THE RELATIONSHIP BETWEEN THE CORPORATE TAX RATE AND FOREIGN DIRECT INVESTMENT IN THE SOUTHERN AFRICAN CUSTOMS UNION

by

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DECLARATION

I declare that '**The Relationship Between the Corporate Tax Rate and Foreign Direct Investment in the Southern African Customs Union'** is my own work and that all sources that I have used and quoted have been acknowledged and referenced.

.....25/08/2022.....

P.T. Masuku (Ms.) Date

DEDICATION

I dedicate my dissertation to my three wonderful children, Sisekelo Nkambule, Siphiwosethu Maphalala, and Sandzisiwe Maphalala who have been my source of hope and encouragement as I faced very many challenges during the course of this study. I also dedicate this dissertation and give thanks to some of my friends and family members, especially my sister Ncobile Masuku, who has always believed in my potential. I greatly appreciate their words of encouragement and support at times when I felt it was all becoming too much. Thank you for being there for me throughout the entire Master's programme.

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ABSTRACT

Foreign direct investment (FDI) is crucial for developing countries in order to boost economic growth. Therefore, maintaining a favourable investment climate should be a priority goal for governments in these economies, and the Southern African Customs Union (SACU) is no exception. This can be achieved through implementing policies that are aimed at attracting FDI into the SACU economies. This study investigates the relationship between the corporate income tax (CIT) rate and FDI in the SACU region. The study used a panel dataset of the five SACU member states, covering the period 2000 to 2019. In an effort to separate South Africa's dominance over the other smaller SACU countries, the study estimated two panels, the first panel being for SACU as a whole, and the second panel for the smaller member states only. The study used the pooled Ordinary Least Squares (OLS) regression and Fixed-Effects (FE) models, and further estimated the Seemingly Unrelated Regression (SUR) model on the data. The main independent variable is the CIT rate and the dependent variable is the FDI inflows. Other control variables were introduced into the model: the GDP annual growth rate, inflation rate, population growth rate, openness, political stability and control of corruption. The findings from the empirical analysis indicate that the CIT rate is insignificant in attracting FDI into the region as a whole. Control of corruption, political stability, population growth, inflation and openness were established to have a statistically significant association with the FDI inflows. GDP growth, on the other hand, is insignificant. For the smaller economies, mixed results were obtained from the different models regarding the effect of the CIT rate on FDI. It was established though, that the CIT rate has a more significant effect in the smaller economies than in the union as a whole. Otherwise, all other independent variables indicated similar conclusions to those for the first panel.

Key words: Panel data, foreign direct investment (FDI), corporate income tax (CIT), Fixed- Effects (FE) model, Seemingly Unrelated Regression (SUR) model.

LIST OF ACRONYMS

2SLS	Two-Stage Least Squares
AIC	Akaike Information Criterion
AsgiSA	Accelerated and Shared Growth Initiative for South Africa
ARMA	Autoregressive Moving Average
BITC	Botswana Investment and Trade Centre
CIP	Critical Infrastructure Programme
CIT	Corporate Income Tax
CMA	Common Monetary Area
COMESA	Common Market for Eastern and Southern Africa
DID	Difference-In-Difference
DRIS	Duty Remission Incentive Scheme
ECA	Taiwan Economic Cooperation Agreement
ECM	Error Correction Model
EIPA	Eswatini Investment Promotion Authority
EPZ	Export Processing Zone
FDI	Foreign Direct Investment
FE	Fixed Effects
GDP	Gross Domestic Product
GEAR	Growth, Employment and Redistribution
GMM	Generalised Method of Moments
ICA	Initial Capital Allowances
IDZ	Industrial Development Zone
IFSC	International Financial Services Centre
IMF	International Monetary Fund
IPS	IM, Pesaran and Shin
LBF	Losses Brought Forward
LLC	Levin, Lin and Chu
LM	Lagrange Multiplier
LNDC	Lesotho National Development Corporation
LSDV	Least Squares Dummy Variable
NDP	National Development Plans

NIC	Namibian Investment Centre
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PSM	Propensity Score Matching
RE	Random Effects
SACU	Southern African Customs Union
SEZ	Special Economic Zones
SUR	Seemingly Unrelated Regression
SYGMM	System Generalised Method of Moments
TECA	Taiwan Economic Cooperation Agreement
UNCTAD	United Nations Conference on Trade and Development
VAT	Value Added Tax
WTO	World Trade Organisation

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1. CHAPTER 1: INTRODUCTION TO THE STUDY

1.1 Background

Developing countries are often caught up in a struggle to balance the goals of taxation policies, especially tax incentives for investment stimulation, and their effects on the government resource envelope or on public expenditure. Edo, Okafor & Justice (2020) concur, highlighting the existence of a trade-off between attracting higher levels of foreign direct investment (FDI) and the amount of corporate revenue an economy collects. Even so, there is no denying that for most governments, foreign investment is necessary to cover revenue shortfalls, reduce unemployment levels, and bridge existing knowledge gaps in the economy.

The collection of tax revenue is important in many economies – particularly those of developing countries, as it enables them to own the development process of their economies rather than relying on foreign aid received from developed countries. Tax collection remains challenging for developing countries however, as indicated by their lower proportions of tax revenue collected, in relation to their Gross Domestic Product (GDP). Developing countries average around 10–20% in terms of their tax to GDP ratios, while the Organisation for Economic Co-operation and Development (OECD) countries collect 30–40% of their GDP (Moore, 2013). According to OECD (2020), in a report on about 26 African countries, corporate income tax (CIT) was the second highest contributor to tax revenues at 18.6%, after Value Added Tax at 29.4%.

The purpose of taxation policies is to ensure that there are few hindrances against undertaking productive activities, while ensuring maximum social justice (Bonucchi, Ferrari, Tomasini & Tsenova, 2015). To maximize tax collections and promote economic growth, both developed and developing economies make regulations and policies aimed at fostering FDI. Tax incentives – particularly tax exemptions, tax holidays and reductions in tax rates – along with other fiscal incentives, are some of the instruments countries use to achieve this objective (OECD, 2016).

Policy makers strongly believe that taxes have a strong effect on the movement of capital between economies. Their argument is that holding all other variables fixed, taxation policy interventions have a notable influence on the amount of FDI and its choice of location, because where the tax rates are high, the after-tax returns are reduced. As such, in their competition to attract foreign investment, governments pursue several taxation incentives and corporate tax rate cuts are among the popular initiatives implemented. Morisset and Pirnia (2001) raise a query on this belief of policy makers, questioning whether accommodative tax policies can compensate for the business environment challenges investors would face. The same authors argue that other factors, like commercial and regulatory policies, market size, and human capital (among others) have a greater influence on FDI than tax policies alone.

When multinational enterprises search for suitable locations for their investments, a low-tax burden is an obvious advantage that is among the top influencing factors for their ultimate decision. This notion is supported by Fonseca and Juca (2020) who highlight that indeed, taxation policie4s are known to influence the decisions taken by corporates with regard to financing and investment. Well-informed, country-specific taxation policy decisions depend critically on several relevant macroeconomic indicators, including how variations in the corporate income tax rate impact investment and economic growth.

Foreign investment in the African continent has remained low in comparison to other global continents. Some of the contributing factors are that most African countries are characterized by unfavourable macroeconomic factors, such as poor infrastructure, political instabilities, unfavourable financial conditions, and high unemployment, among others. The African continent is widely seen as risky and volatile in terms of investment prospects, (Appiah-Kubi, Malec, Phiri, Maitah, Gebeltova, Smutka, Blazek, Maitah & Sirohi (2021). Notwithstanding some of these negative perceptions (which may be true to a greater or lesser extent), over time, some African economies have implemented several initiatives aimed at improving their business operating environments in order to lure foreign investment. According to Appiah-Kubi *et al;* (2021), some of these significant measures include liberalization of the economy, provision of infrastructure and tax incentives.

Even though discussions on the correlation between tax cuts and FDI do take place in political and academic circles – and studies have been undertaken on individual

countries and other regions – research investigating the whole Southern African Customs Union (SACU) is currently unavailable. This study therefore focuses on the member states of the SACU, which are Lesotho, Botswana, Eswatini, Namibia and South Africa, all of which have experienced one or more corporate tax rate cuts over the past twenty years.

The purpose of this study is to establish the effectiveness of lowering the corporate income tax (CIT) rate in SACU member countries in attracting FDI inflows into these economies. The main assumption is that there should be an observed increase in FDI inflow resulting from decreased tax rates. The findings of the study will assist in contributing empirical evidence to support and guide any proposed future policies. The study covers the period from 2000 to 2019.

1.2 Problem Statement

There is a growing level of tax competition between countries in order to attract investment and boost their FDI inflows, and in this regard, countries apply a number of policies, including lowering the corporate tax rate. According to Hungerford (2013), reforming corporate income tax policies should have the main objective of lowering tax rates and extending the tax base, while remaining revenue neutral. This approach takes note of the fact that while attracting FDI may be the long-term goal of implementing most corporate tax reforms, there is likely to be a negative effect on corporate tax revenues, particularly in the short-to-medium term. While several studies conducted in different economies and regions have shown a link between these two variables (FDI and the CIT rate), the exact impact of corporate tax cuts on FDI notably varies from one economy to another, depending on their overall economic and business landscapes.

Even though the SACU region – and more broadly the overall African continent – has in recent times gradually increased FDI inflows, the amount remains lower compared to other developing countries. When conducting a study on tax incentives and FDI in South Africa, Kransdorff (2010) argues that South Africa's relative FDI was fading and conducted a study on whether the country's tax regime was a potential cause. With the tight links that exist between South Africa and the other SACU members, South African economic developments often directly impact those of the other economies,

with both negative and positive spillover effects. More recently, according to the World Bank Group (2020), prospects to attract FDI by SACU member states still require much improvement, as indicated by their low rankings in the ease of doing business index. The publication compares existing business regulations (including taxation regulations) in 190 economies. South Africa is ranked 84, followed by Botswana at 87 and Namibia at 104. Eswatini and Lesotho are at the bottom, standing at 121 and 122 respectively.

For SACU as a whole, there is inadequate empirical work that seeks to establish the assumed link between lowering the corporate income tax rate and positive changes in business activity in order to promote investment and economic growth. This is despite the fact that such a policy initiative would normally be among the strategies considered to boost FDI inflows. SACU member countries have in recent years battled with budget deficits, necessitating reforms to bring both short- and long-term tax revenue boosts. Considering the lowering of the CIT rate to reduce the tax burden on businesses in an effort to stimulate investment and economic growth has been identified as one important initiative by some of the SACU governments. Thus, the main problem this study seeks to analyse is the existence and nature of a relationship between the CIT rate and FDI in SACU member states.

1.3 Research Objectives

The purpose of this study is to examine (using a panel data analysis approach) whether lowering the CIT rate does invite foreign investment, thus contributing positively to economic growth. The main aim is to provide the governments in SACU member states with empirical evidence to guide their corporate taxation policies, particularly when considering implementing a corporate tax cut. The objectives are to:

1. Analyse the existence of a relationship between changes in the CIT rate and FDI in the SACU region.
2. Analyse the relationship that exists between FDI and other selected independent variables identified to have an impact on FDI. This second objective aims to shed light on other economic factors that influence investors' decisions in locating their investments in the SACU region.

1.4 Significance of the study

SACU member countries have experienced low economic growth rates in recent years, with a SACU average GDP growth of 1.8% in the past 14 years, compared to an average of 4.3% in the preceding 13-year period (UNCTAD data, 2022). This has necessitated the need to pursue a fiscal policy to bring both immediate and long-term revenue relief to support government expenditure (among other considerations). According to Onofri and Tsenova (2014), policy options which reignite the economic growth engine, thus generating welfare and internal demand, offer the only viable exit from financial and debt crisis. With the identification of incoming FDI as one of the crucial macroeconomic features to boost economic development, taxation policies which are typically used by countries to encourage FDI, are among the top initiatives to be explored.

In the past twenty-something years, the CIT rate has not been reduced much in the SACU economies, and therefore in recent years, some jurisdictions have considered lowering tax rates in order to boost economic growth and investment. But how effective are tax rate changes in encouraging investment and thus stimulating the necessary economic growth direction? This study aims to answer this question and the findings can then be extended to other tax types to be considered during policy decision making.

Of the five countries in SACU, South Africa has been receiving a higher level of incoming investment compared to the other four member states, since it is generally advantaged by its larger market size. Therefore, this study analyses two different panel datasets: one for the whole SACU region, and the other one for only the smaller member states (Botswana, Eswatini, Lesotho and Namibia). This will generate much more conclusive findings about the impact of the CIT rate on FDI, particularly for the smaller economies. Several research studies have been undertaken to examine the influence of CIT policies on FDI across the world, and to some extent, even in selected African regions; but interestingly, none has conducted an extensive analysis on the SACU member states, and therefore this study seeks to address that gap.

The remainder of this dissertation is ordered as follows: Chapter 2 reviews both the theoretical and empirical literature on FDI and its determinants, and the association between the corporate tax rate and FDI. Chapter 3 discusses reform strategies and

policies informing foreign direct investment redress in SACU, and Chapter 4 details the methodological approach of the study. The results are summarized and discussed in Chapter 5, and conclusions and recommendations are presented in Chapter 6.

2. CHAPTER 2: THEORETICAL AND EMPIRICAL LITERATURE REVIEW

2.1 Introduction

In general, foreign direct investment (FDI) contributes positively to the economic growth of destination countries (Kitonyo & Kathanje, 2018). This section discusses the literature on the determinants of FDI, including both theoretical and empirical evidence. Different views and conclusions are presented from numerous studies that have been undertaken in this area. One thing to note is that it is evident from the studies that the intended location for FDI is influenced by a variety of factors. In particular, the exact impact of a corporate tax rate reduction varies from one economy to another, and there are other – sometimes much stronger – factors that influence investment decisions.

2.2 What is Foreign Direct Investment?

OECD (2016) defines FDI as a form of investment that occurs when a foreign investor establishes a substantial interest in, or influence over a company in another country. Borrowing from different literature sources, Kitonyo and Kathanje (2018) categorise FDI into three types: market-seeking, resource-seeking and efficiency-seeking. Duce and Espana (2003) define FDI as per the International Monetary Fund (IMF) framework, which uses the balance of payments (BoP) viewpoint, in which FDI reflects the aim of attracting a long-term investor into business in another country. In all these cases, it is assumed that the intended investment is planned to be on a long-term basis, thus playing a significant role in the host country. Goransson and Khaled (2013) additionally states that the benefits of FDI are as valuable to the host country as they are to the investor.

