Capital Inflows and Domestic Investment in the South African Economy

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Abstract
Theoretically, the effect of foreign capital inflow on the domestic economy is determined by the nature and type of the capital inflows that are attracted and the capacity of the economy to absorb these capital inflows. This study examines the impact of capital inflows on domestic investment in the South African economy from 1985 to 2018. The study employs an Auto-Regressive Distributive Lag (ARDL) to obtain a robust result. The causality test found a one-way causality between domestic investment and portfolio investment with the causation stirring from domestic investment to foreign portfolio investment (FPI). This was also detected between domestic investment and economic growth. However, a bi-directional bond was observed between economic growth and foreign direct investment (FDI). The study found out that foreign capital inflow does not harm domestic investment in South African but stimulates it. Also, the study found out that economic growth (GDP), FDI and FPI significantly contributed to domestic investment. The study recommended that policy should be channelled towards pursuing high economic growth in the South African economy, as this is the main factor that determines domestic investment and foreign capital inflow in the economy.

Keywords: Capital Inflows, Foreign Domestic Investment, Portfolio Investment, Domestic investment, Auto-Regressive Distributive Lag (ARDL), South Africa

JEL Classifications: C22, E22, F21, F23

Introduction

This study examines the connection between foreign capital inflows and domestic investment in the South African economy. Theoretically, foreign capital inflows can stimulate domestic investment in developing countries (by providing capital for investment) or harm their economies (by raising the risks of financial crises). The effect of foreign capital inflow on the domestic economy is determined by the

nature and type of the capital inflows that are attracted and the capacity of the economy to absorb these capital inflows. Portfolio investment, which can be seen as international debt inflows, is seen as 'bad cholesterol' (Hecht, Razin & Shinar, 2004). This is premised on the fact that portfolio investment is a short-term loan from abroad, driven by speculative consideration based on interest rate differentials and exchange rate expectations, which can cause volatility in the financial market. Another issue of concern is the foreign capital inflow absorption. The foreign capital inflow absorptive capacity of both public and private enterprises is a function of the repayment ability. This repayment ability is determined by the overall productive use of these foreign resources (Jorge & Salazar-Carrillo, 1988). This was the departure point for examining the interaction between foreign capital inflows and the domestic investment in the South African economy.

Foreign capital inflows can come in the form of FDI, remittances, portfolio investment; receipt from exports, official development assistance, income generated from abroad and bank credit inflows. Capital outflows can be in the form of a local investment made in a foreign country, withdrawal of portfolio investment, payments for imports, the repatriation of profits as well as repatriation of capital, otherwise called de-investment. A net flow is the difference between total inflows and outflows and the value can either be positive or negative (Ajuwon & Akotey, 2016).

The capital inflows in South Africa have been very low compared to similar developing economies with comparable income levels. According to WDI data for up to 2018, South Africa has been averaging an annual net inflow of FDI as a percentage of GDP of less than 2 percent, compared to 3 percent for similar upper-middle-income economies. Between 2000 and 2004 the average for South Africa was 1.8 percent, whereas it was 2.8 percent for the other upper-middle-income economies. Economies at a similar level of economic development, such as Brazil, Chile, India and Russia, have received more FDI, as a share of their GDP, compared to South Africa. In addition, Australia and Chile, which are also resource-based economies, have been able to maintain high levels of inward FDI, including other forms of capital inflows over time (UNCTAD, 2011).

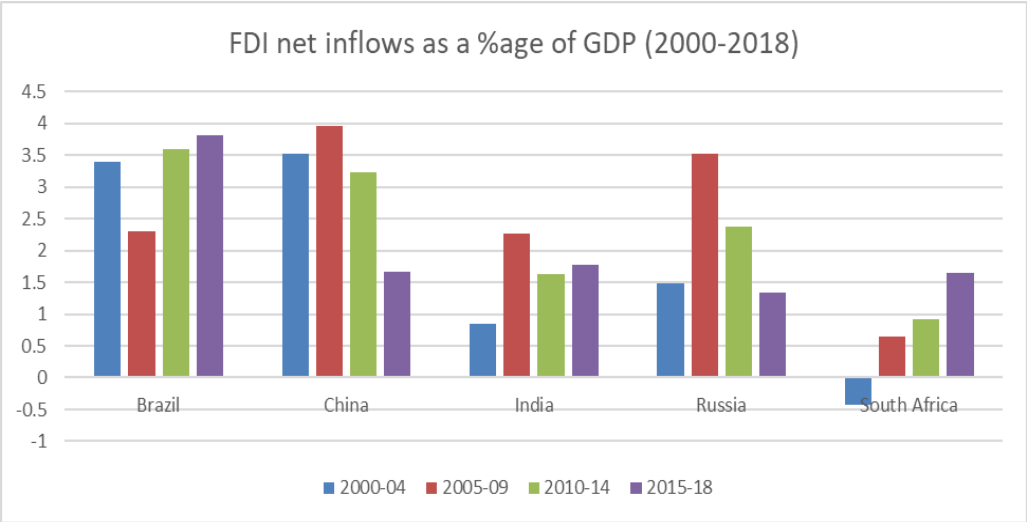

Figure1: FDI net inflows as a percentage of GDP (2000-2018)
Source: *Data sourced from World Development Indicator (WDI)*

The World Bank (2011) emphasised that in order to position South Africa for a higher GDP growth trajectory, it is important to ensure the significantly higher level of fixed investment necessary to sustain faster economic growth. Economic theory suggests that investment must be funded either from domestic savings, credit extension or foreign capital inflows (World Bank, 2008:54). Classical economists are of the opinion that capital inflows should be encouraged to boost investment. Therefore, a developing economy could rely on foreign savings (capital inflows) to fund its investment-savings shortfall. Portfolio investment have been South Africa's dominant source of foreign capital inflow since 1994.

