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The Impact of Capital Flight on Domestic Investment: Empirical Evidence from South Africa

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Abstract

Capital flight has been a significant source of concern for many emerging countries. However, most of the debate on international capital flows focuses on examining the effects of foreign capital flows on economic growth. Thus, the implications of capital flight and its impact on domestic investment remain primarily unanalysed. This paper investigates the effect of capital flight on domestic investment in South Africa using an ARDL estimation between 1980 and 2018. The results show an inverse relationship between capital flight and domestic investment. In the long run, the impact of capital flight on domestic investment is more significant than the short-run impact, indicating that a persistent outflow of capital has a negative cumulative effect on domestic investment over time. The study further found foreign direct investment crowded out domestic investment in the long run.

Keywords: Capital flight, domestic investment, ARDL, South Africa

JEL classification: E22, F32

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1. Introduction

The importance of capital accumulation to a country's economic growth cannot be over-emphasised. Keynes (1936) posits that domestic investment is essential to boost economic growth in a closed economy. Economic growth depends on capital accumulation, which partly drives investment. In turn, investment depends on the stock of savings (both domestic and foreign sources). Most developing countries face the challenge of stimulating domestic capital in the form of savings to boost domestic investment to achieve high economic growth rates. Yalta (2010) explains that a savings gap occurs when a country's domestic resources are insufficient to fund domestic investment. This resource gap can further be widened by capital flight, where domestic and foreign funds leave the country favouring investing abroad.

Over the recent decade, capital flight from African countries has taken centre stage in development policy literature. Capital flight has received attention from scholars because of the heavy burden of financial outflow in an already capital-deficient continent that is falling behind other continents in development indicators (Ndikumana, Boyce and Ndiaye, 2015). A large amount of capital flight from Africa has been coined as a paradox in the literature by Lucas (1990), Boyce and Ndikumana (2008), and Kollamparambil and Gumbo (2018). The paradox stems from the notion that capital flows

from countries of low-capital to capital-abundant countries. On the one hand, African countries are heavily indebted due to credit constraints, which compromise governments' service delivery. On the other hand, these capital-deficient countries are the source of massive capital outflows to different continents (Boyce and Ndikumana 2008).

Sub-Saharan Africa has fallen behind other developing countries in achieving developmental goals such as sustainable development goals. Although the absolute amount of capital flight from Africa is relatively small compared to other continents, it comes at a higher cost and thus deserves serious attention. The excessive amount of capital flight carries a hefty opportunity cost that weakens domestic investment (Fofack and Ndikumana, 2010; Ndikumana, 2014), slows economic growth and undermines poverty alleviation (Nkurunziza, 2014).

Despite being relatively more advanced than other Sub-Saharan countries, South Africa has not escaped the consequences of capital flight. The size of capital flight has continued to wreak economic havoc over the past decade. Capital flight has negatively impacted macroeconomic indicators such as economic growth, investment, and tax revenue (Mohamed and Finnoff 2004). For example, South Africa lost over US\$300 billion to capital flight between 1980 and 2018 (Ndikumana, Naido, and Aboobaker, 2020). This loss worsens the problem of capital scarcity and diminishes South Africa's ability to mobilise domestic resources. The national development plan (NDP) target is to grow the economy on average by 5.4 per cent. However, with the significant outflows of capital, achieving a growth rate of 5 per cent annually by 2030 remains a challenge.

Studies on capital flight in South Africa have focused on the magnitude, causes and measurement of capital flight (Fedderke and Liu 2002; Mohamed and Finnoff 2004; and Ashman et al. 2011). Notwithstanding the advancement in estimating the magnitude, causes and measurement of capital flight in literature, much less evidence exists on its impact. Few studies (Wujung and Mbelle, 2016; Beja, 2007; Mariana, 2006) investigated the effect of capital flight on economic growth. Thus, this study adds to the body of literature by focusing on the impact of capital flight on domestic investment as a significant macroeconomic indicator. Domestic investment is a crucial driver of economic growth, which is one of the 17 SDGs. Secondly, the study focuses on a single country, of South Africa, because country-specific research impacts of capital flights are under-represented in literature. Most of the literature focuses on a cross-country aggregate using a cross-sectional level analysis. However, country-specific research is pertinent for designing and implementing policies to curb and prevent capital flight peculiar to South Africa. Lastly, the study improved the estimation technique by using the Autoregressive distributive lag (ARDL) bounds technique to estimate the link between capital flight and investment. In comparison to VAR, this approach is robust to small sample problems. For example, the ARDL bounds model can have many variables without losing many degrees of freedom, which is a particular problem of VAR models.