Siregar and Patunru (2021) argue that due to their guarantee of a long-term commitment, FDI flows are much more stable than portfolio investments (financial instruments like bonds, stock ownership among others). Besides being a source of capital, FDI inflows provide employment, enhance human skills, and promote

advancement in technology, as well as providing the host country with access to new international markets. All of these factors play a critical role in the economy's productivity and growth. De Mello (1999) shares the same sentiments, stating that other forms of mixed non-equity cooperation also fall under the umbrella of FDI, including the transfer of tangible and intangible assets by a foreign entity to a domestic counterpart. The same author argues further that for FDI to contribute positively to growth, it needs to be complemented by suitable domestic investments, especially in the short term.

To highlight the crucial role played by FDI in developing countries, Simelyte and Antanaviciene (2013) define FDI as aid to developing economies – as well as those in transition – by means of supplementing their domestic funds and providing more effective management instruments, thus boosting the country's productivity. According to Shad (2013), FDI is a powerful weapon for driving development in many economies. He considers FDI to be a significant driver in terms of physical capital growth, increasing employment opportunities, developing productive capacity, as well as helping to integrate the economy. Another under-studied advantage of FDI is that besides guaranteeing the transfer of intangible assets to another country, it also plays a crucial role in the development of indigenous entrepreneurship, thus facilitating the 'spillover' of knowledge (Osabohien, Awolola, Mathew, Itua & Elomien, 2020). The same authors argue further that such knowledge spillovers contribute to the establishment of new enterprises in the destination country.

Through FDI, host countries can score critical economic benefits in addition to the injection of foreign capital, including technology advancement, skills enhancement, improvement in their innovative capacity, and exposure to new export markets. However, these positive benefits do not always come easily and automatically. In order to enjoy complete economic benefits of FDI, host countries need to ensure that their business and regulatory environments are conducive for investments, and that business operations are not frustrated by government inefficiencies. This includes ensuring ease of doing business through providing access to infrastructure and improving other business-related regulations, among other factors.

Rjoub, Aga, Alrub and Bein (2017) assert that for any investment, undertaken either domestically or internationally, investors should undertake a thorough consideration

of the inherent political constraints and the general environment in the host country. This includes vigorously seeking insight into government regulations and understanding of the political climate and its associated risks, since these factors pose a major threat to investment opportunities. Other related risks that need to be assessed include levels of corruption, the quality and effectiveness of existing investment regulations, crime and security issues, among others.

2.3 Theories on the Determinants of FDI

There are several theories on the determinants of FDI, which can be categorised into four main types, namely the neoclassical, portfolio choice, industrial organisation, and eclectic theories.

2.3.1 The Neoclassical Theory

According to this theory, capital flows among countries are governed by the differences between the interest rates prevailing in those countries. Assuming unconstrained capital mobility, this paradigm holds that there will be mutual benefits in terms of either capital exports or capital imports for countries that participate in either activity. The outcomes depend on factors such as the host country's resources (financial, natural, human), flow of information, political climate, expected returns from the investment, as well as tax and other incentive policies.

2.3.2 The Portfolio Choice Theory

Linked to the neoclassical theory, in addition to assessing the expected returns on a particular investment, the portfolio choice theory requires investors to further consider the risks that are related to that investment. It assumes that fluctuations in capital returns within a country – and particularly between countries – are not perfectly correlated. Therefore, risks can be reduced by diversifying investment portfolios. It then follows that the location and composition of an existing investment portfolio will determine where foreign capital flows will be directed.

2.3.3 The Industrial Organisation Theory

According to the industrial organisation theory, investing firms and businesses are assumed to be oligopolistic, thus posing entry barriers to the foreign markets. In such a set up, foreign firms are able to compete more successfully than local firms since they are advantaged by characteristics such as economies of scale, technological advancement in their product offerings, and other attributes relating to job skills. This theory emphasizes that depending on the type of investment, firms are required to have certain distinct characteristics (oligopolistic nature) to be successful.

2.3.4 The Eclectic Theory

The eclectic theory attempts to explain FDI flow by considering three angles: ownership advantage, locational advantage, and internationalisation, as per Dunning (1981, 2000, 2001). Regarding the ownership advantage, investors consider the ownership rights of the business and any associated proprietary details, including copyrights and trademark rights. These considerations may further include an assessment of available human resources and skills. The second consideration – the locational advantage – assesses mainly the host country's available resources (including natural resources) and their costs. These considered resources are normally of an immobile nature. Lastly, the internalisation advantage considers the most cost-effective production approach for the investing business, that is, whether to outsource and partner with a foreign firm, or to manage production in-house.

2.4 Literature on the Determinants of FDI

Several studies have been conducted on both developed and developing economies to ascertain what drives the decisions investors make with regard to the location of their capital. Scholars and independent researchers have established that the decisions made by investors to move their capital and invest it in certain economies are affected by a number of factors. The major influences include market size, economic environment, economic growth, trade performance, competitiveness, labour costs and productivity, infrastructure, political risk, taxes, and regulatory policies. Even though the identified factors are broadly similar in most countries across the globe, there is variation in how much influence each of these variables has, especially in terms of country-to-country or region-to-region comparisons.

Demirhan and Mascal (2008) conducted an analysis of thirty-eight (38) developing counties and found that statistically significant variables that influence FDI include the tax rate, the inflation rate, GDP per-capita and trade openness. Labour costs, on the other hand, were found to be statistically insignificant. Drawing on additional literature sources, the OECD (2016) summarises the key factors that motivate investors to move their capital according to the previously mentioned three advantage angles of the eclectic theory. On the other hand, Darmo *et al*. (2020) categorise the factors that drive investors into establishing their interests in a host country into internal and external factors. Internal determinants mostly have to do with a target company's features and resources, whereas external factors are related to economic, legal, cultural, and social environments in the host country. The geographical location of a prospective host country is also of considerable interest to investors (Rodriguez-Pose & Cols, 2017).

A study by Awolusi (2018) into policy considerations as well as non-policy factors that determine African FDI movements using 42 selected African countries, came to a conclusion that is broadly in line with most studies on the subject. Awolusi's research employed both the generalised method of moments (GMM) and ordinary least squares (OLS), and concluded that trade openness, economic instability, and natural resources have a significant and positive effect on FDI inflows, alongside human capital development, foreign aid, and the first-year lag of FDI (FDI recorded in previous year). Awolusi's (2018) findings reveal a negative relationship between FDI inflows and the host country's debt position, corporate tax rates and exchange rates.

Narrowing down their scope to the SACU region, Suleiman, Kaliappan and Ismail (2015) used the pooled OLS method and found results that are in line with the overall conclusions for the African continent (mentioned above). Suleiman *et al;* (2013) found that a bigger market size, trade openness, and the presence of natural resources have a positive effect on attracting FDI. Such findings are supported by available data on FDI inflows into the region as presented in the next chapter, which indicates that South Africa – being the largest economy of the five SACU member states – has been receiving higher FDI inflows than the other economies, mostly advantaged by its larger market size and the availability of natural resources. Other variables with a positive influence on FDI as per Suleiman *et al.* (2013) study were infrastructure, gross capital formation and labour costs, although the relationship was insignificant for all three variables.

Kumari and Sharma (2017) reached similar conclusions to the African and SACU studies on the determinants of FDI inflows. They used fixed-effects and random-effects models to identify key influencing factors for FDI in 20 South, East and Southeast Asian countries. The considered variables included market size, trade openness, infrastructure, inflation, interest rate, research and development, and human capital. After reaching conclusions on the impact of these variables in determining FDI inflows, the study advised that governments need to strengthen policies on key measures, such as developing market size, implementing regulations to boost international trade, developing more research and development facilities, and investing in more advanced technologies. Shah (2013) established similar findings in a quantitative study focusing on the Bangladesh economy, based on almost the same variables.

2.5 Literature on the Corporate Tax Rate and FDI

The literature on corporate income tax rates and how they affect investment focuses on two areas, namely, FDI and the expansion of existing businesses. Corporate tax policies are generally considered to be significant in influencing where investors choose to locate their businesses (FDI location). The ultimate goal for investment is to earn profits, and the amount of tax paid is an important factor to consider as a cost element of investment. In other words, higher tax rates result in reduced after-tax returns, which could adversely affect investment decisions. Consequently, investors prefer moving their interests to economies which offer tax advantages (OECD, 2016).

Interest in what determines FDI – in particular the influence of taxation – has increased in recent years, as shown by several studies that explore the subject. Nasution (2020) argues that investors consider a host of factors when deciding to establish a business in a host country, of which tax rates is only one, thus making it quite difficult to attract FDI. In reference to the corporate tax rate policy, Nasution (2020) argues that its effect varies between developing and developed countries, depending also on the type of investment.

Almost along the same lines, Boly, Coulibaly and Kere (2020) suggest that even though the debate on how tax incentives impact FDI has existed for some time, it remains unsettled. One of the opposing arguments is that tax incentives rob the host

country, particularly developing economies of much needed finance for their own development projects, which, in turn, inhibits economic growth. However, proponents of the argument are of the opinion that tax incentives foster more effective use of public resources. This is through the notion that the provision of tax incentives is an indirect government expenditure through the tax system to promote business growth and investment.

Another viewpoint on why developing countries need to offer tax incentives even more than other countries, is founded on the argument that these countries often have poor investment climates thus these tax incentives would somehow compensate in luring foreign investors into these economies. This stands true when considering the high levels of corruption, political instability and poor infrastructure that dominate in most developing countries, (Appiah-Kubi *et al.* 2021).

After reviewing several studies on taxation and investment, Hasset and Hubbard (1996) determined that a consensus exists on the presence of a notable influence of tax policy on firms' investment decisions. Nevertheless, some important unresolved issues remain on the extent of this impact, taking other influencing factors into consideration. From the studies reviewed by Hasset and Hubbard (1996) tax cuts for the corporate sector have been a popular tax incentive to attract foreign investors. Other fiscal incentives that have been implemented include tax holidays (normally targeted at specific industries), tax allowances, import duty exemptions, and free-trade zones, among others (Siregar & Patunru, 2021). However, the resultant effects of implementing one incentive can vary from the other.

According to the OECD (2007: 3), at the centre of policy debate over the appropriate setting of a host country's corporate tax rate on business profit, is the difficult question of the sensitivity of FDI to corporate taxation and addressing this question is critical to an assessment of how best to address competitiveness pressures and avoid capital relocation. Ohrn (2018) argues that in an effort to maintain a neutral revenue standpoint, a number of corporate changes made by economies have lowered tax rates alongside eliminating some possible deductions, which is not always a reality. Some reforms have been proved to have negligible effects on business investment.

From a global perspective, Morisset and Pirnia (2001) assessed the connection between tax policy and FDI, along with other specific tax instruments (including tax

holidays, investment allowances, accelerated depreciation among others) that had an impact on FDI. They reviewed results from studies conducted by various authors who had used either surveys or econometric analysis in their research. The common conclusion from all the survey studies was that tax incentives are a weak stimulant for FDI – this is the opposite of the opinion of government officials in host countries, who believe that tax incentives are a strong stimulant. The other evidence was from studies which had used an econometric approach and applied time-series estimation to determine FDI's responsiveness to tax rate fluctuations. In line with the findings from the survey approaches, a weak correlation was found between FDI and taxes, whilst a much stronger influence was from market and political factors. These findings are all in line with Morrisset and Pirnia's (2001) initial assumptions.

Some of the reviewed studies are presented in the following sub-sections, categorised according to the research approaches used, namely time series, cross-sectional and panel data studies. It is worth noting that most studies in the subject area used mostly time-series or panel data approaches, and not many cross-sectional studies were found.

2.5.1Time Series Data Studies

Edo, Okafor and Justice (2020) investigated the impact of corporate taxes on FDI inflows in Nigeria during the period 1983 to 2017. Whilst the main tax type was company (corporate) income tax, the study also considered Customs and Excise duties and Value Added Tax (VAT), along with other explanatory variables including inflation, exchange rates, GDP growth rate and trade openness. The researchers analysed their impact on FDI inflows using the error correction model (ECM). They established that the combination of all the captured explanatory variables had a combined effect in influencing FDI inflows, with an R-squared (*co-efficient of determination*) of 77%. Company income tax, along with the other two tax types (Customs and Excise duties and VAT) yielded a significant negative relationship with FDI, whilst variables like GDP growth rate and trade openness were positively associated with FDI.

In Rwanda, Harelimana (2018) undertook descriptive research on corporate income tax incentives and investment in private sector manufacturing companies in Kigali. The

analysis established that tax incentives were positively and significantly associated with the companies' investment levels. The researcher recommended that policy makers, together with the Government of Rwanda, should strengthen efforts to ensure that more corporate tax incentives are introduced, particularly to assist smaller and medium-sized enterprises. Cela (2017) had earlier reached the same conclusion in the case of Albania, where corporate taxes indicated a significant negative bearing on the level of FDI in Albania.

2.5.2 Cross-sectional data study

Dobbins and Jacob (2016) examined how investment levels respond to corporate tax rate cuts in their study titled: Do corporate tax cuts increase investment? Their research focused on German firms and investigated the effect of a 10 percentage points cut in corporate taxes, a tax reform that was implemented in that country in 2008. By using a matching difference-in-difference approach, the study revealed that the investment responses varied across the selected firms. Even though all firms indicated a response to the tax initiative, it was established that locally owned entities showed a significantly stronger response to the lowered tax rate compared to foreign owned entities. This finding was attributed to the suggestion that domestically owned firms invested in the domestic economy, since they had no access to international profit shifting.

2.5.3 Panel data studies

The OECD (2016) used the fixed effect panel estimation and the GMM method of estimation to establish the relationship between lowering the corporate tax rate and the level of FDI in 19 OECD countries. The independent variables in the study included the corporate tax rate, GDP growth rate, inflation rate, population growth, unemployment rate, corporate tax revenue, openness of the economy, and an average of the Kaufmann, Kraay and Mastruzzi (KKM) governance indicators. The study established that following a reduction in the corporate tax rate, the countries' foreign direct investment levels increased, thus implying a negative association between these two variables.

A recent study conducted by Nasution (2020) used a fixed effects model to investigate how tax cuts affect FDI in ten Southeast Asian economies. The study grouped the countries into two panels, one consisting of countries who implemented a tax cut during the study period and the one for those with no tax cut. The variables used included GDP growth, tax revenue, corruption perception index, inflation, unemployment, and government effectiveness. The study concluded that taxes are not the main factor in attracting FDI in this region, but other factors play a key role, such as GDP growth, trade openness and government performance. A rather different conclusion is established by Bénassy-Quéré, Fontagné and Lahrèche-Révil (2004) on the response of FDI to corporate taxation. In a study of 11 OECD countries in the years 1984 to 2000, they established that tax differentials are also key in understanding foreign location decisions, along with other critical FDI determinants.

Another relevant study is the one by Sato (2012), who used data from 30 OECD countries to provide further insight into how FDI responds to corporate taxation, using the effective statutory tax rate. Sato (2012) used the system generalised method of moments (SYGMM) and established that the previous year's FDI amounts had a positive influence on the current year's levels. The same study also confirmed the significant inverse relationship between the corporate tax rate and FDI.