Some previous studies have over-relied on the cross-sectional data, which cannot satisfactorily address the country-specific issues. The underlying problem of using a cross-sectional method is that grouping countries that are at different stages of economic development, fails to address the country-specific effects of the causal relationship between capital inflows and domestic investment within the context of an open economy that has a very low (aggregate) domestic savings base (Abu-Bader & Abu-Qarn, 2008; Odhiambo, 2008; Ghirmay, 2004; Casselli, Esquivel & Lefort, 1996; Quah, 1993). It is against this backdrop that this study attempted to examine the causal relationship between capital inflows and domestic investment in South Africa. There is also the need to carry-out more empirical research to determine if foreign capital inflow is actually substituting or complementing domestic investment in the South African economy (Loungani & Razin, 2001).

The main objective of this study is to investigate the impact of foreign capital inflows on the domestic investment in the South African economy. The specific objectives are to investigate the nature of the causal relationship between foreign capital inflows and domestic investment in South Africa and determine if foreign capital inflow is substituting or complementing the domestic investment. Following this introduction, is the section 2 that contains the literature review, while the data and methodology is in section 3. Section 4 presented the result analysis and the discussion while section 5 contains conclusion and policy recommendation.

Literature Review

Theoretical Literature

Theories that explain the impact of joint liberalisation of capital flows and of activities in the domestic financial system can be found in the works of Bacchetta (1992). Bacchetta (1992) used an overlapping generation model and explained that the joint liberalisation leads to a large net inflow of international capital in the initial period. After a while, the net capital inflows reduce and may eventually be substituted by net outflows. The basic limitation of the Bacchetta (1992) framework is that it focuses only on a small open economy and examines the impact of the once-and-for-all liberalisation. It ignores the role of uncertainty and fails to analyse the impact of gradual liberalisation. The impact of both instant and gradual liberalisation on the dynamics of capital flows is analysed in another work (Bacchetta & Wincoop, 1998), which is an improvement on the work of Bacchetta (1992).

There are a number of studies especially the works of Dasgupta & Ratha (2000), Reinhart & Rogoff, (2009) that explain the maturity term structure of external debt flows. These studies suggest that institutional development, the relaxation of regulatory restrictions on external debt inflows, domestic financial development and currency crises are among the key potential determinants of the maturity mix of international capital flows. By their reasoning, institutional development generates incentives and reduces risks for investment while relaxation of regulatory restrictions on foreign capital inflows in an economy with a developed domestic financial system reduces the cost of capital movement (North, 1990), thereby promoting inflows of long-term capital. Following their logic, it can be

hypothesised therefore that a country that strengthens its institutions, reduces its regulatory restrictions on the inflows of external capital and develops its domestic financial system can attract greater inflows of long-term capital relative to the short-term capital inflows. However, this has not been the case in South Africa where it attracts more of short-term external debt to long-term external debt.

Reisen (1998) argues that capital inflows could benefit a recipient country by adding to domestic savings, raising economic efficiency, and allowing for increased risk-sharing. Thus, in theory, emerging countries with developed stock markets should be able to supplement their low levels of domestic savings with foreign capital. However, Goldin and Reinert (2005) opined that the link between foreign capital inflows and heightened domestic investment is highly idealised, as it does not consider intervening factors such as political risk, default risk, limitations of available human capital and technology, and differences in institutional quality.

Burney (1988) opines that capital inflow reversal leads to an increased government reliance on loans rather than equity capital to finance its development objectives. Kim & Yang (2009) commented that capital inflows can impact asset prices in three ways: either directly through the increase of demand for assets; by increasing money supply and liquidity; and by generating economic booms.

Caballero and Krishnamurthy (2006) commented that asset price bubbles arise in emerging countries because of insufficient stores of wealth. Thus, asset price bubbles may be generated because there is too much capital chasing too few investment opportunities domestically. In addition, the capital may lead to large outflows in search of better investment opportunities abroad. In contrast, Ventura (2011) argued that asset price bubbles are a substitute for capital inflows and thus may have beneficial effects, including improving the international allocation of capital, and reducing rate of return differentials across countries. However, Ventura (2011) also found that bubbles tend to propagate macroeconomic instability, because they compound the effects of productivity shocks and foster expectation shocks. In summary, if care is not taken, capital inflow might do more damage than good and that is why it is necessary to ascertain the impact of capital flow into the South African economy so as to guide the appropriate policy framework towards capital inflow into the economy.

Empirical Literature

Bosworth and Collins (1999) investigated the relationship between different types of private capital inflows on both investment and saving; the main emphasis was on the variation over time within countries rather than the variation across countries. Their results showed that capital inflows, especially FDI and bank lending, have a strong impact on domestic investment. On the other hand, portfolio flows have a positive but statistically insignificant relationship on domestic investment.

Mohamed (2012) investigated the effect of capital flows on the South African economic growth since the end of apartheid by providing an analysis of the effects of foreign private investment (FPI) on South Africa's economic growth path. The author found that the liberalisation of financial markets in 1995 led to the deepening of financial markets, which in turn led to a large increase in the amount of capital inflows to South Africa. Most of these capital inflows have been short-term portfolio investment, with the bulk of it being absorbed by the private sector.

Mody & Murshid (2005) differentiated between different types of foreign capital inflows and their impact on domestic investment. They opined that FDI brings about boost in any targeted sector of the economy that they entered through more employment opportunities and transfer of technologies and that gives it an advantage when compared to other forms of foreign capital inflow, and thus generates more domestic investment.

