AK. Autoregressive distributed lag (ARDL) cointegration technique: Application and interpretation. Journal of Statistical and Econometric Methods. 2016;**5**(4):63-91

[61] Brooks C. Introductory Econometrics for Finance. 2a Upplagan. Cambridge: Cambridge University Press; 2008. ISBN-13. 2008:978-0

[62] Saarenheimo T. Credit Crunch Caused Investment Slump? An Empirical Analysis Using Finish Data. Finland: Bank of Findland Discussion Papers; 1995