Djankov, Ganser, McLiesh, Ramalho, and Schleifer (2010) studied the economies in 85 countries and found a significant negative association between the effective corporate tax rate and both entrepreneurial activity and FDI. The countries consisted of both developing and developed economies; 22 rich OECD countries, 17 from Eastern Europe, 13 Latin American countries, 10 countries from East Asia, 6 from the Middle East, 3 from South Asia and 14 African countries. Whilst the tax rates indicated a link to investment for the manufacturing sector, the same was not true for the services sector and the informal sector. An earlier study on the same subject, conducted by Devereux and Freeman (1995), had concluded that taxation does have an impact on attracting FDI. However, no significant effects of taxation were established on outgoing investments or the selection of domestic investments.

Gomes and Pouget (2008) followed another angle and studied the link between corporate tax competition and a decrease in public investment in 21 OECD countries. Their initial argument was that there is an existing interdependency between the corporate tax rate and public investment. Therefore, tax competition, which normally

influences corporate tax rate cuts, would also reduce public investment. This is because as the tax rate goes down, and there is less tax revenue, the public capital stock is reduced. Their findings confirmed their argument and established that if the tax rate goes down by 15%, declines of about 0.6% to 1.1% of GDP in public investment are observed in the short run, going down steadily between 0.2% to 0.4% of GDP in the long run.

Mohammed, Ahmed, Grantley and Lien (2020) studied the relationship between investment efficiency and corporate taxation from a corporate tax avoidance angle. They employed propensity score matching (PSM), difference-in-difference (DID), and two-stage least squares (2SLS) regression analyses on data from large firms in the United States, covering the period 1993 to 2016. With the aim of providing empirical evidence of the entities using savings obtained through tax avoidance to invest further in their businesses, the study concluded that there was a positive relationship between investment inefficiency and tax avoidance. This implied that the study could not establish that the firms efficiently used their savings from tax avoidance initiatives on investment activities.

Wolff (2007) conducted a panel study in 26 European member states, arguing that while high corporate tax rates discourage FDI and low corporate tax rates create unfair competition to attract it, FDI is responsive to tax rates in a wide range of estimates, according to the available empirical evidence at the time. In his results, Wolff found that statutory tax rates could not be confirmed as holding great power over investment decisions, thus making it difficult to confirm the policy assertion of the importance of the corporate tax rate in attracting FDI. Having conducted the analysis on three FDI components, the study found that the largest part of total FDI (equity FDI) in the EU countries was influenced mostly by the respective country's macroeconomic characteristics, such as GDP and population size.

While most panel studies seem to understand the linkages between corporate taxation and FDI through cross-country datasets, some other studies have been conducted on selected firms within the same country. These include Oliech (2012), who studied how corporate taxes affect the investment decisions of firms in Kenya, focusing on those listed in the Nairobi Securities Exchange during the years 2008 to 2012. Whilst the study concluded that the effect of different tax incentives was asset specific, corporate

tax was established to be the largest contributor in reducing the net funds available for further investment.

An almost similar firm-level conclusion is reported by Melo-Becerra, Mahecha and Ramos-Forero (2021) on selected Columbian firms for the period 2005 to 2014 where the effect of changes in the corporate tax rate had varying effects on the firms investments activities. The main differences were captured through economic sectors and size of the firms. The results indicated that the changes in the corporate tax rate had a stronger negative effect in smaller firms compared to larger and medium entities, and additionally favoured certain sectors including mining, manufacturing, real estate, accommodation and food sectors. Another firm-level study was conducted by Federici and Parisi (2015) on Italian firms for the years 1994 to 2006. Through using the GMM estimator, they established a negative linkage between corporate taxation and investment decisions.

Despite some studies concluding that there is a weak relationship between corporate tax rates and attracting FDI, several other studies insist on taxes having a notable influence on the amount of incoming investments. These include Auten, Armour, Burkhauser & Larrimore (2008), who concluded that high tax rates will discourage FDI, and further, will result in distortions in the economy; and Edo *et al.* (2020) who concluded that corporate tax has a significant negative association with FDI in Nigeria. Another study conducted by Uwuigbe, Omoyiola, Uwuigbe, Lanre & Ajetunmobi (2019), employed OLS regression to investigate the possible factors that have an impact on FDI, particularly the role of corporate taxation. The study established a long-term negative association between the two variables.

One of the commonly used theories in explaining the channels through which corporate tax rates may affect FDI is the Tobin's *q* theory of investment. This theory explains how FDI may be affected by taxation in a neoclassical school of thought, whose central feature of capital accumulation is how derived capital reacts to relative input prices, (Mudenda, 2015). The Tobin's *q* theory can be presented as:

$$Tobin's\ q\ =\ Market\ value\ of\ the\ firm/Replacement\ value\ of\ the\ firm \qquad (2\text{-}1)$$

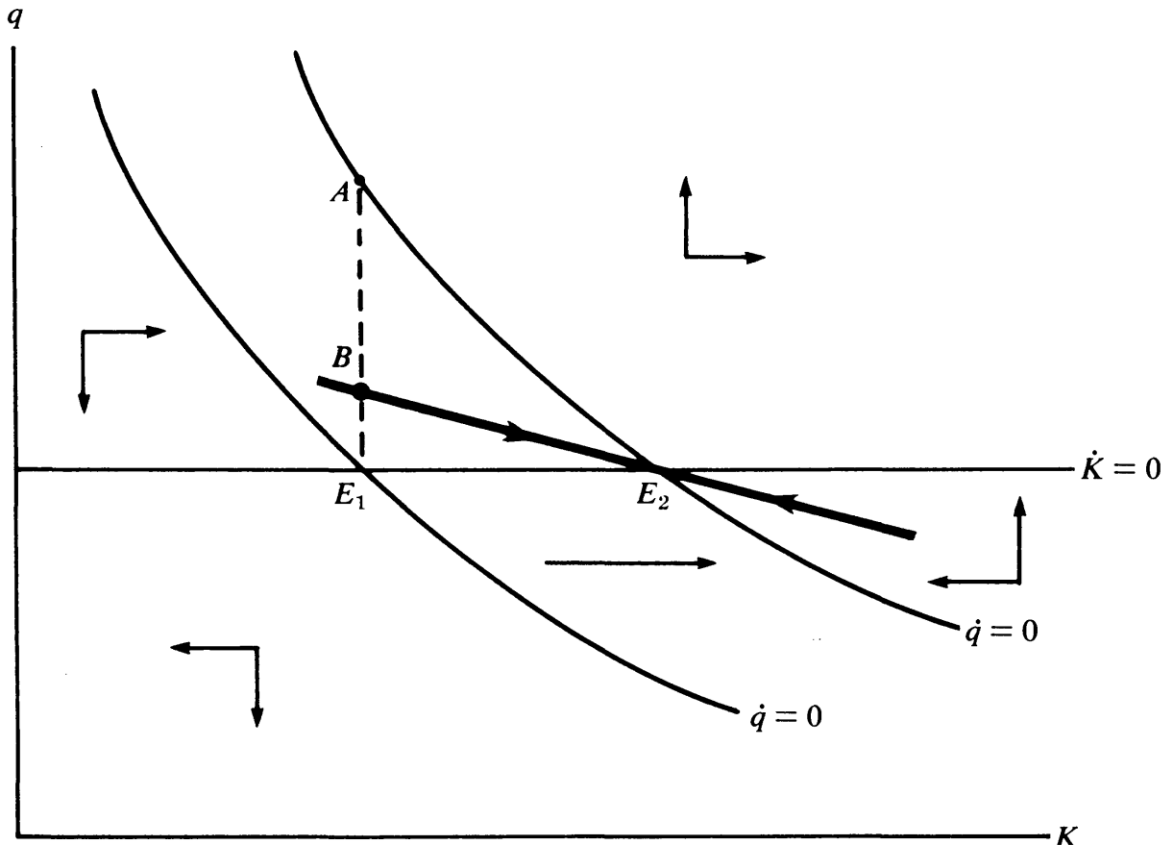
Where, since the main objective of firms is to maximise the net present value of their profits, then what becomes crucial is the ratio of market value of the marginal unit of

capital to its replacement cost, (Mudenda, 2015). In a study investigating the importance of Tobin's *q* in the determination of investment decisions at the company level, Blundell, Bond, Devereux & Schiantarelli (1990), using the stock market value of the company found *q* to be a significant determinant of investment.

The assumption that if the net present value of future cash flows of the company is greater than the cost of capital then it is beneficial to continue investing, applies further to how reduced tax rates can promote FDI attraction. By affecting capital costs, taxes also affect investment levels by reducing the market value of the company, thus disincentivizing investment (Mudenda, 2015). Summers (1981) studied the effects of tax policy on capital accumulation, based Tobin's q theory of investment in which he used the effects of tax changes on future profits to estimate the impact of those changes on the stock market. This was then used as a basis for evaluating the impact of the tax changes on capital formation. Through studying different dimensions of how the changes in the tax rates and other incentives affect investments, the study established that these changes affected the rate of return and had a larger estimated impact on the levels of investment.

Summers (1981) presented the effects of a tax change in capital as per the illustration in figure 2.1. The saddle-point path in which the system is stable is represented by the dark line. When the corporate tax rate is reduced, the impact on investment is not immediate (*q* moves from E_1 to B), but as capital is accumulated, the system again converges at the equilibrium value of *q* at E_2. In a case where investors cannot foresee the effects of the capital accumulation, when the tax cut is implemented, *q* moves from E_1 to A in a path where *q*=0, resulting less earnings than the required rate of return.

Figure 2.1: Diagram Showing Investment's Response to a Corporate Tax Cut



Source: Summers (1981)

Whilst the corporate tax rate is widely seen as a stimulant for FDI, `Camara (2019) argues that through the entry of new firms or an increase in foreign investment, FDI inflows can stimulate tax revenue collection by broadening the corporate income tax base. Camara established that this relationship is particularly significant in the long term where FDI inflows have a positive impact on tax revenue in developing countries, but not statistically significant in the short term.

2.6 Conclusion

This chapter has reviewed the literature regarding FDI, its determinants, as well as theoretical and empirical evidence on the relationship between corporate taxation and FDI. FDI – defined mostly as a form of investment by an investor, in businesses operating outside their own jurisdiction – is influenced by a host of factors, mainly

economic growth, market size, trade openness, human capital, political risk, taxes, regulatory policies, financial market development, and infrastructure.

Focusing on the influence of taxation as one of the determinants of FDI, this chapter has reviewed both theoretical and empirical literature on the impact of the corporate income tax rate on FDI. Many empirical studies have tried to determine the connection between foreign investments and corporate tax policies. Some studies have focused on individual economies, and others have investigated the relationship across countries – mostly aggregating by either region or economic blocks. There have been several conclusions on how exactly the corporate tax rate influences investor decisions.

Interestingly, there are differing perspectives on how corporate tax policy (particularly CIT rates) influences FDI. On one side are the proponents, who argue that under specific economic conditions, such policies can work effectively to stimulate investment. And on the other side are the opposing arguments, holding that the revenue losses to governments resulting from these incentives can outweigh any benefits. While some studies indicate that the relationship between corporate tax rates and FDI is not strong, others have highlighted taxes as being significant in influencing the extent of FDI inflows.

3. CHAPTER 3: REFORM STRATEGIES AND POLICIES INFORMING FOREIGN DIRECT INVESTMENT REDRESS IN THE SACU REGION

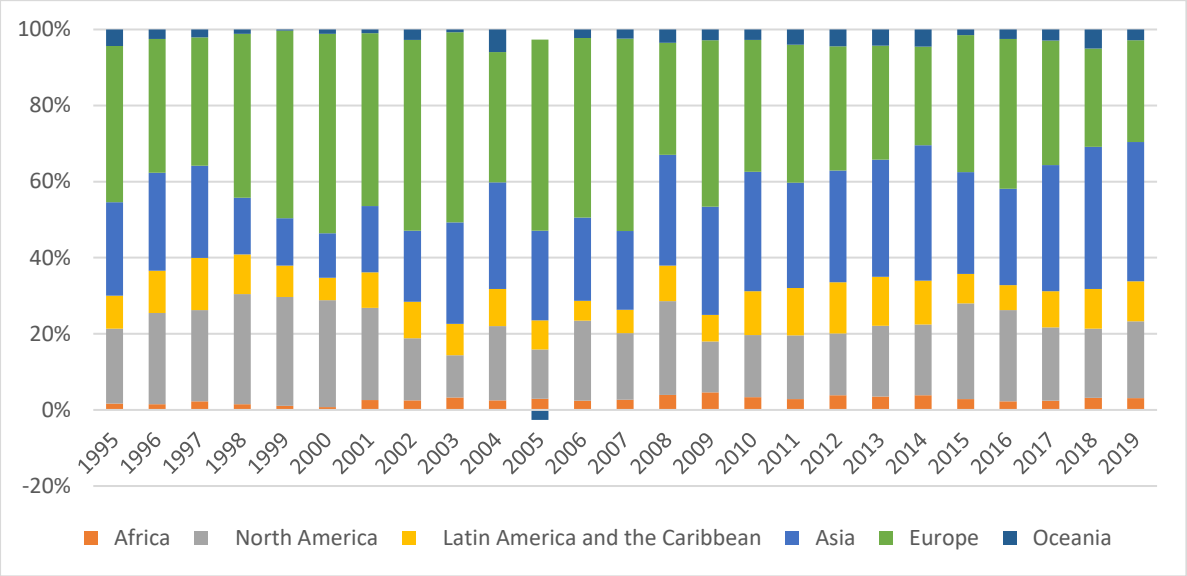
3.1 Introduction

This chapter provides a background to the SACU region, highlighting the developments around FDI inflows over time and relevant influencing factors. The chapter begins with a brief summary of FDI developments on the entire African continent before narrowing down to the SACU region. Country-specific initiatives aimed at mobilising FDI are discussed, as well as their observed impact on the various national economies. The chapter also discusses common investment tax incentives implemented around the world and provides a summary on how these taxation policies have been implemented by each of the SACU countries.

3.2 FDI in the African Continent

In comparison to other parts of the world, the continent of Africa has lagged behind in terms of development for decades, and the trend has continued even in more recent times. According to Osei (2018), African economies tend to be dominated by the primary sector and most of them have failed to diversify. As a result, economic growth on the continent has been low, necessitating the need to implement economic reforms to restructure national economies and better position them to achieve higher economic growth and development. Along with other reforms needed by developing countries, opening and liberalisation of African economies is crucial in order to allow free inflow of capital from developed countries (Suleiman et al., 2013:2). This need demonstrates the vital role played by foreign investments in the economic development and progress of host countries.