In all, there is the need to ascertain the specific effect of each type of capital inflow on the domestic investment in the South African economy so as to be able to adjudicate for a proper economic policy with respect to each types of capital flow into the economy.

Data and Methodology

Data

The secondary data used for this research study was sourced from World Development Indicator (WDI). The data span between 1985 and 2018. The period used is informed by the availability of data, data for Portfolio Investment was not available until 1985 and data after 2018 were not obtainable when the analysis was done. Variables of interest are Gross Domestic Product (GDP), Gross Capital

Formation (GCF), Foreign Direct Investment (FDI), Portfolio Investment (PI), and Gross Domestic Savings (GDS).

Theoretical Framework

Lewer (2007) employed the AK model in response to the outcome of the neoclassical theory, which states that economic growth would be zero in the absence of technological progress. The new growth theories are different from the neoclassical growth theories in the sense that they focus on the creation of technological knowledge and its diffusion and innovation efforts that react to economic incentives, which are regarded as major engines of growth. The AK model goes on to emphasis the role of research and development, human capital accumulation and externalities (Romer, 1994). Thus, the link between capital inflows and growth can be examined using a simple endogenous-growth model. The AK model is an endogenous-growth framework that stresses the likely results of changes in financial variables (financial development and capital inflows) on steady-state growth through their influence on capital accumulation. Pagano (1993) (cited by Bailliu, 2000), used the AK model to illustrate the possible effects of financial development on growth, and the framework was widened further by integrating international capital inflows. From their closed-economy version of the AK model, the aggregate production of the economy is given by:

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

Where Y_t = output (aggregate value added), K_t = capital input, L_t = labour input, and A_t = the level of technology, while t refers to the time period.

Following the closed economy financial flow analysis of Pagano (1993), Bailliu (2000) expanded the AK model to include foreign capital flows. According to Bailliu (2000), aggregate output is a linear function of the aggregate capital stock, thus:

$$Y_t = AK_t \quad (2)$$

Where Y = output, A = total factor of production, K = capital stock available in the economy.

The production function of this type can be viewed as a reduced form for a composite of physical and human capital, where the two types of capital are reproducible with identical technologies (Chamberlin & Yueh, 2006).

In this model, only capital is subject to constant return to scale. To estimate the capital stock, we use the perpetual inventory method, which argues that the stock of capital is the accumulation of the stream of past investments. Assuming capital depreciates at a rate of δ per period, then gross investment will be denoted by the following equation:

$$I_t = K_{t+1} - (1 - \delta) K_t \quad (3)$$

Where I = gross investment, K = capital stock available in the economy, and I-δ = net depreciation rate of capital. From equation 3, gross investment equals capital stock at the end less capital stock at the beginning, taking into account depreciation of capital stock.

Bailliu (2000) pointed out that in the model, financial intermediaries play the role of transforming savings into investment by pooling resources for investment such that saving S_t equals gross investment I_t. Assuming that Φ is available for investment, whereas 1-Φ of the flow is lost in the process of financial intermediation due to transaction costs. In the closed-economy version of the model, capital market equilibrium requires that savings by domestic residents less the cost of financial intermediation must equal gross investment. Thus, equilibrium in the capital market ensures that:

$$S_t = I_t \quad (4)$$

Where S_t = amount available for investing through savings less transaction costs, I_t = gross investment. Bailliu (2000) showed that using equations (2) through (4) and dropping the time indices, the growth rate of output g can be written as:

$$g = A\left(\frac{1}{Y}\right) - \delta = As - \delta \quad (5)$$

Where S denotes the gross savings rate.
Equation (5) thus represents the steady-state growth rate of a closed-economy AK model with financial intermediation. This equation reveals two main channels through which financial development can affect economic growth. The first channel is the efficiency with which savings are allocated to investment. This is best done by banks, whose increased participation in intermediation will result in

a drop in the spread between their lending and borrowing rates. Thus, in Equation (5) above, economic growth (g) will emerge as a result of an increase in the proportion of saving channel to investment.

The extension as proposed by Bailliu (2000) showed that external financial flows can be incorporated into the AK model. Assuming that foreigners will invest through financial intermediaries, it is argued that their involvement will result in an increased pool of savings, which will be available for investment. Thus, extending Equation (4) in the presence of international capital flows the capital market equilibrium becomes:

$$\Phi^* (S_t + NCF_t) = I_t^* \quad (6)$$

Where NCF_t represents net international capital flows, and the growth rate in turn, will be shown as:

$$g^* = A^* \left(\frac{1}{Y}\right) - \delta = A^* \phi^* S^* \frac{(S+NCF)}{Y} - \delta = A^* \phi^* S^* - \delta \quad (7)$$

Bailliu (2000) showed that comparing the growth rate of the AK framework with financial intermediation and international capital flows in Equation (7) and the closed economy AK model with financial intermediation in Equation (5) highlights various channels through which capital flows can influence economic growth. Foreign capital flows can promote economic growth if their availability leads to an increase in investment rate, meaning g* will be higher than g if s* is larger than s, all other things being equal.

Model Specification

The model used for this research was adapted from the work of Mileva (2008):

$$GCF = f(GDP, NFDI, NPI, GDS) \quad (8)$$

$$\log GCF = \alpha_0 + \alpha_1 \log GDP + \alpha_2 \log NPI + \alpha_3 \log NFDI + \alpha_4 \log GDS + \varepsilon_t \quad (9)$$

Where GCF = gross capital formation, representing domestic investment, GDP= gross domestic product, representing economic growth, NFDI = net foreign direct investment, NPI = net portfolio investment, GDS = gross domestic savings. We did not include remittance and export to avoid double counting because the greater percentage of these two sources of inflow reflecting in gross capital

formation will pass through domestic savings, finally, aids and official development assistance were also left out because data for these two flows started in 1993, which makes the data entry point not enough for any meaningful regression analysis.