The remainder of this paper is organised as follows. Section 2 provides a brief overview of capital control policies and trends in capital flight in South Africa. Section 3 introduces recent literature on capital flight and domestic investment. The data and methodology used in this paper are discussed in Section 4. Section 5 presents the empirical findings, and finally, the paper concludes with Section 6.

2. Overview of Capital flight in South Africa

Historically, the capital control policy in South Africa can be traced back to the 1960s during the apartheid regime. The exchange rate control policy was first introduced in the 1960s-70s amid fears of political instability (Farrell and Todani, 2006). The exchange rate control mainly limited the purchase and sale of foreign currencies to manage capital movement. Thus, it was imperative to implement policies to keep South Africa's wealth within its borders.

At the beginning of the 1980s, the government abolished the dual exchange rate¹ to move toward

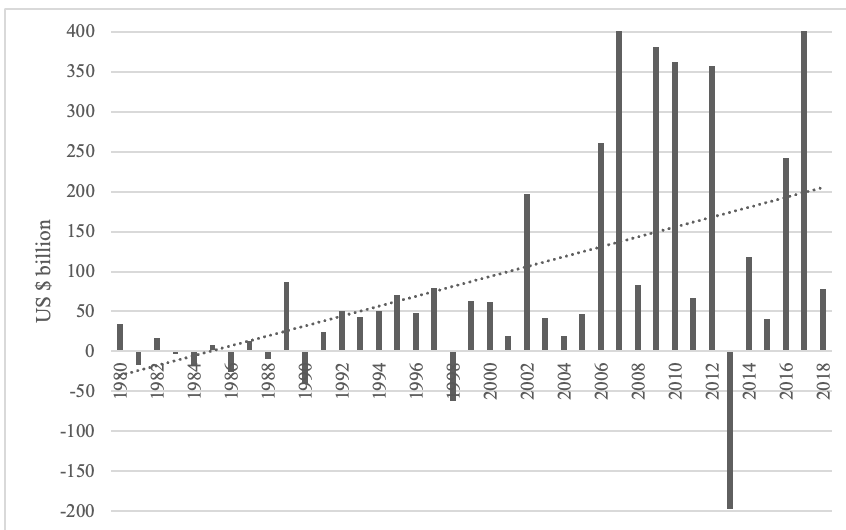
1. A dual exchange rate is a setup created by a government where their currency has a fixed official exchange rate and a separate floating rate applied to specified goods, sectors, or trading conditions

market liberalisation. However, the political and economic instability of the period overshadowed this early attempt.

The end of the apartheid regime saw a further push toward market liberalisation. On the one hand, many policymakers strongly supported the classical school of thought. For example, the appointment of Chris Stals, an advocate of the free market, as South African Reserve Bank governor. On the other hand, removing apartheid-era sanctions meant South Africa could reintegrate into the global economy. In addition, there was insurmountable pressure from the Bretton Wood institutions for the country to move to full market liberalisation since the country had a low budget deficit. For example, in 1995, the two-tier exchange rate regime was abolished implying that non-residents would be allowed to bring capital into South Africa for any purpose and repatriate the profit without any restrictions. The main aim of liberalisation was to provide reassurance to wealth holders that the political and economic spheres were stable, and investments were relatively safe in South Africa (de Beer 2015). In the recent decade, South Africa’s economy has been more integrated into the global market than in the apartheid era and is ahead of other African countries. However, South Africa’s capital market is still more restrictive than other more advanced economies.

The expectation from a more open economy is the inflow of capital. Once an economy is open without stringent exchange rate restrictions, there will be a net inflow of capital as economic agents will be free to invest for the highest return. Thus, the net inflow would fill the savings-investment gap (mobilisation of domestic funds) to achieve economic growth. However, removing exchange rate controls could also encourage capital outflow in both licit and illicit transactions (Ndikumana, Naido and Aboobaker, 2020).

In South Africa, market openness coincides with a high amount of capital flight, as seen in Figure 1. The trendline shows an overall increase in the amount of real capital flight from South Africa. Between 1995 and 2006, real capital flight rapidly grew to a peak of nearly 400 billion dollars. Since 2006 the figure has remained high at an average of 160 billion dollars. The onset of liberalisation coincides with a rapid increase in capital flight, signalling that the relaxation of exchange rate controls may have facilitated the increase in the outflow of capital.