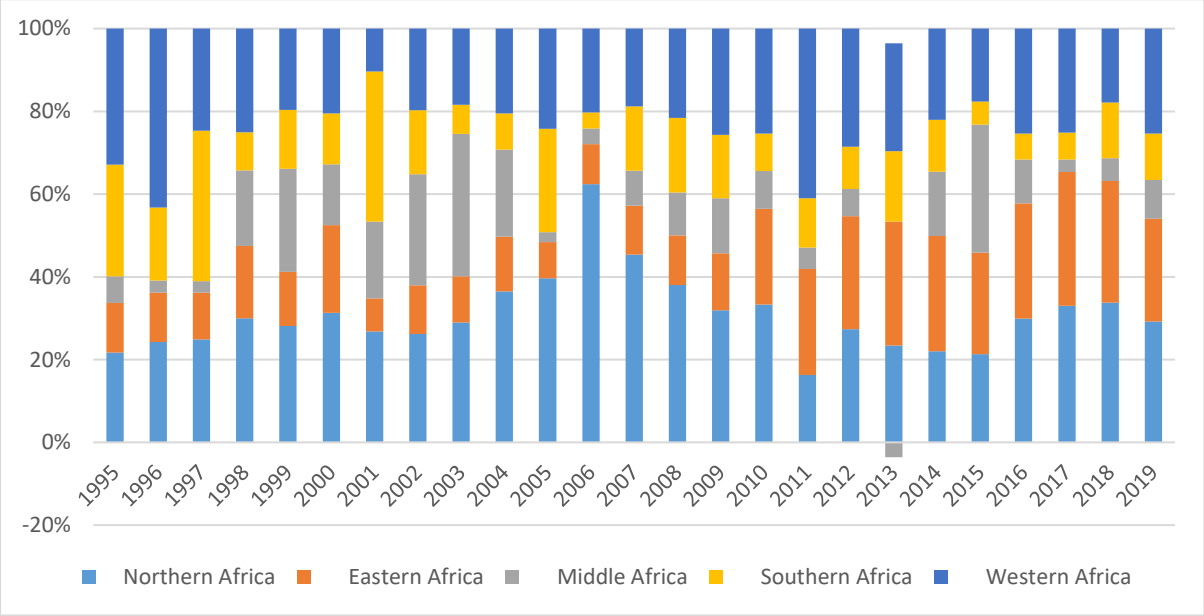
Figure 3.1: FDI Inflows into Africa and the Rest of the World 1995–2019



Source: Author's presentation from UNCTAD data

Figure 3.1 shows a twenty-five-year trend of FDI inflows into the African continent in relation to the rest of the world. Even though Africa is the second largest continent in the world, its proportion of incoming FDI is significantly lower than the others. Although the trend started to improve somewhat in the early 2000s – showing a slight increase in incoming FDI flows, it dipped again in 2015 and 2016.

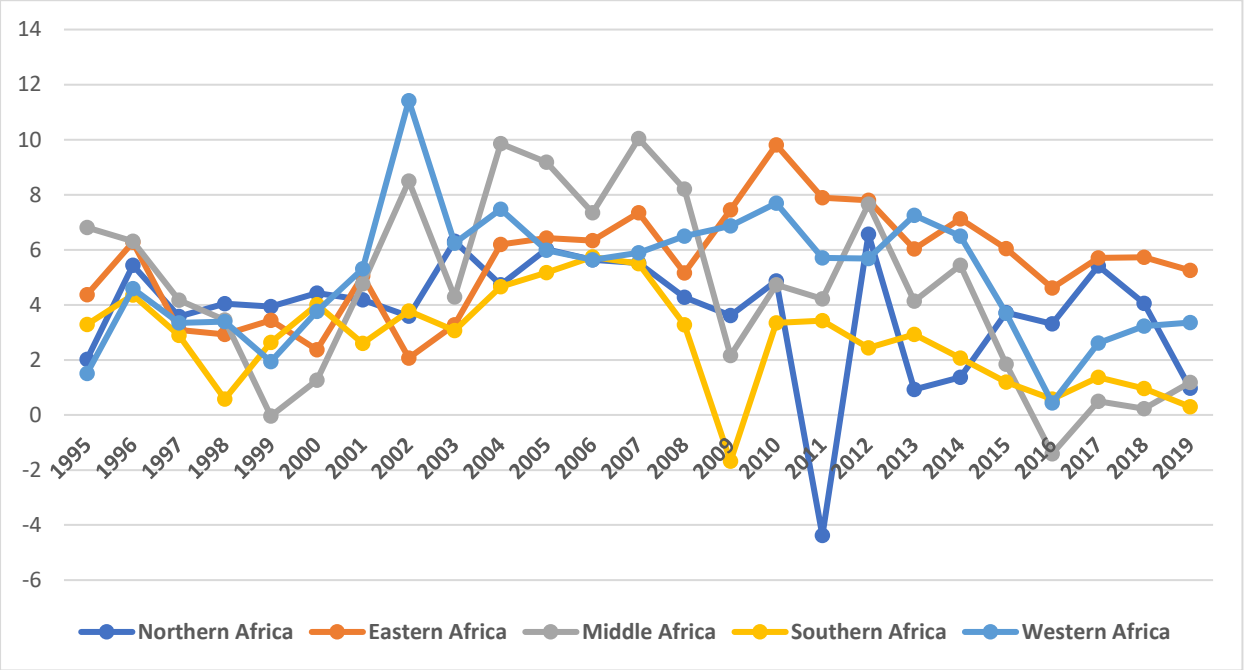
Figure 3.2: FDI Inflows into African Sub-Regions (1995–2019)



Source: Author's presentation from UNCTAD data

According to Figure 3.2, Northern Africa tends to have the largest inward stock of FDI in Africa, due primarily to the region's rich natural resources particularly in countries like Algeria, Egypt and Libya. Before the year 2010, Western Africa was second in terms of African FDI, but patterns changed after 2010, when the Eastern Africa regions significantly increased their share of the total FDI, thus taking second place, and even first place in most recent years. It is worth noting that in this classification by the United Nations Conference on Trade and Development (UNCTAD), the Southern African region consists of only the SACU countries – the other Southern African Development Community (SADC) countries are classified under either the Eastern or Middle regions. Countries like Mozambique, Zambia and Zimbabwe are listed under the Eastern region, whilst Angola comes under the Middle region.

Figure 3.3: Economic Growth Trends in African Regions (1995–2019)



Source: Author's presentation from UNCTAD data

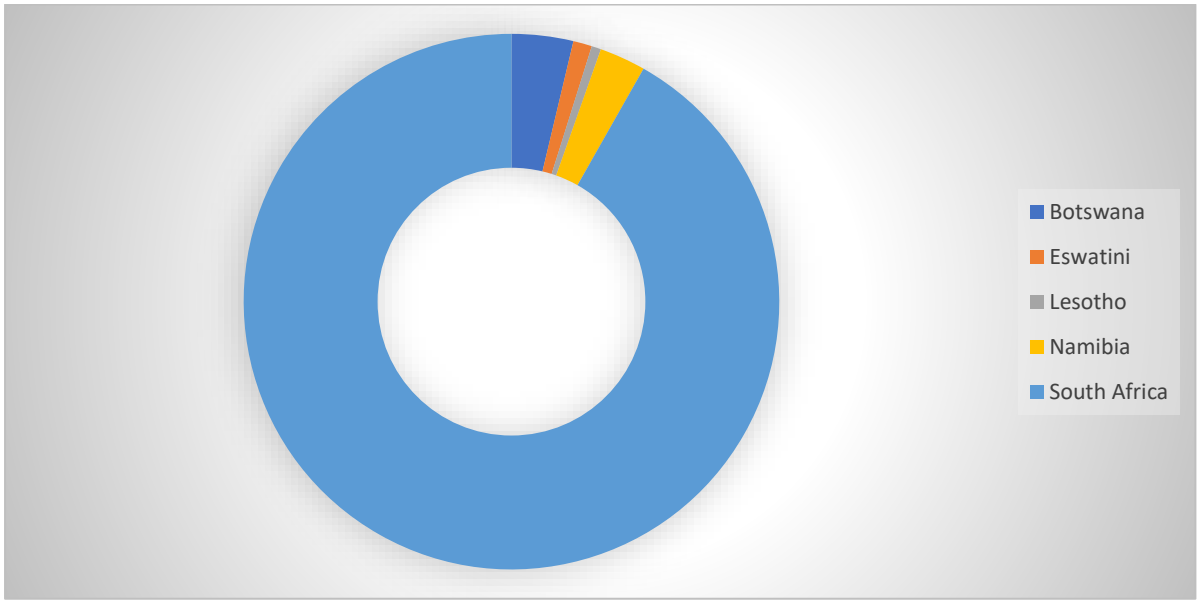
In a similar trend, real GDP growth rates in African regions mirror the trends in incoming FDI, as shown in Figure 3.3. Whilst the Northern region shows higher growth

rates in the initial years, the Eastern region was the fastest growing among all the regions in the years 2010 to 2019.

3.3 FDI in the Southern African Customs Union (SACU)

The SACU is an African regional economic organisation which was formed in 1910 and is one of the oldest customs unions in the world. It has five member countries: Botswana, Eswatini (formerly Swaziland), Lesotho, Namibia and South Africa. From 1910, the union was administered by the South African Government, through agreements made in 1910 and 1969, until a new agreement was signed in 2002 and made official by the SACU Heads of States. The main objectives of the union include facilitating trade between member countries, improving their economic development and investment opportunities, and promoting diversification, industrialisation and competitiveness. The union also facilitates the sharing of revenue (customs, excise and other applicable duties) collected by member countries from goods coming from outside the union. One of the key characteristics of SACU is that it is economically dominated by South Africa, as shown by the size of its GDP in comparison to the other four member states (Suleiman *et al*., 2013:2).

Figure 3.4: Average Share of SACU GDP for Member States (1995–2019)



Source: Author's presentation from UNCTAD data

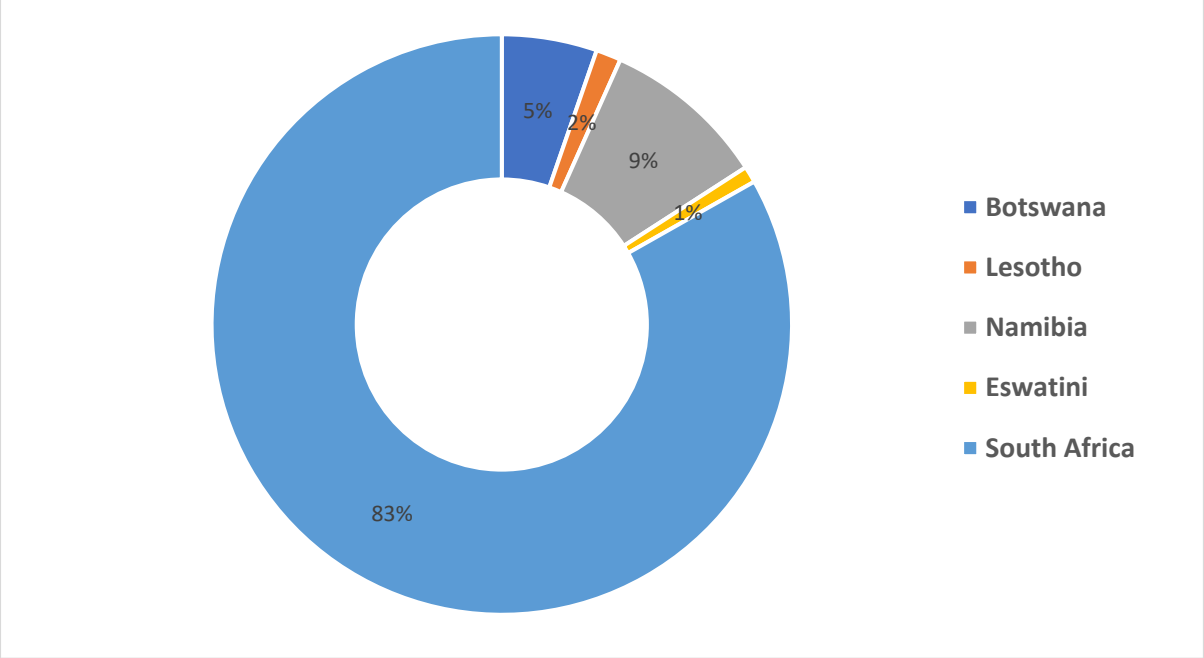
For the period 1995 to 2019, the South African economy accounted for an average of 91.8% of the total SACU GDP. The other four member states accounted for the remaining 8.2%: Botswana 3.7%, Namibia 2.8%, and Eswatini 1.1% and Lesotho at 0.6%. Export oriented industries like manufacturing and mining, especially in commodities like gold, platinum and diamonds, are the key contributors to economic activity and growth in SACU countries. South Africa leads on the export of these commodities, while the other countries rely significantly on the South African economy in terms of their trade and investments.

The economy of Botswana has benefitted from the growth of its diamond mining industry, increasing its share of the SACU GDP to 5% in the period 2016 to 2019 – from 3% in 2012. Eswatini, on the other hand, is highly dependent on the agricultural sector – and additionally in recent years, the manufacturing sector – together accounting for about 38% of the country's GDP in 2019. Similarly, Lesotho's economy is based largely on agriculture, a sector which employs about 57% of its labour force, (SACU, 2022).

On the other hand, the Namibian economy is disadvantaged by desert conditions that make it challenging to undertake agricultural activities, so it relies instead on the mining industry. Throughout the period covered by the UNCTAD data, the SACU countries have experienced many political challenges and other economic disruptions, even resulting in changes to their economic structures. The challenges are evident in their economic growth rates, which have been volatile over recent decades.

In terms of FDI inflows into the union, South Africa has received a higher percentage in relation to the other countries. Nevertheless, the other four countries still benefit from some of these investments, due to the tight links that exist between the SACU member states and their somewhat similar economic landscapes. Despite the SACU region recording an increase in FDI inflows, an improvement that appears to impact economic growth positively according to Suleiman *et al.* (2013), the overall economic performance (as measured by the respective member countries' GDP growth rates) remains low.

Figure 3.5: Average Share of Net FDI Inflows for SACU Members (1995–2019)



Source: Author's presentation from UNCTAD data

Relative to the size of its GDP, Namibia received on average the highest level of incoming FDI during the period 1995 to 2019, at 4.66% as shown in table 3.1. Lesotho, Botswana and Eswatini recorded average FDI inflows relative to GDP of 3.72%, 2.43% and 2.07% respectively. The South African economy recorded the lowest size of FDI as a proportion of GDP at 1.44%. However, considering the average annual growth in investment inflows over the same period, South Africa had the highest average growth rate of 151%. Peak periods for these inflows are noted in the period 2001 to 2007. From 2008, the trend started becoming negative, partly influenced by the effects of the global financial crisis and has it has struggled to recover since then. Botswana, Lesotho and Namibia had average growth rates of 71.7%, 61.2% and 35.1% respectively. On the negative side, Eswatini experienced an overall decline in investment inflows, with an average growth rate of -91%. It is worth noting that in 2019 Eswatini recorded significant growth in incoming FDI flows, benefitting mostly from the implementation of the Special Economic Zones (SEZ) Act of 2018, which among other incentives, allows corporations a 20-year exemption from all corporate taxation.