Estimation Procedure

We started the result analysis with the stationarity test using Augmented Dickey-Fuller and Phillip-Perron unit root test. The Autoregressive Distributive Lag (ARDL) bound testing approach was employed in the analysis for this research. This was informed by the different stationarity level of the data employed as obtained from the unit root testing using Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP). ARDL bounds testing approach is a cointegration method developed by Pesaran, Shin, & Smith (2001) to test the presence of the long-run relationship between variables. It has a comparative advantage over other approaches to cointegration. While other approaches require variables to be cointegrated at first difference, ARDL was developed to accommodate variables even if they are of different order of integration but of order not higher than first difference. It also provides efficient and unbiased estimators in small sample size and it also has an opportunity to determine different lag length with their respective variables.

Subsequently, the Pairwise Granger Causality Test (Granger, 1969) is used to determine the direction of short-run causality among the variables. Granger (1969) developed a relatively simple test that defined causality as follows: a variable Y_t is said to Granger cause X_t if X_t can be predicted with greater accuracy by using past values of the Y_t variable rather than not using such past values, all other terms remaining unchanged.

In order to ensure the reliability of the results, the estimated parameters are subjected to evaluation by using their respective p-values and Student's t-statistics to test their individual significance while the F-statistic is used to test their joint significance. The explanatory power of the model is ascertained by using the multiple co-efficient of determination (R^2) and the adjusted R^2. Furthermore, to ensure all stochastic assumptions of OLS are met, the researcher runs residual diagnostic tests with the use of the Jarque-Berra normality test, the Breusch-Godfrey serial correlation test and Breusch-Pagan-Godfrey heteroscedasticity test.

In addition, Ramsey's RESET test is employed to ascertain the absence of model misspecification while the overall stability of the specified empirical model is tested using the CUSUM and CUSUM of Squares tests.

Result

Stationarity Test (Augmented Dickey-Fuller and Phillip-Perron)

Table 1: Stationarity Test Results

	ADF (Trend & Intercept)			PP (Trend & Intercept)		
Variables	T-Stat	Critical values	Order of integration	T-Stat	Critical values	Order of integration
Log(GCF)	-3.808748**	-3.646342 -2.954021	I(1)	-3.8087**	-3.646342 -2.954021	I(1)
NFDI	-4.666155**	-3.639407 -2.951125	I(0)	-4.6574**	-3.639407 -2.951125	I(0)
NPI	-5.659076**	-3.646342 -2.954021	I(1)	-6.3994**	-3.646342 -2.954021	I(1)
Log(GDP)	-3.915647**	-3.646342 -2.954021	I(1)	-3.8011**	-3.646342 -2.954021	I(1)
Log(GDS)	-4.267206**	-3.646342 -2.954021	I(1)	-4.2672**	-3.646342 -2.954021	I(1)

*** and * significance at 1 and 5% level respectively.*
Source: Authors' computation

The results of the stationarity test using the Augmented Dickey Fuller and Philip Perron test show that all the variables except NFDI were not stationary at Level, but became stationary at First difference. Due to the presence of a stationarity problem, we proceed to test for cointegration among the variables using Auto-Regressive Distributive Lag Bound Test

Auto-Regressive Distributive Lag Bound Test for Cointegration

Table 2: ARDL bound test results

Test statistic	Value	K
F-statistic	4.841585	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52****
5%	2.86	4.01***
2.5%	3.25	4.49**
1%	3.74	5.06

, ***, and * denote cointegration at the 2.5, 5 and 10% significance level respectively*
Source: Authors' computation

The F-statistic, valued as depicted in the diagram, is compared to the upper I(1) and lower I(0) critical bound so as to determine the presence of cointegration among the variables. If the F-statistic is lower than the lower critical bound I(0), we can conclude that no presence of cointegration among the variables exists. In the same vein, if the F-statistic value is greater than the upper critical bound I(1), we conclude that the variables are co-integrated, and if the value falls between the lower I(0) and upper I(1) bound, the conclusion for cointegration is inconclusive and we may have to consider alternative measures to determine the presence of cointegration. Our analysis showed that the F-statistic value is greater than the upper critical bound at 2.5%, 5% and 10% level respectively, and thus we concluded that a unique long-run relationship exists among the variables.

Auto-Regressive Distributed Lag (ARDL) Model

The ARDL result, which was based on the Hannan-Quinn criterion, showed that the optimal lag length is 4, which corresponds to the ARDL (1,1,4,1,1) model.