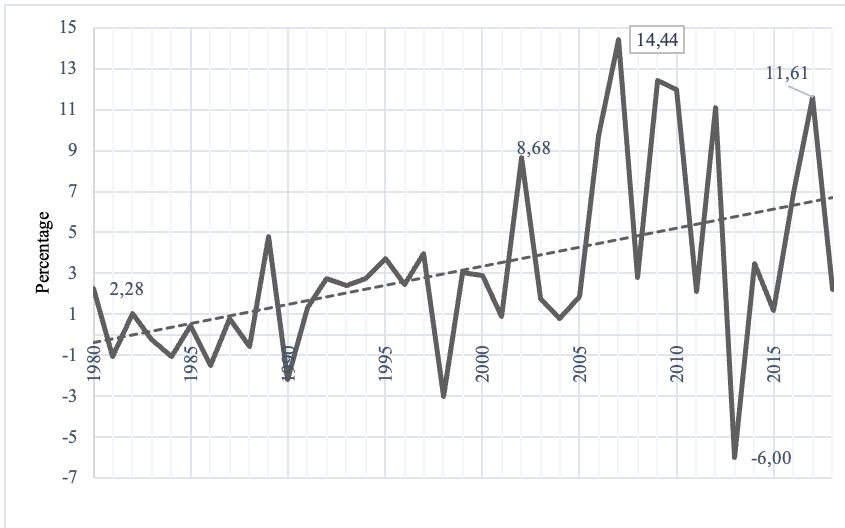


Source: Author’s estimation

Figure 1. REAL CAPITAL FLIGHT FROM SOUTH AFRICA 1980-2018 (US \$ BILLION)

Ndikumana and Boyce (2019) explain that one of the main reasons for capital flight is to gain access to favourable exchange rates. Thus, economic agents will evade any restrictive policies to profit

from arbitrage. In this regard, economic agents do not use the portfolio choice theory in decision making. Furthermore, the same trend is observed in Figure 2, which shows the capital flight as a percentage of GDP in South Africa. The highest ratio was in 2007 at 14.4 per cent of GDP. Given the political uncertainty, wealth holders used the opportunity to take their wealth elsewhere. The year 2007 was faced with a myriad of political uncertainty for South Africa. Besides being the year prior to the financial crisis, 2007 was the year in which former republican President Jacob Zuma ran neck-to-neck with President Thabo Mbeki for the African National Congress (ANC) presidential seat. President Zuma was entangled with the prosecution of Mr. Shabir Shaik. The year also saw the beginning of xenophobic attacks on the public.



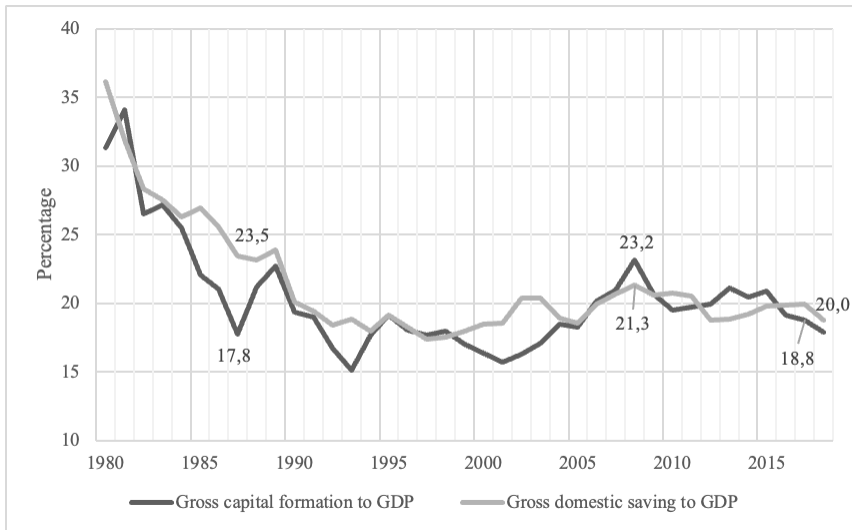
Source: Author's estimation

Figure 2. REAL CAPITAL FLIGHT AS A PERCENTAGE OF GDP(%)

One of the significant detriments of increasing capital flight is the failure to fill the savings-investment gap to boost domestic investment and economic growth (Ndikumana et al., 2020). The investment and savings trends in South Africa have fallen since 1980. Indeed, this trend has been a significant reason for the country's inability to sustain high growth rates in the post-apartheid era.

Domestic investment as a percentage of GDP trend shows South Africa experienced higher investment in 1980, in line with the highest savings rate. The highest peak of domestic investment was in 1980, after which the rate continued to fall until 2018. Between 2006 and 2008, domestic investment and savings rose briefly. This period also coincided with the highest economic growth in South Africa over the last two and half decades. A more stable political environment characterised the period under President Mbeki's reign with a relatively favourable rand exchange rate. In the post-global financial crisis, domestic investment fell sharply to 19.2 per cent from a high of 23.5 per cent. Savings followed a similar downturn coinciding with the start of growth deceleration in South Africa. Thus, domestic capital accumulation and savings policies should be central to boosting growth and combating capital flight. In addition, domestic investment trends vis-à-vis capital flight trends contrast in terms of emerging trends. Whereas domestic investment has shown a downward trend throughout the period under consideration, capital flight has shown an upward trend. Thus, an inverse relationship emerged from the trend analysis.