Table 3.1: FDI inflows as a percentage of GDP in SACU Member States (1995 to 2019)

Economy	Average FDI Inflows as a % of GDP	Average Annual Growth in FDI Inflows
Botswana	2.43%	72%
Eswatini	2.07%	-91%
Lesotho	3.72%	61%
Namibia	4.66%	35%
South Africa	1.44%	155%
SACU	1.59%	61%

Source: Author's presentation from UNCTAD data

Three SACU member states (Eswatini, Lesotho and Namibia) have tight linkages with South Africa through their Common Monetary Area (CMA) affiliation, where each of the countries' currencies is pegged at parity with the South African rand. This results in the four countries having an interlinked monetary policy which extends beyond the monetary space into other economic policies, including trade and investment.

3.4 Strategies to attract FDI in the SACU countries

Through its policies and processes, SACU has created and implemented programmes to improve economic growth through encouraging FDI, even though there are still many challenges in the process, due to unfavourable political conditions, corruption and health related issues. Through country-specific national development plans (NDPs), member countries have been pursuing sound macroeconomic policies to create attractive investment environments.

Mahembe (2014) highlights that SACU member countries are open to investment in most economic sectors, prioritising some sectors over others, as per each country's development plan. Whilst studying the relationship between economic growth and FDI in SADC countries, he highlighted the finding that they implement various different policies and initiatives aimed at attracting FDI. Investment attraction initiatives by the five SACU member states include: cultivating a stable political environment and good governance measures; lowering incidents of corruption; implementing sound

macroeconomic policies; cultivating good labour relations; promoting stable exchange rates; curbing crime rates; establishing trade agreements with other countries and regional groups; and lowering tax rates, particularly the corporate tax rate.

3.4.1 FDI mobilisation policies in Botswana

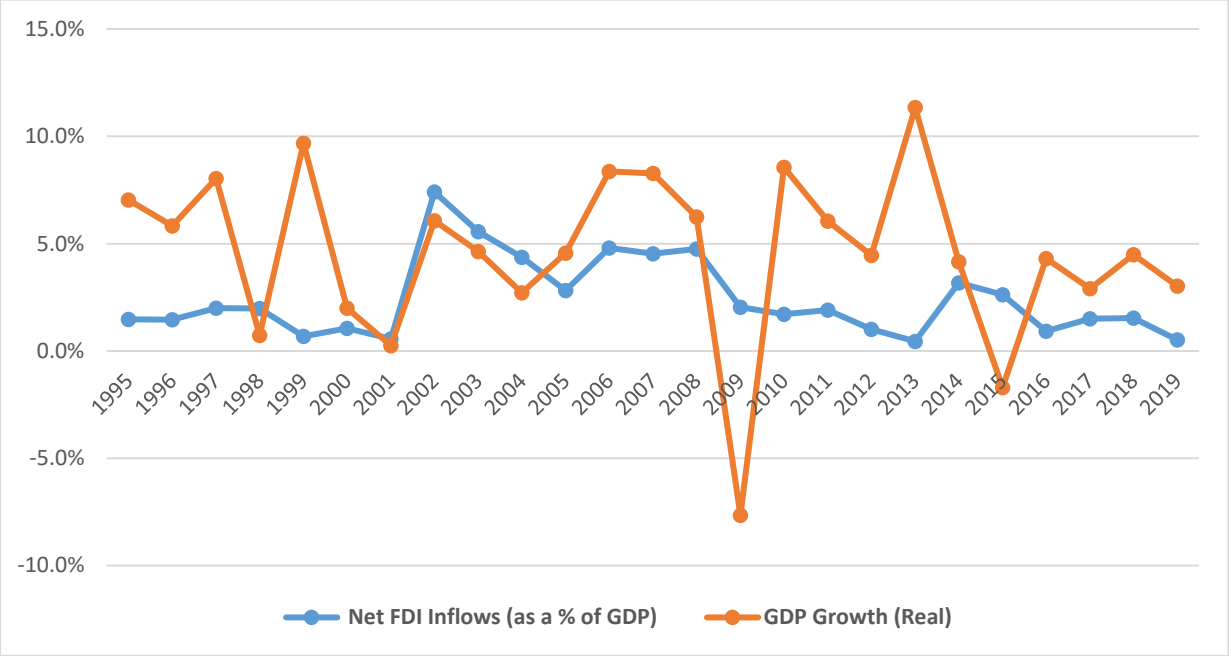
Botswana is currently reported as a middle-income country. Over the past decade, it has been listed as one of Africa's fastest-growing economies, (SACU, 2022:23). Its main resources are diamonds, silver, copper, nickel, iron ore, coal soda ash and potash. In 2020, the GDP was estimated at USD15.87 billion.

The country actively promotes a wide range of investment opportunities through the Botswana Investment and Trade Centre (BITC), including the availability of investment funds, farming opportunities supported through a number of programmes, as well as manufacturing and mining opportunities. Some of the policies that the country has adopted to attract FDI into the economy include:

- Investor friendly macroeconomic policies: These policies aim to diversify the economy and increase its competitiveness, particularly in the diamond trade (Munongo, 2015).
- Free-trade bilateral agreements: Botswana has a low population (estimated at 2.4 million people), and therefore relies on neighbouring countries for markets. In addition to the SACU agreements which are crucial for Botswana revenue streams, the country is part of the World Trade Organisation (WTO) and has bilateral agreements with other countries such as Malawi and Zimbabwe.
- Infrastructure development: There have been efforts to improve Botswana's infrastructure, particularly roads, airlines and railways, as well as easing access to electricity supplies for all businesses.
- Capital controls: Botswana does not impose restrictions on the transfer of profits or proceeds of disinvestments (SACU, 2022). The country does not have foreign exchange controls.
- Access to credit: Botswana aims to establish itself as a regional hub for financial services and already has good institutions that offer a range of credit facilities (SACU, 2022)

Over the years 1995 to 2019, the level of FDI inflows as a proportion of Botswana's GDP shows an almost flat growth on average, with only a notable increase between 2002 and 2008. This indicates the need for Botswana to continue to strengthen its efforts in attracting further FDI to stimulate economic growth.

Figure 3.6: FDI as a proportion of GDP and GDP growth in Botswana (1995–2019)



Source: Author's presentation from UNCTAD data

3.4.2 FDI mobilisation policies in Eswatini

The Kingdom of Eswatini is classified as a lower-middle income country. In 2020, its GDP was estimated at USD3.85 billion, (SACU, 2022). The Eswatini economy has diversified over the years, with manufacturing activities – particularly sugar-related and textiles processing – accounting for about 45% of the country's GDP. The country also has a large agricultural sector, which is dominated by sugar and forestry activities and contributes about 12.7% to GDP as of 2020, (SACU, 2022). The country is currently one of the world's top five low-cost sugar producers. Other resources in the kingdom include coal, quarry stone, iron ore and gold, among others.

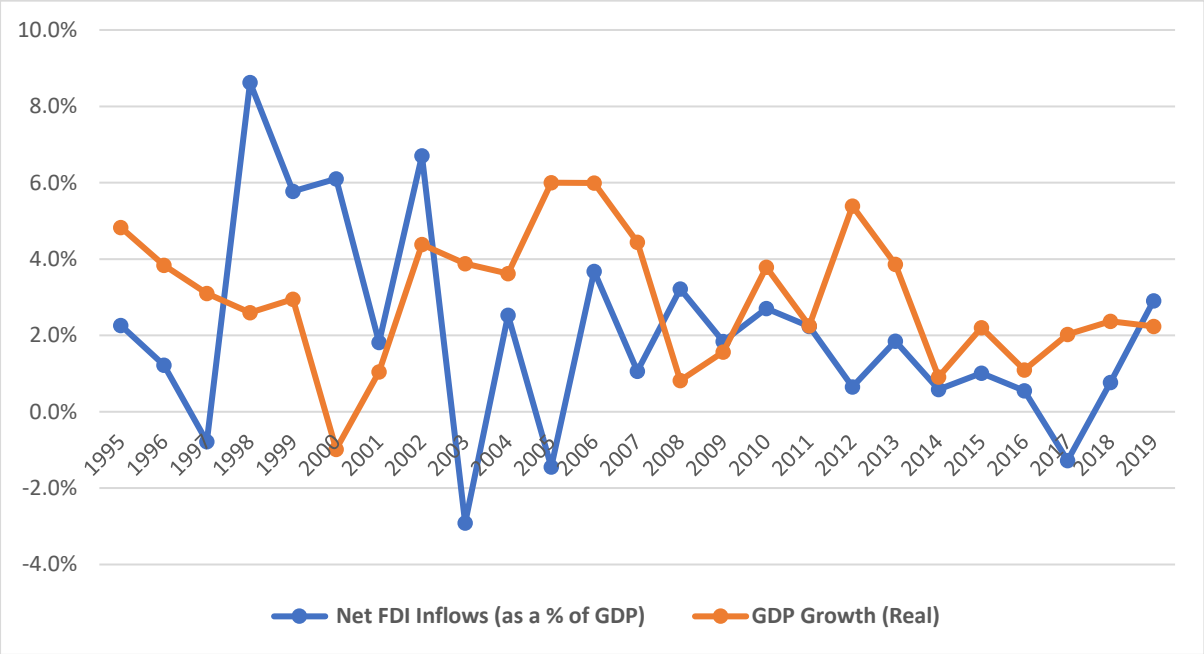
Eswatini offers investment opportunities across all sectors of the economy and continues to implement a wide range of FDI enticing initiatives. The Eswatini Investment Promotion Authority (EIPA) plays a major role in promoting investment as

well as foreign trade in the country. EIPA's key mandates include investment promotion, local and foreign trade promotion, investment policy advocacy, operating as a one-stop-shop trade and investment partner, as well as providing after-care services to investors. Various government ministries in Eswatini have their own investment policies which cover areas such as agriculture, energy, transportation, mining, education and telecommunications. Some of the FDI mobilisation initiatives in the economy include:

- Bilateral trade agreements: In addition to SACU arrangements, Eswatini is also part of the Common Market for Eastern and Southern Africa (COMESA) and the WTO. It is the only country in SACU with access to COMESA. Eswatini is also part of the Taiwan Economic Cooperation Agreement (TECA), offering 153 product lines for export to Taiwan with zero percent import tariffs (SACU, 2022).
- Infrastructure development: Eswatini prides itself on improvements to the road and cargo rail systems that make it easy to access South African seaports like Durban and Richards Bay.
- Educated and trainable workforce: Through promoting and funding most education services from lower grades to tertiary level, the country has managed to achieve a literacy rate of 87% and ranks number eight among 52 African countries
- Generous tax incentives

Figure 3.7 shows the trends of incoming FDI into the kingdom during the years 1995 to 2019. There is a notable link between the level of incoming FDI into the economy (as a proportion of GDP), and GDP growth, as the variables show similar growth patterns over the years.

Figure 3.7: FDI as a proportion of GDP and GDP growth in Eswatini (1995–2019)



Source: Author's presentation from UNCTAD data

3.4.3 FDI mobilisation policies in Lesotho

The Kingdom of Lesotho is another of the smaller countries in the SACU region, with an estimated GDP of USD1.91 billion in 2020, (SACU, 2022). Relying mostly on agricultural activities, Lesotho also has resources in the form of diamonds, sand and clay. Diamond mining has grown in recent years, accounting for 35% of total exports in 2018, (SACU, 2022). The government has a large presence in the economy and is the largest employer.

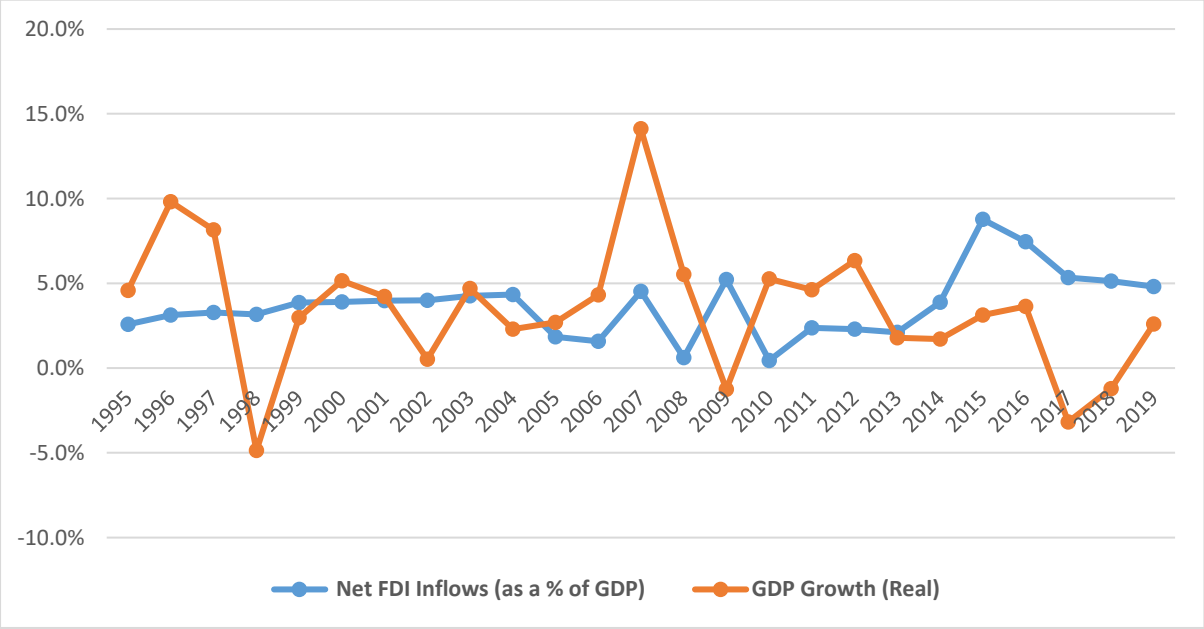
Due to the low cost of doing business in Lesotho, the country presents investors with great business opportunities, such as producing high-end products while moving away from basic products. The economy has the potential to become a centre for IT outsourcing and innovation, given its high literacy rate of 86% and steady supply of graduates. Some of the FDI attracting initiatives in the economy include:

- Industrial development: The Lesotho National Development Corporation (LNDC) is charged with implementation of the country's industrial development policies. It facilitates the development of manufacturing and processing industries, mining industries and commerce through several initiatives, which include the provision of serviced industrial land and industrial buildings.