Table 3: Auto-Regressive Distributed Lag Results

Dependent Variable: LOGGCF
Number of models evaluated: 2500
Selected Model: ARDL(1, 1, 4, 1, 1)
White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. error	t-Statistic	Prob.*
C	-0.934509	0.561619	-1.663956	0.1073
LOGGCF(-1)(*)	0.449043	0.135619	3.311060	0.0026
NFDI	0.000257	0.001278	0.200763	0.8423
NFDI(-1)(**)	0.003579	0.001678	2.133361	0.0418
NPI	0.002615	0.001964	1.331624	0.1937
NPI(-1)	0.000576	0.002200	0.261828	0.7954
NPI(-2)	0.002459	0.001568	1.568227	0.1281
NPI(-3)	-5.91E-05	0.002126	-0.027781	0.9780
NPI(-4)(**)	0.004242	0.001823	2.327137	0.0274
LOGGDP(*)	2.081141	0.519240	4.008052	0.0004
LOGGDP(-1)(**)	-1.179396	0.563913	-2.091452	0.0457
LOGGDS(*)	0.680071	0.239917	2.834608	0.0084
LOGGDS(-1)(*)	-0.871556	0.219451	-3.971521	0.0005
R-squared	0.936577	Mean dependent variable		3.021437
Adjusted R-squared	0.909396	S.D. dependent variable		0.210076
S.E. of regression	0.063234	Akaike info criterion		-2.431171
Sum squared resid	0.111959	Schwarz criterion		-1.887843
Log likelihood	62.83900	Hannan-Quinn criterion		-2.233321
F-statistic	34.45682	Durbin-Watson statistic		2.175971
Prob(F-statistic)	0.000000			

** and ** denote significance at 1 and 5% level respectively.*
Source: Author's computation

The ARDL model showed that the major variables that impact on domestic investment are: Net Foreign direct investment (NFDI), which impacted positively on domestic investment, but the impact became significant only after first lag. Net Portfolio investment (NPI) was instrumental to domestic investment with only its fourth lag value being significant in its contribution to domestic investment. Economic growth (LOGGDP) in its raw value contributed significantly to domestic investment in its current value while its lag value was the opposite. A similar trend was observed for gross domestic savings (LOGGDS), where the current value contributed positively to domestic investment, but it's one period lag value impacted negatively on domestic investment.

Long-Run Coefficient Estimation

Table 4: ARDL (1,4,1,1,1) selected based on HQ criterion

Dependent variable: LOGGCF				
Variable	Coefficient	Std. error	t-Statistic	Prob.
C	-1.696157	0.958972	-1.768724	0.0878
NPI(*)	0.017847	0.005920	3.014596	0.0054
NFDI	0.006963	0.004731	1.471579	0.1523
LOGGDP(*)	1.636689	0.274267	5.967508	0.0000
LOGGDS(*)	-0.347551	0.041405	-8.393995	0.0000

** significance at 1% level*
Source: Authors' computation

Error Correction Model

Based on the long and short-run error correction estimate, we can observe (in table 4 & 5) that net Portfolio investment (NPI), net foreign direct investment (NFDI) and economic growth (LOGGDP) contributed positively to domestic investment in both the short- and long-run, but the long-run of the net foreign direct investment is not significant. Gross Domestic savings (LOGGDS) impacted negatively and it is significant in the long-run analysis. A number of major findings were however observed, and these are discussed below.

Table 5: Error Correction Model Results

Dependent Variable: D(LOGGCF)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.086490	0.015860	-5.453357	0.0000
D(NFDI(-1))(**)	0.003965	0.001478	2.682205	0.0110
D(NFDI(-2))(***)	0.002970	0.001466	2.025503	0.0503
D(NPI(-2))	0.001957	0.001328	1.473591	0.1493
D(LOGGDP)(*)	3.204877	0.490429	6.534843	0.0000
ECM(-1)(*)	-0.524856	0.125909	-4.168550	0.0002
R-squared	0.639673	Mean dependent variable		-0.005665
Adjusted R-squared	0.589628	kk S.D. dependent variable		0.102613
S.E. of regression	0.065734	Akaike info criterion		-2.474826
Sum squared resid	0.155556	Schwarz criterion		-2.226587
Log likelihood	57.97134	Hannan-Quinn criterion		-2.383837
F-statistic	12.78187	Durbin-Watson statistic		2.050265
Prob(F-statistic)	0.000000			

, **, and * denote significance at 1, 5, and 10% level respectively*
Source: Authors' computation

First, capital inflow in South Africa does not deter nor substitute for domestic investment but rather augment it, an insignificant positive relationship to the tune of 0.7% increase in domestic investment was observed in the long-run, while a significant trend of 0.4% and 0.3% was observed for its one and two period lag values of FDI. The implication of this is that although the contribution of FDI in South Africa to domestic investment is positive, this positive impact is minimal, because the long-run analysis is not significant. This finding is in line with that of Razin *et. al.* (2002), who observed a significant positive contribution of FDI on domestic savings in their analysis of 64 countries for the period 1976-1997. Amadou (2011) also made a similar observation in his analysis of Togo for the period 1970-2008.

Second, positive impact of portfolio investment (PI) on domestic investment was observed both in the short- and long-run. The short-run value, although not significant, contributed positively to the tune of 0.2% while the long-run value contributed positively and significantly to the tune of 1.8%. We can also imply that the contribution of PI to domestic investment growth in South Africa is mixed in significance but positive, and thus PI does not impede domestic investment in South Africa. The findings are in line with those of Razin *et.al.* (2002), who observed an insignificant positive contribution of portfolio investment on domestic savings in their analysis of 64 countries for the period 1976-1997.

Third, economic growth was observed to be the major determinant of domestic investment (GCF), as it contributed significantly and positively to domestic investment, both in the short- and long-run. The short-run contribution was estimated at 320.5%. A similar observation was made for the long-run analysis, as its positive value to domestic investment was to the tune of 163.7% and significant at 1% level of significance at both the short- and long-run.

Lastly, gross domestic savings in South Africa was observed to influence domestic investment negatively which is not supposed to be. The Schwarz and Akaike info criterion used for filtering the over-parameterized equation eliminated all traces of domestic savings in the short-run model. The long-run result, however, showed that domestic savings has a negative relationship with domestic investment for the period of analysis. Possible explanation could be that most of these savings are being used to finance foreign investment. Our finding opposes the findings of Razin *et. al.* (2002) and Amadou (2011), as they observed a positive relationship between domestic investment, and domestic savings in their analysis.