Ndikumana et al. (2020) provide two significant channels for sustained capital flight. The first channel for capital flight is tax evasion by private wealth holders and traders and profit shifting by large multinational corporations in South Africa. Prominent South African multinational corporations such



Source: Author's estimation

Figure 3. TRENDS IN DOMESTIC INVESTMENT AND SAVING, 1980-2018 (% OF GDP)

as telecommunications, banks, and departmental stores, are well spread throughout Africa. These investments provide companies with a basis for portfolio diversification and benefit from comparative gains in capital.

The second channel is trade mis-invoicing² which remains a significant route of capital flight due to poor implementation of exchange control reforms and openness of the capital account regime. While rigid restrictions on access to foreign exchange and outward investment create incentives for export and import mis-invoicing, it does not necessarily follow that liberalising exchange controls will eliminate these practices.

South Africa needs to enforce trade regulations better to curb trade mis-invoicing and capital flight. For example, the government should improve the capacity to track, monitor, and record trade flows from the exporter (source) to the destination (importer). A step in the right direction is modernising the electronic platform for the South African customs services to track international trade. To further curb capital flight in South Africa, the government could implement structural and institutional reforms to encourage and enforce transparency in cross-border trade and financial transactions.

3. Literature Review

The cross-border movement of goods/services and capital characterise world economic integration. Ndikumana et al. (2020) define capital flight as the cross-border capital flows that are not recorded in official government statistics. However, there is no universally accepted definition of capital flight. Effiom, Achu and Edet (2020) define capital flight as the unlawful movement of investable resources to a foreign country. It is essentially the enormous capital outflow to foreign countries that the government has not sanctioned. This study defines capital flight as a cross-border outflow of capital following the studies of Ndikumana et al. (2020); Mohamed and Finnoff (2004); and Ndikumana and Boyce (2009).

Capital flight is derived using the residual approach and is adjusted by adding trade mis-invoicing (Boyce and Ndikumana, 2001; Mohamed and Finnoff, 2004; and Kwaramba, Mahonye and Man-

2. The practice of knowingly submitting an invoice that misrepresents the value of goods being imported or exported

dishara, 2016). The residual measure is the difference between capital inflows and the sum of the current account deficit and increases in the official reserves (Erbe, 1985). Capital inflows comprise foreign debt stock and net direct investment. The theoretical underpinning of this study rests on four main theories, namely, the investment diversion theory, debt-driven capital flight thesis, the portfolio theory of capital flight, and the tax-depressing thesis. Firstly, the investment diversion theory, pioneered by Kindleberger (1966), holds that capital flight is sanctioned by better investment opportunities in advanced nations and macroeconomic and political uncertainty in developing countries (Nyong, 2015). Variables such as corruption, poor governance, high inflation rates, limited financial instruments, and the lack of offshore accounts drive capital away from developing countries. Thus, developing countries are left with low funds to boost investment, economic growth, employment, and poverty alleviation (Ajayi, 1992).

The debt-driven capital flight thesis extends the investment diversion theory. The thesis states that a country with a large sum of external debt provides its citizens with an incentive to move funds abroad. The theory holds that external debt could encourage capital flight, which is a disincentive for domestic savings and investments. Indeed, the desire to invest and save diminishes due to the expectation of exchange rate devaluation, fiscal crisis, and expropriation of assets to pay the debt (Nyong, 2015). In other words, capital flight undermines domestic investment and economic growth, which necessitates borrowing and in turn encourages capital flight in a vicious cycle (Ajayi, 1995). Therefore, the investment diversion theory and debt-driven theories emphasise the interdependent relationship between capital flight, domestic investment, and economic growth.

The portfolio theory (Markowitz, 1952) of capital flight postulates that the diversification of external portfolios can be regarded as capital flight in cases where the returns from investments are neither reported nor recorded in the home country. Devereux and Saito (2006) empirically show that the availability of nominal bonds and net foreign assets are significant causes of capital flight. When investors adjust their gross positions in each currency's bonds, countries can achieve an optimally hedged change in their net foreign assets (or their capital account), thus facilitating international capital flows.