- Macroeconomic policies: The country's membership in the CMA, along with Eswatini and Namibia provides the economy with most of its monetary and exchange policy, boosting investor confidence by ensuring a consistent and effective policy environment.
- Market size: Being a low population economy (estimated 1.9 million), Lesotho relies on neighbouring countries for markets to increase trade in the region; this is assisted by its membership in SACU and SADC.
- Generous tax incentives

Lesotho's FDI inflows as a proportion of GDP surprisingly show relatively flat growth over the years, necessitating the need to expend even more efforts in FDI mobilisation strategies. Even though FDI is largely welcomed in the country, the legal framework for investment is still lacking and needs to be improved in order to enhance transparency and consistency. Some areas found to be weak include taxation and business regulation, land regulation, work permits, industrial and trade licensing, competitive policy, and foreign exchange control (Mahembe, 2014).

Figure 3.8: FDI as a proportion of GDP and GDP growth in Lesotho (1995–2019)



Source: Author's presentation from UNCTAD data

3.4.4 FDI mobilisation policies in Namibia

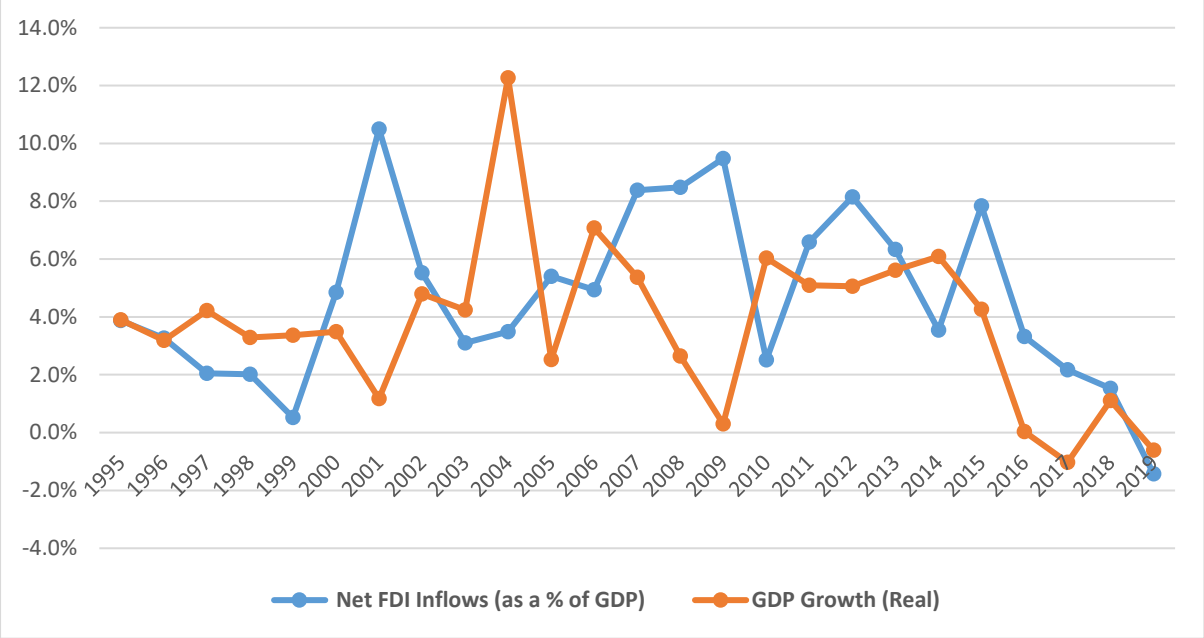
Namibia is ranked as an upper-middle income country and according to SACU (2022) its main resources include uranium, diamonds, gold, zinc, lead, copper, among others. In 2020 the GDP was estimated at USD10.76 billion. In a similar way to the economies of Eswatini and Lesotho, Namibia's economic trend is closely related to that of South Africa due to Namibia's pegged dollar to the rand. The economy has great potential for growth in sectors like manufacturing, renewable energy, transport and logistics.

Namibian economic policies and strategic drives seek to achieve the Namibian Vision 2030, which aims to establish Namibia as a prosperous and industrialised nation by the year 2030, through prioritising growth of the manufacturing sector and diversifying the export base. Some of the initiatives that the country has prioritised over the years in order to attract more FDI include:

- Establishment of the Namibian Investment Centre (NIC) with the mandate of promoting and facilitating foreign investment.
- Establishment of an Export Processing Zone (EPZ) through the Export Processing Zone Act of 1995.
- Infrastructure development: Namibia has been able to grow its energy sector since 2011 and has implemented some fiscal policies aimed at improving the infrastructure and creating employment (Munongo, 2015).
- Trading across borders and market availability: The Namibian economy greatly benefits from its SADC and SACU membership in terms of trade, since it is greatly challenged by having large areas of desert land. Additionally, Namibia is part of the WTO and has a free-trade agreement with Zimbabwe (SACU, 2022).
- Substantial tax incentives: these are available particularly for businesses in the manufacturing sector, along with other non-tax incentives.

Figure 3.9 shows an analysis of the FDI trends in Namibia and indicates that the level of incoming FDI as measured in proportion to GDP is for most years linked to overall economic growth between 1995 and 2019.

Figure 3.9: FDI as a proportion of GDP and GDP growth in Namibia (1995–2019)



Source: Author's presentation from UNCTAD data

3.4.5 FDI mobilisation policies in South Africa

South Africa is classified as a middle-income country and is the largest economy among all five SACU member states, ranking sixth in Africa in relation to its GDP per capita as at 2020, (SACU, 2022. The publication further stated that South Africa ranked 32nd in the world in terms of size of GDP in 2021 and accounts for approximately 12% of the GDP on the African continent. Its resources include gold, platinum, palladium vanadium, tin, chromium, iron, copper, nickel, manganese, coal, natural gas, antimony, phosphates, rare earth elements, uranium, gem diamonds and salt.

Several factors contribute to a robust investment climate in South Africa, including a stable judiciary, a robust legal system committed to enforcing the rule of law, a free press and investigative reporting, an established financial and services sector, good infrastructure, and a wide range of experienced local partners (United States Department of State, 2020). South Africa's diverse economy offers a range of opportunities for investment. While mining and mineral beneficiation remain an important sector for export earnings and growth, business is increasingly geared towards services and manufacturing industries. The South African economy has

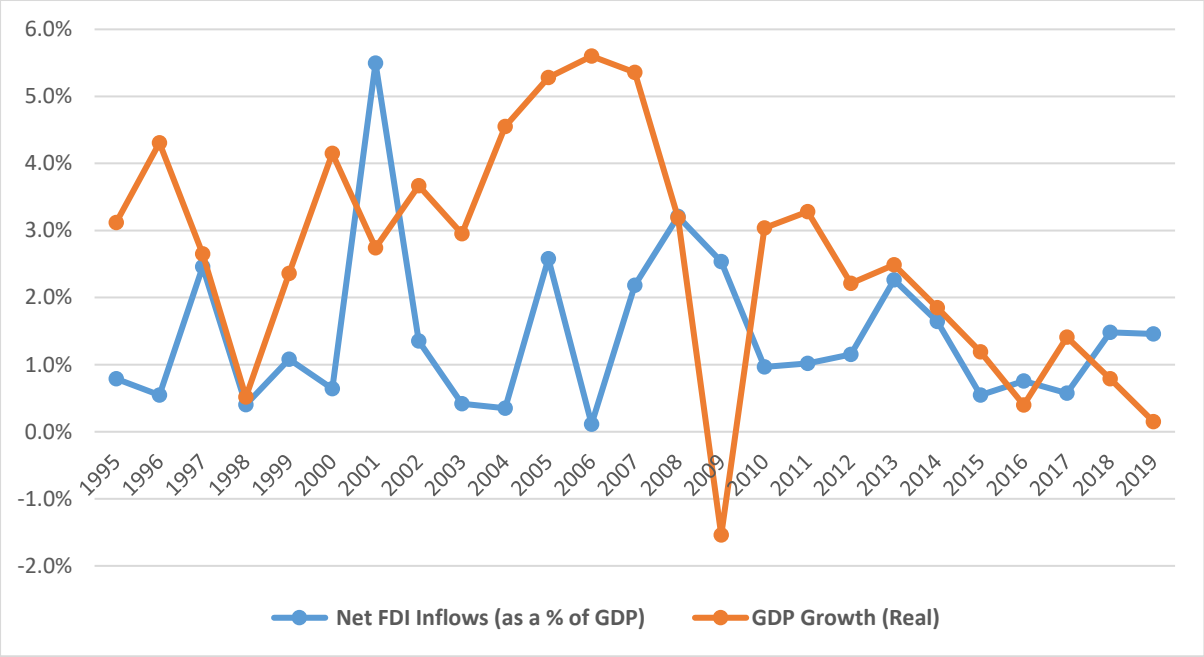
prioritised five sector clusters for investment being; the green economy (clean energy, water and waste), advanced manufacturing (aerospace, electronics, chemicals and pharmaceuticals), manufacturing (automobiles, rail and textiles), resource-based economy (forestry, mining, aquaculture) as well as services (television and film and global business services), (SACU, 2022). Other initiatives and strategies towards enticing FDI into the country include:

- Macro- and microeconomic policies, including restructuring of the economy to allow for more private sector participation and reduce state intervention through privatisation of state-owned enterprises. In the years following the advent of democracy in 1994, South Africa implemented a number of development policies, including the Growth, Employment and Redistribution (GEAR) framework in 1996. The aim was to increase employment and GDP through liberal trade and investment policies (Munongo, 2015). Other policy initiatives include the Accelerated and Shared Growth Initiative for South Africa (AsgiSA) in 2006 and the National Development Plan (NDP) which is due to end in 2030.
- Market size: As one of the largest economies in Africa, South Africa's population is estimated at 56 million people, offering a reasonable market size. It also benefits from access to foreign markets through membership in SACU and SADC. South Africa has agreements with most major trading partners and is part of the WTO.
- Capital controls: Investors who are not citizens or permanent residents of South Africa can repatriate their returns or capital without restrictions.
- Infrastructure development: South Africa has a good core infrastructure network including transport, power, sewage and water systems, and a good communications network. There is also the Critical Infrastructure Programme (CIP), which aims to leverage investment by supporting infrastructure that is deemed to be critical, thus lowering the cost of doing business in the country.
- Tax and non-tax initiatives to support businesses.

The South African economy has struggled with low economic growth in the past decade, as shown in Figure 3.10, due a number of structural constraints, including electricity shortages. The unfavourable political conditions, coupled with incidents of corruption, have worsened conditions, affecting investor confidence in particular, and thus lowering the level of incoming FDI. The South African economy therefore needs

to increase its efforts to create a more stable environment for investment, and in turn, stimulate economic growth.

Figure 3.10: FDI as a proportion of GDP and GDP growth in South Africa (1995–2019)



Source: Author's presentation from UNCTAD data

3.5 Tax Incentives Adopted Globally to Encourage Foreign Direct Investment

General definitions of tax incentives describe them as fiscal measures that lower the tax obligation of businesses in order to encourage them to invest more. These incentives are normally targeted at both local and foreign investors. Globally, both developing and developed economies offer various tax incentives to entice investors, with the main aim of boosting economic activity. Tax incentives are frequently used to stimulate specific behaviour, with most benefits resulting in the realisation of development projects (Nar, 2019). Tax incentives are determined not only by tax rates and technical provisions of the law, but also by the institutional setting or framework (Nathan-MSI Group, 2004).

It is not uncommon for investment tax incentives to be granted outside the tax laws of a country, or even under more than one piece of legislation. In many cases, several government ministries may be responsible for designing and administering tax incentives, for example, the ministries of trade or finance. In such cases, there may be a number of administrative challenges, including poor coordination amongst the government bodies involved, which could lead to intersecting incentives, inconsistent incentives, or some incentives that work against each other, OECD (2014). The same publication further argues that using discretion in incentive management can increase the chances of corruption and rent-seeking.

Creating a fair, economical and efficient tax system should be a country's first priority in terms of tax policy, since this will promote positive investment outcomes in all sectors of economic activity. The Nathan-MSI Group (2004) argues that adding incentives to an inefficient and distorted system is not a good substitute for reforming the system in the first place. The same source highlights the importance of a healthy investment climate, stating that a poor investment climate cannot be compensated for by ineffective tax incentives, as these may actually erode the potential revenue base in a developing country.

This section gives an overview of some widespread investment tax incentives that have been implemented globally. These include tax holidays, preferential tax rates (mainly sector specific), accelerated depreciation, low statutory rates, initial capital allowances, investment tax credits, losses carried forward, taxation treatment for dividend remittances, export incentives and export processing zones, and protective tariffs.

3.5.1 Tax Holidays

Tax holidays are government incentive initiatives that provide consumers or businesses with temporary tax reductions or eliminations. The Nathan-MSI Group (2004:83) defines a tax holiday as "a preferential tax rate with a limited duration, often five years", arguing further that several factors determine the tax revenue loss from a tax holiday, including the size and scope of the tax break, the holiday period length, and the characteristics of the investment project. Nar (2019) shares the views of some tax holiday opponents, who describe it as an inefficient investment policy tool which

allows the transfer of income (profits made in developing countries) to developed economies.

According to Munongo (2015), it is only in their early years that tax holidays are attractive – towards the end of the period they become less attractive. In terms of benefiting specific investments, the Nathan-MSI Group (2004) states that tax holidays usually favour short-term investments with low capital intensity and low debt, and as such, can generate more taxable income during the tax-free period. On the other hand, the tax holiday is of little value to longer-term investments, especially if they are capital intensive and would generally be making losses over longer periods.

3.5.2 Preferential Tax Rates

Adoption of a preferential tax rate incentive involves mainly the application of tax rate reductions for specific sectors of an economy, usually the agricultural and manufacturing sectors. The main advantage of this incentive is that it comes as a reward for investors who meet specified criteria; and it may encourage even more investment in those specific economic activities.

Referring to several literature sources, Munongo (2015) highlights some of the disadvantages of the preferential tax rate incentive, in that it discriminates against other businesses, and can sometimes encourage tax avoidance by firms transferring their tax on profits to low-taxed investments. “A preferential tax rate distorts investment incentives more than an overall rate reduction”, (Nathan-MSI Group, 2004: 83). Another argument by the same source is that revenue losses from this initiative may not be fully measured, as it may promote aggressive planning from companies with many businesses.

3.5.3 Accelerated Depreciation

This incentive is also referred to as bonus depreciation. According to UNCTAD (2000), it allows businesses to write off capital costs in a shorter period of time than that dictated by the capital’s useful economic life, which is generally the accounting basis for depreciating capital costs. Accelerated depreciation permits higher depreciation expenses to be recognised in the early years of an asset's depreciation. UNCTAD

(2000) further argues that with accelerated depreciation, a business can claim deductions for the cost of qualifying capital that are a multiple of the actual cost, which could sometimes be up to twice the price. There is no generally known rate and pattern of depreciation, and as such, the depreciation schedules used are often arbitrary (Nathan-MSI Group 2004).