The coefficient of the error correction mechanism in the model is -0.525 suggesting that the adjustment speed to the long-run is 52.5% of the disequilibrium errors which occurred in the previous year are corrected in the current year.

Granger Causality Test

In order to capture the direction of causality between the variables, the Granger causality test was carried out.

Table 6: Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
LOGGDP does not Granger Cause LOGGCF(***)	43	2.64057	0.0844
LOGGCF does not Granger Cause LOGGDP		0.87785	0.4239
LOGGDS does not Granger Cause LOGGCF	43	0.57388	0.5681
LOGGCF does not Granger Cause LOGGDS		2.23533	0.1208
NFDI does not Granger Cause LOGGCF	43	0.09573	0.9089
LOGGCF does not Granger Cause NFDI		0.05360	0.9479
NPI does not Granger Cause LOGGCF	43	0.16503	0.8485
LOGGCF does not Granger Cause NPI(***)		4.52205	0.0173
NFDI does not Granger Cause LOGGDP	43	2.26949	0.1172
LOGGDP does not Granger Cause NFDI(***)		3.02545	0.0604

, ** and * Denotes causality at 1%, 5% and 10% respectively.*
Source: Author's computation

The probability value suggests the absence of any evidence relating to causality between gross domestic savings, and domestic investment in South Africa. A similar result was obtained in relation to the level of causality between FDI and domestic investment, as the probability value suggests the absence of causality in both directions. However, a one-direction causality was observed between domestic investment and net portfolio investment in South Africa, with the causality occurring from domestic investment to net portfolio investment. This view holds that an increasing level of domestic investment causes an increase in the influx of portfolio investment to South Africa. A similar result was obtained between economic growth and domestic investment, with the causality occurring from economic growth to domestic investment. It thus becomes obvious that in the case of South Africa, economic performance is a significant determinant of

domestic investment, while both economic performance and domestic investment cause the inflow of portfolio investment.

Diagnostic and Stability Test

The Hannan-Quinn criterion (HQ) was used to determine the superiority of the ARDL (1,1,4,1,1) model, among others, with Figure 4 presenting the top 20 models that minimize the Hannan-Quinn criterion.

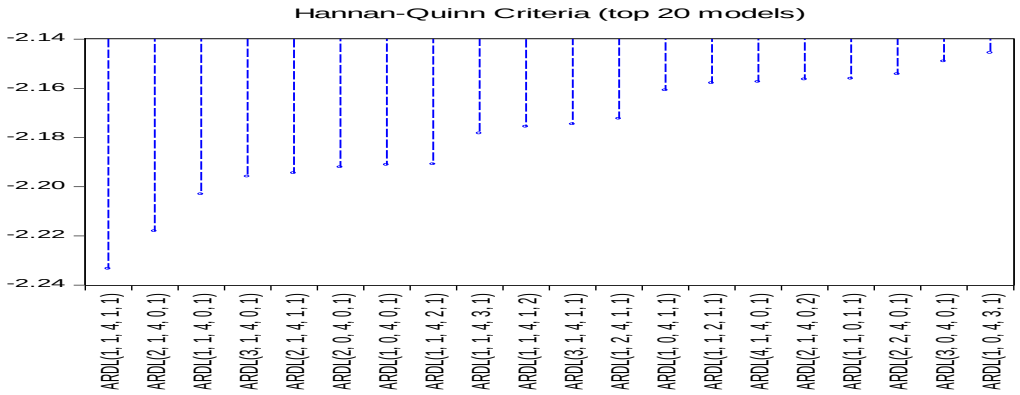

Figure 2: Hannan-Quinn Criteria

Source: *Author's computation*

The stability of the ARDL model is presented in Figure 5, using the Cusum and Cusum of square tests (CCST). The CCST showed that the model is stable, as the CCST test failed to cross the 5% critical bound.

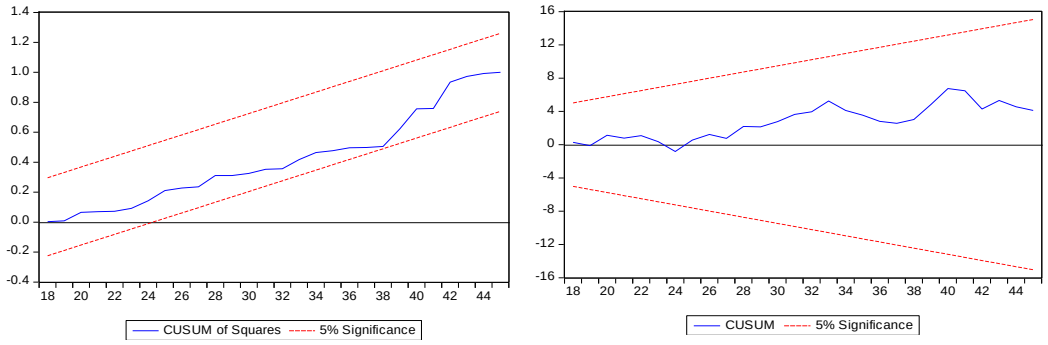

Figure 3: Cusum and Cusum of Square

Source: *Author's Computation*

The Breuch-Godfrey LM autocorrelation test was also carried out, so as to further ascertain the stability and reliability of the model specified. The probability value attached to the F-statistic shows that the F-statistic is not significant and thus we do not have a serial correlation issue with the model.