The tax-depressing theory focuses on the consequence of capital flight in terms of revenue loss. The theory asserts that funds transferred abroad in capital flight cannot be taxed in the collection of revenue/income to boost economic growth (Wujung and Mbella, 2016). The loss in revenue reduces the government's ability to service its debt. This reduced revenue increases the debt burden and further constrains economic growth and investment. Empirical studies show that domestic investment is an essential variable for economic growth. However, African countries have an array of political, economic, and institutional instability that impede the accumulation of capital for domestic investment. Economic agents therefore prefer to invest abroad rather than domestically, resulting in capital flight. This investment choice erodes the domestic economy of the necessary savings to increase investment. Adetiloye (2012), Adesoye, Maku and Atanda (2012), and Effiom et al. (2020) empirically investigated the relationship between capital flight and investment in Nigeria. Adetiloye (2012) employed the Vector Error Correction Model (VECM) and found a negative but insignificant impact on capital flight and investment. The limitation of the study is that it does not include capital flight in the investment equation. In contrast, Adesoye et al. (2012) found a positive but insignificant coefficient of capital flight. The Engle-Granger cointegration test shows a long-run association between capital flight and investment. The study is limited because the estimated model is statistically unstable and thus unreliable in explaining the long-run dynamics. The short-run model (ECM) was not estimated because of collinearity among the independent variables. Notwithstanding, the findings of the study by Effiom et al. (2020) are more robust and in line with theoretical underpinning. Effiom et al. (2020) used the ARDL, robust to small sample problems compared to the Vector Error Correction Model (VECM) and found that capital flight negatively impacted domestic investment, and the coefficient was significant. In addition, the long-run effects of capital flight on domestic

investment are more severe than in the short run. This implies that the adverse effects of capital flight on investment become severe in future periods. Moreover, the findings also showed that Nigeria's poor institutional quality was a barrier to domestic investment. Effiom et al.'s (2020) findings are consistent with macroeconomic theory.

Salandy and Henry (2013) studied capital flight for the economy of Trinidad and Tobago with a focus on growth and investment from 1971 to 2008. They found an inverse relationship between capital flight and investment. Salandy and Henry (2013) used two-step estimation techniques for their econometric analysis. The VECM for the short-run and long-run analysis and the Generalised Method of Moments (GMM) augmented the analysis.

Gachoki and Nyang'oro (2016) investigated the impact of capital flight on private investment in Kenya. The use of ordinary least squares (OLS) showed that capital flight impacted private investment negatively due to the resource gap. They further found that external debt, changes in terms of trade, real interest rate and the ratio of private credit to GDP also affected private investment. The OLS estimation suffered from biased and inconsistent estimates because explanatory variables could be endogenous.

The empirical literature also reflects cross-country panel studies that have examined the capital flight-domestic investment nexus. One such study was by Yalta (2010), who focused on the impact of capital flight on investment and financial liberation. The study collected data from 22 emerging economies and showed that capital flight decreased private investment; however, it did not significantly impact public investment and financial liberalisation. The study used the difference GMM, which weakened with an increasing number of instruments. Ndiaye (2009) employed statistical data from the Central and West African Economic unions to investigate the impact of capital flight on investment. Using the GMM, the author found that capital flight hurt domestic investment. In addition, the study showed that the magnitude of the negative impact was more extensive on private domestic investment than on public domestic investment. Comparing the two economic regions revealed that capital flight was relatively more severe in the Central African economic union than in the West African economic union. The determinants of capital flight have also been the focus of various studies because of the significant policy implications emanating from understanding capital flight features. In this regard, Ajayi (1995) found that inflation, financial development, fiscal policy, exchange rate and trade mis-invoicing were significant determinants of capital flight in Nigeria. Moulemvo (2016) found that capital flight was detrimental to health and education expenditure in Congo-Brazzaville. Muchai and Muchai (2016) show that taxation and external debt positively impact capital flight. In Madagascar, Ramiandrisoa and Rakotomanana (2016) conclude that external borrowing and institutional deficiencies fuel capital flight.

Ellyne and Mbewe (2015) studied the role of exchange rates on capital flight in South Africa, Zambia, and Nigeria from 1970 to 2010. They used a VECM and found that the expectation of currency depreciation was a determinant of capital flight in larger economies such as the economies of Nigeria and South Africa; however, in Zambia, this was not the case. Macro-economic variables such as inflation instability and foreign direct investment negatively influence capital flight.

Most capital flight literature specific to South Africa utilises the portfolio choice rubric. Khan (1991); Smit and Mocke (1991); Rustonjee (1991); Wood and Moll (1994), Fedderke and Liu (2002), Mohamed and Finnoff (2004), and Ndikumana et al. (2020) studied the diverse nature, scope, and determinants of capital flight. These studies captured different features of capital flight, such as volume, motive, and direction of capital flight, unique to the South African experience. These analyses focused on capital flows, macroeconomic instability, fiscal policy, risk and returns to investment, and political instability as the central motivating factors for capital flight.