3.5.4 Low Statutory Rates

Low statutory rates, applied mostly to corporate tax rates, are considered to be one of the tax incentives with the least distortion. This is because they are generally a standard tax rate that is applied across all taxable economic activities, without selecting specific criteria or areas of the economy. The fact that this incentive does not give new businesses any form of advantage over established investors is one of its biggest advantages. According to the Nathan-MSI Group (2004), low statutory rates are mostly transparent and reduce the motivation to engage in abusive tax planning. Even though this incentive is considered to be very effective, its main downside is that unless it is strategically implemented alongside other revenue mobilisation measures, it can have a major impact on tax revenues.

3.5.5 Initial Capital Allowances (ICA)

A capital allowance is a tax-deductible expense that is available for the acquisition of certain assets for business use by the company. Effectively, it allows taxpayers to deduct the value of an asset over a certain time period (KPMG, 2022). Initial capital allowances are special capital write-offs that enhance cost recovery at the start of a project. The ICA is a percentage of the asset cost that can be written off in the first year (or the first few years) (Nathan-MSI Group, 2004). However, merely purchasing capital items does not ensure eligibility for capital allowances; the item must be for use in the business before capital expenditures are granted. In other tax systems, the ICA is an extra or additional allowance, over and above full depreciation of the capital asset.

One major highlighted advantage of capital allowances is that since they are accessible during the initial year of operation, they help to ease the business's liquidity constraints through the reduced cost of capital. There is, however, a challenge in

identifying qualifying assets under this criterion, since there is normally no approved list of qualifying items. This makes the incentive somehow complex to manage, since qualifying expenditure must be thoroughly and properly identified. However, from a more general perspective, qualifying assets usually fall under the category of industrial or commercial buildings, plant and machinery, motor vehicles, and other capital items that the business may acquire in order to produce revenue.

3.5.6 Investment Tax Credits

The International Monetary Fund (IMF) (1998) describes an investment tax credit as one that is used to directly reduce the amount of income taxes to be paid. These investment tax credits can operate as either flat or incremental (UNCTAD, 2000). In the case of a flat investment tax credit, the tax credit is received as a fixed percentage of investment expenditures incurred in a year on qualifying capital. On the other hand, incremental investment tax credit is earned as a fixed percentage of qualifying investment expenditures in a year in excess of some base that is typically a moving-average base (UNCTAD, 2000). The Nathan-MSI Group (2004) describes investment tax credits as one of the preferred tax incentives, and argues that it is similar to initial capital allowances – hence the two share similar advantages and disadvantages.

3.5.7 Losses Brought Forward

In the course of business operations, there are several factors that result in taxpayers incurring and declaring losses, including low economic growth, unfavourable financial conditions, and poor investments undertaken. To achieve the principle of neutrality in taxation, global tax laws allow taxpayers to use losses incurred in previous years to off-set profits in future assessment years. This is referred to as losses brought forward (LBF), or loss carry-overs. Besides the immediate impact on taxable income and tax revenue, LBF may also raise tax compliance risks, in particular if businesses turn to aggressive tax planning as a means of increasing and/or accelerating tax relief on their losses.

Since LBF affect the tax liability of businesses, they may seem to be undesirable for tax administrations in their quest to mobilise more revenue. However, LBF have several advantages for businesses: they provide future tax relief from past losses;

reduce pressure on cash outflow in profitable years; and may foster investment because the tax refund serves as insurance against part of the losses that may potentially be suffered.

3.5.8 Taxation Treatment of Dividend Remittances

Taxes are generally levied on the dividends that foreign investors remit to their shareholders, and as a form of incentive to enhance investment, governments may reduce the taxes levied on these dividends (UNCTAD, 2000). Generally, a double-taxation effect occurs when the dividend remittances to shareholders are taxed, since the first level of taxation on profits occurs at the corporate tax level (Nathan-MSI Group 2004). This therefore necessitates careful consideration of the integration of company tax and dividends tax. Further caution needs to be also exercised, since a lower dividends taxation regime may entice investors to pay out more dividends to their shareholders abroad, as opposed to re-investing their earnings locally.

3.5.9 Export Incentives and Export Processing Zones (EPZs)

EPZs are generally built with the purpose of promoting the manufacture of goods that are primarily destined for export. They remove taxes and other related regulatory burdens on export-oriented businesses. These businesses are normally located in specially designated areas in the host country. The incentive package for EPZs may include other tax incentives which operate as standalones, for example, tax holidays, preferential tax rates, exemption from taxation of capital goods and raw materials, among others. The EPZ incentive is intended mainly to support outward looking investment and is in line with international standards (Nathan-MSI Group 2004). For example, under VAT, relief is usually provided through zero-rating of export sales, in which case businesses are refunded the taxes paid on their inputs into production. Export incentives are one of the best initiatives (export promotion policies) that economies can pursue in order to achieve noticeable export-led growth.

3.5.10 Protective Tariffs

Protective tariffs come in two forms. Governments can set them up as financial barriers to the importation of certain goods into their economies. These types of taxes usually have no aim to increase revenue, but rather to increase the prices of specific imports. On the other hand, governments can reduce or eliminate tariffs on imported capital equipment and spare parts for qualifying investment projects, with the aim of reducing the cost of investment (UNCTAD, 2000).

Table 3.2 provides a summary of how the different SACU member states have implements some of the tax incentives discussed in this section.

Table 3.2: Summary of the Tax Incentives Adopted by SACU Countries

Tax Incentive	Botswana	Eswatini	Lesotho	Namibia	South Africa
Tax Holidays	Possible tax holidays for 5–10 years under the Development Approval Order (DAO)	20-year exemption from all corporate taxation under SEZs	None	None	None
Preferential Tax Rates	22% corporate income tax, with 15% for manufacturing companies, International Financial Services Centre (IFSC) and Innovation Hub companies	10% corporate income tax for first 10 years under the DAO	15% corporate income tax for manufacturing companies	Manufacturing industries are taxed at 18%	Grants towards development of small to medium enterprises
Low Statutory Rates	Lowest taxes in the SACU and SADC regions (22% statutory corporate tax and 25% personal income tax)	Statutory corporate tax rate reduced from 30% to 27.5% in 2013	Statutory corporate tax rate reduced from 35% to 25% in 2007	Statutory corporate tax rate gradually reduced from 35% in 2010 to 32% in 2016	Statutory corporate tax rate reduced from 35% to 25% in 2007
Initial Allowances	Industrial building allowance	Industrial building allowance,	Amortisation deduction is allowed for	Financing expenditure for the acquisition	Income tax allowance for industrial

		machinery initial allowance, infrastructure initial allowance, building initial allowance, and hotel initial allowance	start-up expenditure	of most machinery, vehicles, aircraft, and sea-going crafts Building allowance	projects – greenfield or brownfield.
Depreciation allowances	Mining and agricultural capitals claims and deductions	Wear and tear allowance over and above normal depreciation	100% depreciation allowances on investment in mining equipment	Accelerated depreciation: depreciate certain assets within a period of three years	Companies under EPZ enjoy accelerated depreciation allowances
Tax Treatment for Dividend Remittances	Remittance and full repatriation of profits and dividends No foreign exchange controls	Manufacturing unrestricted repatriation of profits under SEZs No foreign exchange controls Repatriation of profits and dividends including salaries for expatriate staff and capital repayments	No withholding tax on dividends distributed from manufacturing income	Remittances and full repatriation of profits and dividends.	
Losses Brought Forward	Unlimited carry forward of losses	Unlimited carry forward of losses		Unlimited carry forward of losses	Trade industry allowed to carry losses forward to following year
Export Incentives	100% duty rebate on importation of machinery and on imported raw materials	Raw materials imported for producing export products exempt from import duties Central Bank of Eswatini guarantees loans raised	Full rebates on imported raw materials for export products Factory shells at discounted rates	Provided under Schedules 3 and 4 of the Customs and Excise Act.	Industries under EPZ classification are exempt from VAT on inputs from Industrial Development Zone (IDZ) companies sourced from the domestic economy, and for export

		by investors for export markets			processing purposes

Source: Author's presentation from SACU member states' country profiles, SACU investment roundtable report (2022), and SADC report (2014)

3.6 The Corporate Tax Rate in SACU Countries

In line with other countries globally that have used tax policies to attract investment, SACU countries have, over the period 1995 to 2019 reviewed in this literature, implemented corporate tax rate cuts to lure investors into their economies. Botswana moved from 25% to 22%; Eswatini from 37.5% to 27.5%; Lesotho from 40% to 25%; Namibia from 35% to 32%; and South Africa from 35% to 28% during the period.

Table 3.3 shows a summary of the corporate income tax (CIT) rates in the SACU member states, highlighting the years where a reduction in the statutory tax rate was implemented. An average of the SACU statutory rate is also presented.

Table 3.3: Statutory CIT Rates in the SACU Countries

Year	Botswana	Eswatini	Lesotho	Namibia	South Africa	SACU Average Statutory Rate
1995	25.0	37.5	40.0	35.0	35.0	34.5
1996	25.0	37.5	40.0	35.0	35.0	34.5
1997	25.0	30.0	40.0	35.0	35.0	33.0
1998	25.0	30.0	35.0	35.0	35.0	32.0
1999	25.0	30.0	35.0	35.0	35.0	32.0
2000	25.0	30.0	35.0	35.0	30.0	31.0
2001	25.0	30.0	35.0	35.0	30.0	31.0
2002	25.0	30.0	35.0	35.0	30.0	31.0
2003	25.0	30.0	35.0	35.0	30.0	31.0
2004	25.0	30.0	35.0	35.0	30.0	31.0
2005	25.0	30.0	35.0	35.0	30.0	31.0
2006	25.0	30.0	35.0	35.0	29.0	30.8
2007	25.0	30.0	25.0	35.0	29.0	28.8
2008	25.0	30.0	25.0	35.0	29.0	28.8
2009	25.0	30.0	25.0	35.0	28.0	28.6
2010	25.0	30.0	25.0	35.0	28.0	28.6
2011	22.0	30.0	25.0	34.0	28.0	27.8
2012	22.0	30.0	25.0	34.0	28.0	27.8
2013	22.0	30.0	25.0	33.0	28.0	27.6
2014	22.0	27.5	25.0	33.0	28.0	27.1
2015	22.0	27.5	25.0	33.0	28.0	27.1
2016	22.0	27.5	25.0	32.0	28.0	26.9
2017	22.0	27.5	25.0	32.0	28.0	26.9
2018	22.0	27.5	25.0	32.0	28.0	26.9
2019	22.0	27.5	25.0	32.0	28.0	26.9

Source: Tax Foundation Database

3.7 Conclusion

The chapter has discussed FDI trends in the SACU countries, together with some strategies these economies have adopted to attract more investment into the region. It is noted that the African continent as a whole is still behind in terms of winning over foreign investors, compared to other continents. The SACU region has not been spared from the low FDI inflows experienced by other African sub-regions. However, SACU member states have implemented a number of programmes over the years, aimed at attracting investments in order to boost economic growth. These programmes include promoting a stable political environment and good governance measures; lowering incidents of corruption; implementing sound macroeconomic policies, establishing trade agreements with other countries and regional groups; as well as a wide range of tax incentives. The chapter further summarised some of the tax incentives adopted by SACU countries, including tax holidays, lower tax rates in specific sectors, initial allowances, depreciation allowances, export incentives and special treatment of dividend remittances.

4. CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

This chapter discusses the methodological approach of the study: the model specification and the variables considered for the estimation. The main sections cover; the econometric estimation technique and its justification; description of the selected data; the model specifications; and the diagnostics tests that were performed on the econometric models.

4.2 Estimation Technique and its Justification

Generally, the types of data used in statistical and econometric research can be grouped into three major categories: time series, cross section and panel data (Yalçin, Dincer & Demir, 2020). Cross-sectional data is defined as data on different variables measured for a single time period, whilst time-series data measures a single variable recurring in different periods. Panel data, on the other hand, involves observing the same individuals at more than one point in time, that is, data for both independent and dependent variables are measured at multiple points in time.

Combinations of panel data can be in one of two structures: cross-section oriented (wide, but short) or time-series oriented (more balanced, enough time to allow meaningful investigations). Panel datasets can be either balanced or unbalanced. For balanced panel datasets, each cross section is measured and has values in the entire time period covered. However, in an unbalanced panel dataset, the cross sections have differing numbers of observations. At least one or more of the cross sections will not have observations in some periods. This study uses a balanced panel data regression model to determine the impact of corporate taxation on incoming FDI flows.

Wooldridge (2009) uses a similar definition, describing a panel dataset as consisting of a set of cross-sectional units, observed over a period of time. For such data sets, the time dimension plays an important role in terms of serial correlation and dynamic effects. When examining a panel of data that covers a relatively short period of time for a larger population – and particularly if some variables involved in the structural

behavioral relationship are likely to have a joint dependence – it is best to employ the generalised method of moments (GMM) estimation technique (Kiviet, 2019). The GMM method helps mainly in dealing with endogeneity bias, a condition in which an explanatory variable correlates with the error term, or if two error terms correlate when conducting structural equation modelling (Ullah, Akhtar & Zaefarian, 2018).

Among its advantages, panel data analysis allows for an increase in the number of observations and degrees of freedom, decreases multicollinearity, and yields more accurate and consistent predictions with more data information (Yalçin *et al*., 2020). The use of panel data analysis has gained popularity over the past four decades, which Sarafidis and Wansbeek (2020:4) attribute to two main reasons: “its ability to control for certain sources of unobserved heterogeneity and endogeneity due to omitted variables and measurement error; and its ability to estimate dynamic relationships from micro data without suffering aggregation bias”.

OECD (2016) and Nasution (2020), when studying the impact of corporate tax on FDI in the OECD countries and Southeast Asian countries respectively, explored three regression approaches for panel data before choosing the best fitting model. This study follows a similar approach and initially uses two regression approaches for panel data, from which the most suitable approach was selected. The two methods are the pooled ordinary least squares (OLS) method and the fixed-effects model. The study also applied the seemingly unrelated regression (SUR) method. Each of the models are described in detail in the following sub-sections. The random-effects model (though briefly explained below) was not employed in this study, due to data limitations.

4.2.1 Pooled OLS

This model pools all the observations together and runs an OLS regression, not taking into account the time series and cross-section data structure. In pooled OLS, it is assumed that individuals have unique, time-constant characteristics that are uncorrelated with individual regressors. One major problem with the model is the fact that it combines the variables, ignoring their differentiating factors (heterogeneity) that may be present. When comparing the performance of other models, the pooled OLS model is commonly used as a reference or baseline model.