Table 7: Breusch-Godfrey Serial Correlation LM Test Results

F-statistic: 0.499457	Prob. F(2,20): 0.6126
Obs. R-squared: 1.516931	Prob. Chi-square(2): 0.4684

Source: *Author's computation*

Conclusion

The major conclusion drawn from the empirical results is that GDP, FDI and PI contributed significantly to the domestic investment (GCF) in the South African economy, while domestic savings exhibited a negative relationship with GFC. The study also observed that capital inflow is not substituting domestic investment but rather, it is complementing it.

From the empirical result, the study shows that increase in the economic activities, as measured by GDP, is a major determinant of domestic investment, which is in tandem with theory. The policy implication of this is that focus should be more on the macroeconomic variables that will boost GDP, as it will translate into accumulation of more domestic investment. Similarly, a significant positive relationship between FDI and PI was observed to contribute positively to domestic investment in South Africa.

The causality test showed a one-directional causality between domestic investment and PI, with the causality occurring from domestic investment to PI. The policy implication of this is that an increase in domestic investment acts as a confidence signal to foreign investors in the domestic capital market. Similarly, causality test showed a one-way causality between economic output (GDP) and domestic investment (GCF) with the causality occurring from GDP to domestic investment (GCF). Bi-directional causality was however observed between economic output (GDP) and portfolio investment (PI). From the result of this analysis, there is the need to examine why domestic savings and domestic investment is exhibiting negative relationship.

References

Abu-Bader, S. & Abu-Qarn, A.S. (2008). Financial development and Economic Growth: The Egyptian experience. *Journal of Policy Modelling*, 30, 887-898.

Ajuwon, O.S. & Akotey, J.O. (2016). Effect of Macroeconomic Environment on Domestic Investment in Nigeria. Journal of Economic Policy and Analysis, Department of Economics, University of Lagos, Nigeria. 2, 215-233.

Amadou, A. (2011). The Effect of Foreign Capital on Domestic Investment in Togo. *International Journal of Economics and Finance*, **3**(5), 223-226.

Aron, J., Leape, J. & Thomas, L. (2010). Foreign portfolio investment and capital markets in South Africa. [Online] Available: http://www.academia.edu/999128/Foreign_Portfolio_Investment_and_Capital_Markets_in_South_Africa/ Accessed: 22 July 2016.

Asafo-Adjei, A. (2007). Foreign direct investment and its importance to the economy of South Africa. Pretoria: University of South Africa.

Asiedu, E. (2002). On the determinants of FDI to developing countries: Is Africa different? *World Development*, **30**(1), 107-119.

Bacchetta, P. (1992). Liberalization of capital movements and of the domestic financial system. *Economica* 59:465-74.

Bacchetta, P, & van Wincoop, E. (1998). *Does exchange rate stability increase trade and capital flows?* Cambridge, MA: National Bureau of Economic Research. NBER Working Paper 6704.

Bailliu, J.N. (2000). *Private capital flows, financial development, and economic growth in developing countries*. Bank of Canada in Canada. Working Paper, 2000-15.

Bekaert, Geert, (1995). *Market integration and investment barriers in emerging equity markets,* World Bank Economic Review 9, 75--107.

Bosworth, B. & Collins, S. (1999). Capital Flows to Developing Economies: Implications for savings and Investments. *Brookings Papers on Economic Activity***1**(1), 143-169.

Bruce-Brand, A. M, (2002). *Overview of Exchange Controls in South Africa:* Statement to the Commission of Inquiry into the Rapid Depreciation of the Exchange Rate of the Rand, Reserve Bank of South Africa.

Burney, N. A. (1998). Determinants of Debt Problem in Pakistan and its Debt Servicing Capacity. *The Pakistan Development Review*, **27**(4), 805-816

Caballero, R.J. & Krishnamurthy, A. (2006). Bubbles and Capital Flow Volatility: Causes and Risk Management. *Journal of Monetary Economics*, **53**(1), 35-53.

Calvo, G., Leiderman, L., & Carmen. (1993). Capital Inflows and Real Exchange Rate Appreciation in Latin America: The Role of External Factors. *Staff Papers*, **40**(1) 108-150.

Casselli, F., Esquivel, G. & Lefort, F. (1996). Reopening the convergence debate: A look at cross-country growth empirics. *Journal of Economic Growth*, **1**(3) 1-33.

Chamberlin, G. & Yueh, L. (2006). Macroeconomics. London: Thomson Learning. *"Countries"* The World Bank Economic Review, Vol. **10**(1) 51-77.

Dasgupta, D & Ratha, D. (2000): *What Factors Appear to Drive Private Capital Flows to Developing Countries? And How Does Official Lending Respond?* World Bank Working Paper 2392.

Delechat, C., Ramirez, G., Wagh, S. &Wakeman-Linn, J. (2009). *Sub-Saharan Africa's Integration in the Global Financial Markets.* IMF Working paper WP/09/114.

Eichengreen, B. (2002). Capital account liberalization: what do the cross-country studies tell us? *World Bank Economic Review*, **15**(1), 341-366.

Fedderke, J.W. (2010). *Sustainable Growth in South Africa.* Economic Research Southern Africa Policy Paper No. 20, South Africa.

Fernandez-Arias, E. (1996). The new wave of private capital inflows: push or pull? *Journal of Development Economics*, **93**(2), 389-418.

Fernandez-Arias, E. Montiel, P.J. (1996). The surge in capital inflows to developing countries: an analytical overview. *The World Bank economic review*, **10**(1), 51-77.

Ghirmay, T. (2004). Financial Development and economic growth in Sub-Saharan African Countries: Evidence from time serious analysis. *African Development Review*, **16**(3), 415-432.