The South African capital flight literature helps build a better understanding of the volume and flow of capital flight. While Wood and Moll (1994) (looked at the role of under-invoicing) argue that capital flight has been relatively small, evidence from the rest of the literature indicates

that capital flight from South Africa was high by international standards. Most authors agreed that political instability was a significant cause of capital flight. For example, Fedderke and Liu (2002) found that political instability increased the probability of capital flight. However, Mohamed and Finnoff (2004) found that political and economic instability did not drive capital flight. The authors attributed this finding to high levels of poverty and inequality in the country, leading to the lack of trust in the government by the wealth holders. More recently, Ndikumana et al. (2020) used South Africa as a case study to analyse capital flight. In an extensive descriptive analysis, Ndikumana et al. (2020) concluded that chronic financing constraints impeded the government from investing in infrastructure to meet the population's needs and deliver social services such as education, health, and housing. In addition, they asserted that the immense accumulation of private wealth hidden in offshore accounts eroded the country of investable capital.

Therefore, this study fills in the literature gap by moving beyond the nature and measurement of capital flight to focus on its impact on domestic investment. This nexus is imperative because of the critical role of domestic investment in fostering sustainable economic growth.

4. Methodology

4.1 Model Specification

This study follows the investment diversion theory empirical approach. The model states that capital flight occurs because of macroeconomic and political uncertainties. The availability of more profitable investment opportunities abroad may lead investors to choose external financial instruments, thus diverting the already scarce investible funds and limiting domestic investment in the economy. Based on this theory, the functional form of the model is presented as:

$$GDI_t = f(CAPFL, EG, INF, FDI, GDS) \quad (1)$$

Equation (2) gives the econometric model:

$$GDI_t = \beta_0 + \beta_1 CAPFL_t + \beta_2 EC_t + \beta_3 INF_t + \beta_4 FDI + \beta_5 GDS + u_t \quad (2)$$

Where; GDI = Gross domestic investment,

CAPFL = Capital flight

EG = Economic growth,

INF = Inflation,

FDI = foreign direct investment.

GDS = gross domestic saving.

4.2 Description of data and sources

The yearly data is sourced from the South African Reserve Bank (SARB), IMF and the World Bank databases from 1980 to 2018.

5. Results

5.1 Structural break test

The multiple breakpoint test shows that the model had three structural breaks in 1991, 2008 and 2011. The 1991 structural break signified the end of the apartheid regime and the lifting of sanctions imposed by the international community. The 2008 break resulted from the global financial crisis that drastically affected the financial world. Lastly, the 2011 breakpoint was a result of external shocks that affected South Africa, namely, the decline in Chinese demand for South African exports and the fall in iron ore prices. This paper has accounted for the 2008 structural break to safeguard the degrees of freedom. The global financial crisis was a worldwide crisis; hence, the study includes one break dummy variable.

Table 1. DATA DESCRIPTION

| Variable | Description | Sources |
|------------------|---|---|
| GDI | Gross capital formation as a percentage to GDP | World Development Indicators (WDI) |
| CAPFL | Capital flight (in us dollars) | Political Economy Research Institute, University of Massachusetts Amherst; Ndikumana and Boyce (2018) capital flight database |
| EG | The annual percentage growth rate of real GDP | World Development Indicators (WDI) |
| INF | Inflation is measured by the annual growth rate of the GDP implicit deflator. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency | World Development Indicators (WDI) |
| FDI | Foreign direct investment is the net inflows of an investment divided by GDP. | World Development Indicators (WDI) |
| GDS | Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption). | World Development Indicators (WDI) |
| Pre-independence | A dummy variable to cover the period before 1994 | |

5.2 Unit Root tests

Table 2 shows the results of the ADF and KPSS tests. The null hypothesis for ADF is that the series contains a unit root, while the null hypothesis of the KPSS is that the series is stationary. Table 2 indicates that domestic investment and domestic saving are the only variables integrated of order $I(1)$, while capital flight, economic growth, inflation, and FDI are integrated of $I(0)$ based on the ADF and KPSS tests at 5 per cent significance. We proceed since all the variables are integrated of order $I(0)$ or $I(1)$.

Table 2. UNIT ROOT RESULTS

| Variable | Augmented Dickey-Fuller (ADF) | | | Kwiatkowski-Phillips-Schmidt-Shin (KPSS) | | |
|----------|-------------------------------|----------------------------|----------------------|--|----------------------------|----------------------|
| | Level | 1 st difference | Order of integration | Level | 1 st difference | Order of integration |
| GDI | -2.66 | -7.79 | $I(1)$ | 0.19 | 0.103 | $I(1)$ |
| CAPFL | -6.49 | -11.93 | $I(0)$ | 0.06 | -0.03 | $I(0)$ |
| EG | -4.45 | -7.23 | $I(0)$ | 0.12 | 0.13 | $I(0)$ |
| INF | -3.67 | -12.3 | $I(0)$ | 0.11 | 0.06 | $I(0)$ |
| FDI | -5.42 | -12.4 | $I(0)$ | 0.140 | 0.02 | $I(0)$ |
| GDS | -4.27 | -5.65 | $I(0)$ | 0.18 | 0.016 | $I(1)$ |

ADF: Critical points at 5% = -3.53

KPSS: Critical value at 5% = 0.146

5.3 ARDL Results

The study performs the ARDL bound test on the variable stationary of order $I(0)$ and $I(1)$. The test model uses automatic selection to select the best model fit. Also, the lag length is set to a maximum of 4 lags; this is done to reduce the chances of autocorrelation in the model.

Table 3. RESULTS OF THE BOUND TEST

| F- statistic = 6.685 | | |
|----------------------|-------------|--------------|
| Critical values | Lower Bound | Upper Bounds |
| 10% | 2.2 | 3.09 |
| 5% | 2.56 | 3.49 |
| 1% | 3.29 | 4.37 |

Source: Author's computation.

Table 3 shows the existence of cointegration (long-run relationship) between investment and the dependent variables, of which one of them is capital flight. This is after rejecting the null hypothesis of 'no long-run relationship exists' at 5 per cent. Effiom et al. (2020) also found a cointegrating relationship between investment and capital flight in Nigeria.

Table 4. ESTIMATED SHORT-RUN COEFFICIENT BASED ON ARDL

| Variables | Coefficient | Standard error | P-value |
|---------------|-------------|----------------|---------|
| D(LGDI(-2)) | 0.344* | 0.171 | 0.075 |
| D(LCAPFL(-1)) | -0.051*** | 0.012 | 0.002 |
| D(LEG(-1)) | 0.096*** | 0.019 | 0.0008 |
| D(LFDI(-1)) | 0.018*** | 0.006 | 0.019 |
| D(GDS(-1)) | -0.042 | 0.008 | 0.189 |
| D(LINF) | -0.027** | 0.01 | 0.029 |
| ECM(-1) | -0.333*** | 0.11 | 0.015 |

Source: Author's computation. Note: ***, **, * shows significance at 1, 5 and 10 percent.

Table 4 shows the results of the short-run coefficient of error correction model (ECM). The error correction term (denoted as $ECM(-1)$) is negative as expected and statistically significant. The error correction coefficient shows the speed at which the dependent variable (investment) adjusts to changes in the independent variables before converging to its equilibrium level. A negative and significant error correction term reveals that the endogenous variable converges to long-run equilibrium. The estimated coefficient of -0.33 implies that nearly 33 per cent of the disequilibrium in the model is corrected within a year.

Furthermore, in the short run, the study found that capital flight had a negative effect on investment, such that a 10 per cent increase in capital flight would result in a 0.5 per cent decrease in investment. Similarly, Effiom et al. (2020) also found an inverse relationship between capital flight and domestic investment in Nigeria. In the long run, a 10 per cent increase in capital flight would lead to a 2.5 per cent decrease in domestic investment. These results call for more strict government intervention to curb the rise of capital flight and encourage domestic investment. We recommend that the government improve the capacity to track, monitor, and record trade flows from the exporter (source) to the destination (importer) through the computerisation of customs officials. This system will automatically flag any mismatch in records to decrease trade mis-invoicing and eventually capital flight.

The study also found that the coefficient of the EG, which is the economic growth variable, was

positive and significant. A 10 per cent increase in economic growth would lead to a 0.9 per cent increase in investment in the short run and a 2.9 per cent increase in the long run. This result is in line with economic theory in that; production increases encourage domestic investment. Thus, embarking on policy programmes to boost the dwindling economic growth in South Africa is essential to boosting domestic investment and making South Africa an attractive destination for capital inflows.

Moreover, domestic savings have a negative impact on investment in the short run. A 10 per cent increase in savings results in a 0.42 per cent decrease in investment in the short run. Keynes (1936) refers to a negative relationship as the paradox of thrift. He explains that savings can eventually be detrimental to the economy since it takes funds from circulation. For example, if an individual cut spending to increase savings, the aggregate saving would fall because one person's spending is someone else's income. However, in the long run, the accumulated savings are available for investment, and as such, savings are positive and significant in the long run. A 10 per cent increase in savings would lead to a 4.3 per cent increase in investment in the long run. In this sense, this study recommends encouraging long-term savings to alleviate the dependency on foreign capital. These long-term savings can be channelled through education institutes such as the South African Saving Institute. The campaign's focus is on educating citizens on saving methods and available saving routes. For example, intensify campaign policies of the tax-free saving accounts and the unit trust accounts, and disseminate the benefits of saving to individuals. These efforts would cushion increased domestic investments channelled through to economic growth, unemployment reduction and poverty alleviation.