Granger, C. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica*, ***37***(3): 424-38.

Gwenhamo, F. & Fedderke, J. (2010). *The Composition of Foreign Capital Stocks in South Africa: The Role of Institutions, Domestic Risk and Neighbourhood Effects*. School of Economics and Economic Research Southern Africa, Working Paper No. 163. University of Cape Town.

Hecht, Y., Razin, A. & Shinar, N.G. (2004). Interactions between Capital Inflows and Domestic Investment: Israel and Developing Economies. *Economic Review*,**2**(2), 1-14.

Ibhagui, O. & Olawole, K. (2019). Capital flows and domestic investment: new evidence from OPEC countries. Journal of Financial Economic Policy, 11(4), 505-532.

Jorge, A. & Salazar-Carrillo, J. (1988). *Foreign Investment, Debt and Economic Growth in Latin America.* Paper delivered at the Fourth Annual Conference on Key Problems of Latin America, Florida International University. London. Macmillan Press.

Kim, S. & Yang, D.Y. (2009). Do Capital Inflows Matter to Asset Prices? The Case of Korea. *Asian Economic Journal*, **23**(3), 323-348.

Lane, P.R. & Milesi-Ferretti, G.M. (2003). International Financial Integration. Institute for International Integration Studies Discussion Paper 03.

Lensink, R. & White, H. (1998). Does the Revival of International Private Capital Flows Mean the End of Aid? An Analysis of Developing Countries' Access to Private Capital. *World Development*, **26**(7), 1221-1234.

Lewer, J. (2007). The Trade Creating Effects of Capital Flow Liberalization (with Neil Terry). *International Advances in Economic Research*, **9**(1) 85.

Loungani, P. & Razin, A., (2001). How Beneficial is Foreign Direct Investment for Developing Countries? Finance and Development, **38**(2), 254-258.

Luca, O & Spatafora, N. (2012). Capital Inflows, Financial Development, and Domestic Investment: Determinants and Inter-relationships. International Monetary Fund, Working Paper **12**(120),1-23.

Lucas, R. E. (1990). Why doesn't capital flow from rich to poor countries?" *American Economic Review*, **80**(2), 92-96.

Mileva, E. (2008). *The Impact of Capital Flows on Domestic Investment in Transition Economies.* European Central Bank Working Paper Series, No 871/February.

Obstfeld, M & Taylor, A. (2004). Global Capital Markets: Integration, Crisis, and Growth. Cambridge University Press, Cambridge.

Odhiambo, N.M. (2008). Financial depth, savings and economic growth in Kenya: A dynamic causal relationship. *Economic modelling*, **25**(4), 704-713.

Pagano, M. (1993). Financial markets and growth: An overview. *European Economic Review*, **37**(23), 613-622.

Pesaran, M.H., Shin, Y & Smith, R.J. (2001). "Bounds testing approaches to the analysis of level relationships," Journal of Applied Econometrics, John Wiley & Sons, Ltd., **16**(3), 289-326.

Quah, D. (1993). *Empirical cross-section dynamics in economic growth.* European Economic Review, **37**(1), 2–3.

Razin, A. & Sadka, E. (2002). *Labor, Capital, and Finance, International Flows.* New York: Cambridge University Press, Cambridge.

Razin, A., Rubinstein, Y & Sadka, E. (2003). *Which countries export FDI, and how much.* NBER Working Paper no. 10145. Cambridge, Mass: National Bureau of Economic Research.

Razin, A., E. Sadka & H. Tong. (2005). *Bilateral FDI flows. Threshold Barriers and Productivity Shocks*. NBER Working Paper No. 11639, National Bureau of Economic Research, Cambridge, Mass.

Reinhart, C., Carmen M., Kenneth S. Rogoff, & Miguel A. Savastano. (2003). *Debt Intolerance.* Brookings Papers on Economic Activity, Spring, 1–74

Reisen, H. (1998). *Sustainable and Excessive Current Account Deficits.*Emperica,**25**(2), 111-131.

Romer, P.M. (1994). The origins of endogenous growth. *The Journal of Economic Perspectives*, **8**(1), 3-22.

Shahbaz, M., Awan, R. U., & Ali, L. (2008). Bi-Directional Causality between FDI & Savings: A Case Study of Pakistan. International Research Journal of Finance and Economics, 17, 75-83.

South African Reserved Bank, (2013). Online Statistical Query, [Online]. Available: http://www.resbank.co.za/Research/Statistics/Pages/OnlineDownloadFacility.aspx/ Accessed on the 02 August 2015.

Tambunan, T. (2005). The impact of Foreign Direct Investment on poverty reduction: A survey of literature and a temporary finding from Indonesia. In consultative meeting on "Foreign Direct Investment and Policy Changes: Areas for New Research", United Nations Conference Centre, Bangkok, Thailand (pp. 12-13).

UNCTAD, (2011). World Investment Report: Non-Equity Modes of International Production and Development, United Nations Conference on Trade and Development: Geneva.

Ventura, J. (2012). Bubbles and capital flows. Journal of Economic Theory, 147(2), 738-758.

World Bank, (2008). *The Growth Report: Strategies for Sustained Growth and Inclusive Development.* The Commission on Growth and Development. World Bank: Washington, D.C.

World Bank, (2011). South Africa Economic Update: *Focus on Savings, Investment, and Inclusive Growth.* The World Bank Group: Africa Region Poverty Reduction & Economic Management. Issue **(1).** 1 – 46.

World Bank. (2019). World Bank Development Indicators data base. Washington DC: World Bank.