Strategically, the FDI is essential in the short run when domestic saving has a negative impact on investment. Thus, South Africa should attract and rely on FDI to boost investment in the short run because the study has found that FDI compliments domestic investment with a positive impact on the latter. A 10 per cent increase in FDI leads to a 0.2 per cent increase in domestic investment. However, in the long run, FDI becomes a substitute for domestic investment and is illustrated in the notion that a continuous increase in FDI constrains the domestic agents from investing. Therefore, South Africa should rely more on domestic savings, which positively impacts the long run from a strategic policy perspective.

Lastly, the inflation rate, an indicator of macroeconomic stability, is negative and significant both in the short and long run. A stable inflation rate and expectation impress on investors that the macroeconomy is stable. A continuous increase in prices indicates price instability which is a disincentive for investment. The study recommends that the South African Reserve Bank continues with inflation targeting policy.

Table 5. ESTIMATED LONG-RUN COEFFICIENTS BASED ON ARDL

| Variables | Coefficient | Standard error | P-value |
|-----------|-------------|----------------|---------|
| LCAPFL | -0.252* | 0.045 | 0.009 |
| LEG | 0.289** | 0.116 | 0.03 |
| LFDI | -0.053*** | 0.028 | 0.09 |
| LGDS | 0.43** | 0.016 | 0.03 |
| LINF | -0.685 | 0.783 | 0.41 |
| C | 0.45 | 0.541 | 0.421 |

Source: Author's computation. Note: *, **, *** shows significance at 1, 5 and 10 percent.

5.4 Model diagnostics

The CUSUM of residual indicates that the model is stable as the test line falls within the bounds of the critical values. The stricter CUSUM of squares also shows that the model is stable as the test line

falls within the bounds of the critical line for the period under consideration.

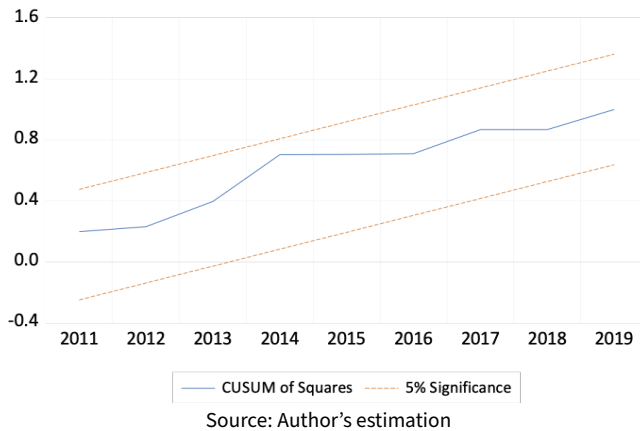


Figure 4. CUSUM OF SQUARES TEST

The traditional test for serial autocorrelation, Durbin - Watson (DW) statistic, is inadequate in assessing autocorrelation in an auto-regressive model. Thus, this study used the alternative test, the Q-statistic test. The null hypothesis is that 'there is no serial correlation' in the model. Table 6 shows that we cannot reject the null hypothesis since the P-value is greater than 5 per cent.

Table 6. Q-STATISTIC TEST FOR SERIAL CORRELATION

| | Autocorrelation | Partial autocorrelation | Q-statistic | P-value |
|----|-----------------|-------------------------|-------------|---------|
| 1 | -0.42 | -0.42 | 5.82 | 0.16 |
| 2 | 0.23 | 0.06 | 7.59 | 0.22 |
| 3 | -0.25 | -0.16 | 9.82 | 0.2 |
| 4 | -0.02 | -0.23 | 9.84 | 0.43 |
| 5 | -0.11 | -0.21 | 10.2 | 0.67 |
| 6 | 0.005 | -0.17 | 10.29 | 0.11 |
| 7 | 0.14 | 0.05 | 11.1 | 0.13 |
| 8 | -0.24 | -0.32 | 13.62 | 0.192 |
| 9 | 0.19 | -0.18 | 15.3 | 0.18 |
| 10 | -0.06 | -0.008 | 15.4 | 0.12 |

Source: Author's computation

6. Conclusion

Capital flight has continued to be a great source of concern throughout the world. The release of the Panama papers in 2016 illustrated how detrimental capital flight could be to a country and the world at large. In South Africa specifically, a large amount of investable capital left the economy between 1980 and 2018 with a resultant low investment rate, falling economic growth and a widening income. The paper emphasises that capital flight impedes domestic investment both in the short and long run. The long-run impact is more significant than the short-run impact showing that a persistent and continuous capital flight has an incremental negative impact on domestic investment. This finding is consistent with the investment diversion theory and debt-driven capital flight thesis and echoes the findings of Effiom et al. (2020) for the Nigerian economy.

Biographical Notes

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Conflicts of interest

The author declare no conflict of interest.

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