Generally, to interpret the pooled OLS model as to whether it is satisfactory for the regression problem at hand, the R-squared, F-test, Log-likelihood, and Akaike Information Criterion (AIC) scores are analysed. An analysis of the residuals is performed as well.

- *R-squared* measures how much variation in the dependent variable is explained by the explanatory variables. The explanatory variables are strong in explaining such variation in the dependent variable if R-squared exceeds 0.5; if not, the studied relationship between the variables is weak.
- The *F-test* for regression estimates the combined significance of the variables considered in the model. The F-value shows how significant the influence of the independent variables is on the dependent variable.
- *Log-likelihood* and *AIC* scores – which are also goodness-of-fit values – are insignificant by themselves, unless compared to that of an alternative model.
- For the *residual analysis*, the test most usually conducted are normality, heteroskedasticity and correlation. Residuals simply measure deviations from the actual values of the estimated or predicted values; that is, how far an observation is from the estimated regression line. In order to validate the model, it is key to conduct analysis of the residuals.

The pooled OLS equation pools all observations in the dataset and estimates one OLS equation:

$$Y_{i,t} = \beta_0 + \beta_i * X_{i,t} + e_{i,t} \qquad (4\text{-}1)$$

i = 1, 2, ..., N

t = 1, 2, ..., T

where:

N is the number of individuals or cross sections

T is the number of time periods

Y is the dependent variable

X is the set of independent variables

e is the error term.

Such a model assumes the following:

- For all cross sections, the regression co-efficients are the same.
- The error terms are not correlated with any of the independent variables, implying that their covariance is zero:

$$COV(e_{i,t}, X_{i,t}) = 0 \qquad (4\text{-}2)$$

This assumption is important to ensure that the parameters of the model are unbiased and consistent.

- The error term is independently distributed about a mean of zero and has constant variance. That is;

$$e_{i,t} \sim iid(0, \sigma_v^2) \qquad (4\text{-}3)$$

This assumption implies that the error term is white noise. This is critical because is ensures that the explanatory variables in the regression model have explained the dependant variable so well that all that is left in the error term is noise.

4.2.2 Fixed-Effects (FE) Model

In the FE model, individuality or heterogeneity can be captured between variables by letting each variable have its own intercept value. The individuality is captured in the intercepts over time (Nasution, 2020). FE models account for the effects of heterogeneity through explicitly incorporating a fixed-effects term in the model specification. The fixed effects are assumed to vary cross-sectionally but are fixed over time. FE models are also known as the least squares dummy variable technique (LSDV).

From the pooled OLS equation:

$$Y_{i,t} = \beta_0 + \beta_i * X_{i,t} + e_{i,t} \qquad (4\text{-}4)$$

The fixed effects model then becomes:

$$Y_{i,t} = \beta_0 + \beta_i * X_{i,t} + Individual\ effects + e_{i,t} \qquad (4\text{-}5)$$

which can also be stated as:

$$Y_{i,t} = \beta_0 + \beta_i * X_{i,t} + \omega_i + e_{i,t} \qquad (4\text{-}6)$$

where;

ω_i captures the unobserved heterogeneity

β_{0i} refers to the intercept of a particular individual or cross section in the database.

For the LSDV model, in order to allow each variable to have its own intercept, dummy variables are introduced. In this way, the distinct characteristics of the individual variables are captured through differences in their intercepts. The LSDV model would be presented as:

$$Y_{i,t} = \beta_{0i} + \beta_i * X_{i,t} + e_{i,t} \qquad (4\text{-}7)$$

where:

β_{0i} refers to the intercept of a particular individual or cross section in the database.

It is worth noting that the intercept β_{0i} has no subscript of t, denoting that it is fixed over time (time-invariant). So, for the LSDV design, after introducing dummy variables the equation then becomes:

$$Y_{i,t} = \beta_0 + \beta_{n-1} * D_{n-1} + \beta_i * X_{i,t} + e_{i,t} \qquad (4\text{-}8)$$

where:

i = 1, 2, ..., N

D_1= 1 if individual 1, 0 otherwise

D_2= 1 if individual 2, 0 otherwise

up to,

D_n= D_1= D_2=…=D_{n-1}=0

For n individuals or cross sections, the model introduces n-1 dummy variables in order to avoid the dummy variable trap, a situation where there is perfect collinearity. Too many dummy variables can result in a noisy model. The coefficients that are estimated by the FE model are referred to as fixed effects estimators. Results from FE models are read in the same way as those from the pooled OLS technique.

The FE model can be either a one-way or a two-way model. One-way fixed effects models have time-invariant fixed effects, as they assume that the intercepts vary across individuals, but not over time. On the other hand, two-way fixed effects models include both individual fixed effects and time fixed effects, assuming that intercepts vary across both individuals and over the time period. By fixing the time period, it is assumed that there are significant variations on how the regressors respond to the dependent variable over time.

4.2.3 Random-Effects (RE) Model:

In the RE model, the variables have a common mean value for the intercept. As per the name of the model, the variables here are considered unpredictable, and it thus determines individual effects of unobserved, independent variables as random variables over time. This model accommodates the differences in individuals and time in the residuals (Nasution, 2020). Random-effects models can move between OLS regression and FE models, enabling them to therefore accommodate dependencies between individuals as well as within individuals.

So, from the FE model:

$$Y_{i,t} = \beta_{0i} + \beta_i * X_{i,t} + e_{i,t} \qquad (4\text{-}9)$$

Instead of fixing the intercept β_{0i} , the RE model assumes it to be a random variable with mean β_0, that is common to all individual units, with a random individual specific error term, ω_i, such that:

$$\beta_{0i} = \beta_0 + \omega_i \qquad (4\text{-}10)$$

The RE equation is then stated as:

$$Y_{i,t} = \beta_0 + \beta_i * X_{i,t} + \omega_i + e_{i,t} \qquad (4\text{-}11)$$

where:

ω_i measures the random deviation of each individual intercept from the common intercept β_0 . The RE model can further be presented as follows:

$$Y_{i,t} = \beta_0 + \beta_i * X_{i,t} + \cup_{it} \qquad (4\text{-}12)$$

where $\cup_{it} = \omega_i + e_{i,t}$

This model is also referred to as the 'error components' model because it includes the error term ω_i in the error term $\cup_{it}$ rather than as dummy variables, whilst allowing for a common intercept. The RE model applies the principle of maximum likelihood or general least squares. Reading the output from a RE model output is different from that in pooled OLS and FE models.

4.2.4 Seemingly Unrelated Regression Method (SUR)

The SUR model is a regression method that is used to estimate a system of linear equations. The set of equations can contain different sets of independent variables, so some variables may be in one equation and not in the others. In the SUR, the individual equations are somehow related to each other, even though they may not appear to be. The notion of 'seemingly unrelated' comes from the assumption that the equations can be estimated separately, without any simultaneity linking them to each other (Baum, 2014).

The underlying assumption of the SUR model is that the jointness of the equations is explained by the structure of the model and the covariance matrix of the associated disturbances. Through the jointness of the equations, there is additional information that can be captured in the system, besides what would have been the outcome in the case of separate equations. In the context of panel data analysis, the SUR can be applied to account for potential heterogeneity in the slopes (Muck, 2022). The SUR is able to account for cross-sectional dependence. It can be applied to panel datasets with smaller individual units, n, and a longer time period, t. The SUR requires that the number of cross sections is less than the number of time periods.

The SUR model is considered to be more flexible than the FE model for panel data analysis, as it allows co-efficients that may differ across individual units, as well as separate estimates of the error variance for each equation (Baum, 2014). The set of equations can be presented as:

$$Y_1 = \beta_1 * X_{1} + e_{1}$$

$$Y_2 = \beta_2 * X_{2} + e_{2}$$

up to

$$Y_n = \beta_n * X_{n} + e_{n} \qquad (4\text{-}13)$$

where β_n is the individual-specific vector of structural parameters for individual units i=1, 2, …, n.

The Wald test can be used to test for heterogeneity of the slopes. The null hypothesis which tests the homogeneity of the slopes is:

$$H_0: \beta_1 = \beta_2 = \cdots = \beta_n, \text{ homogeneity of all slopes, or}$$

$$H_0: \beta_{1,j} = \beta_{2,j} = \cdots = \beta_{n,j}, \text{ homogeneity of some slopes}$$

where β_n stands for the vector parameters for individual units i=1, 2, …, n. and $\beta_{n,j}$ stands for the j-th parameter of the i-th unit.

The Lagrange Multiplier (LM) statistic can be further used to test for cross-equation dependence:

$$LM = \sum_{i=1}^{n-1} \quad \sum_{j=i+1}^{n} p_{i,j}^2 \qquad (4\text{-}14)$$

where $p_{i,j}$ is the cross-sectional correlation coefficient.

4.3 Data Description

The study uses secondary data from several data sources: the UNCTAD database, the World Bank database, the OECD Tax Statistics database, and the Tax Foundation database. This data was supplemented by data from the respective SACU countries' official national statistics websites, including revenue agencies, reserve/central banks and national statistics offices. The data is readily available, and the reference period is 2000 to 2019. The critical common feature of the countries' economies is that they implemented corporate tax rate reductions during this period.

The study used panel data for the empirical analysis. For a panel dataset, one needs to observe different characteristics of the same variable over time (Yalcin *et al*., 2021). The same authors highlight three main objectives for panel data studies: revealing the over-time changes in cross sectional data; explaining the changes in one or combined units based on other variables; and predicting one unit as explained by the relevant explanatory variable.

This study follows the panel data approach and selected variables used by the OECD (2016), among other studies which used broadly similar variables, including Edo *et al*.

(2020), Uwuigbe (2019) and Ngo *et al.* (2020). This section briefly discusses and defines the dependent and explanatory variables considered for this analysis. Even though the main explanatory variable in the study is the tax rate, other control variables were used as other studies have proved their influence on investment decisions.

4.3.1 Foreign Direct Investment (FDI)

FDI refers to the net investment inflows into an economy by foreign investors. The inflows include equity capital, earnings reinvestment, and short- and long-term capital. Several research studies have been conducted in order to determine what drives investors to consider a host country for their business investments, among which taxation has been a factor of interest.

4.3.2 Corporate Tax Rate

This generally refers to the rate of tax applied by the government to business profits. Various studies done on several economies have produced conflicting outcomes with regard to the effectiveness of corporate tax rate reductions in terms of attracting FDI. Among others, Djankov *et al.* (2010), Sato (2012) and Cela (2017) confirm a significant negative association between the corporate tax rate and FDI. Furthermore, Nasution (2020) who investigated how tax cuts affect FDI in Southeast Asian countries, found that taxes are not the main factor in attracting FDI.

4.3.3 GDP Growth

Generally used as a measure of economic activity, GDP measures the sum of all the final goods and services produced in a particular period in a given economy. Foreign investors consider the host country's growth prospects when establishing or relocating businesses there. Nasution (2020) found a significant influence of the host country’s GDP growth rate on investment decisions made by potential investors.

4.3.4 Inflation

For investors, inflation is indicative of price stability in an economy, as well as the level of monetary discipline. Inflation is usually measured on an annual basis. Inflation and

FDI are generally found to have a negative relationship in most of the literature, including studies by Edo *et al*. (2020), OECD (2016) and Nasution (2020), all of whom established inflation levels to be a critical determinant of FDI.

4.3.5 Population Growth

This variable measures annual growth in the size of a country's population, as an indication of the available market size. Market size is considered to be essential in maximizing resources and exploiting economies of scale. OECD (2020) found a positive correlation between the annual population increase and incoming investments. In a study of selected EU countries, Wolff (2007) established that FDI is influenced mostly by a country's macroeconomic characteristics, including GDP and population size.

4.3.6 Openness

This indicator is also of critical importance to investors to consider during their decision making process, especially in a tradable sector. A nation's openness to the external marketplace has some impact on its ability to attract foreign direct investment, even though mixed evidence exists regarding the significance of openness. In their respective studies, Edo *et al*. (2020) and Nasution (2020) established that trade openness and FDI showed a significant positive association.

4.3.7 Government Effectiveness

This is one of the World Bank governance indicators, an index that captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Each country's score is measured in units of a standard normal distribution, ranging from approximately -2.5 to 2.5. The OECD (2016) and Nasution (2020) established a significant negative association between FDI and government effectiveness.

4.3.8 Political Stability and Absence of Violence/Terrorism

This index is also part of the World Bank governance indicators and measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. Each country's score is measured in units of a standard normal distribution, ranging from approximately -2.5 to 2.5. Rodriguez-Pose and Cols (2017) found political stability to be an important factor in influencing incoming FDI.

4.3.9 Control of Corruption

This is the third World Bank governance indicator incorporated in the model. It is an index that captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests. Each country's score is measured in units of a standard normal distribution, ranging from approximately -2.5 to 2.5. Along with other good governance indicators, Rodriguez-Pose and Cols (2017) established that lower corruption is also an important factor in attracting incoming FDI.

Table 4.1 shows a summary of all the variables, their measurements and expected signs of their regression coefficients.

Table 4.1: Summary of Variables

Variable	Label	Measurement	Expected Sign
Foreign Direct Investment (Dependent Variable)	FDI	Net investment inflows in an economy by foreign investors, divided by GDP. *Source: UNCTAD database.*	Nil
Corporate Tax Rate	logCIT	The rate of tax applied by the government on a business's profits (statutory rate). The variable is used in log form. *Source: Tax Statistics Foundation database.*	-
GDP Growth	GDP	The annual real GDP growth rate. *Source: UNCTAD database.*	+
Inflation	INF	The annual rate of inflation. *Source: UNCTAD database.*	-
Population Growth	POP	The annual growth in the population size. *Source: UNCTAD database.*	+

Openness	logOP	The ratio of trade (export and imports) to GDP. The variable is used in log form. *Source: UNCTAD database.*	+
Government Effectiveness	GE	Measured in units of a standard normal distribution, ranging from approximately -2.5 to 2.5. *Source: World Bank Governance Indicators Database*	+
Political Stability and Absence of Violence/Terrorism	PS	Measured in units of a standard normal distribution, ranging from approximately -2.5 to 2.5. *Source: World Bank Governance Indicators Database*	+
Control of Corruption	CRC	Measured in units of a standard normal distribution, ranging from approximately -2.5 to 2.5. *Source: World Bank Governance Indicators Database*	+

4.4 Model Specifications

The quantitative analysis was done using the *E-views 10* software package. In the light of limitations in the data structure and properties, the study utilised only the pooled OLS and FE models. The RE model was not adopted because it requires the dataset to consist of more cross sections than independent variables, whereas in this case there are five cross-sections and eight independent variables. Conclusions were drawn from first testing the better-fitting model between the pooled OLS and FE models, and then performing further diagnostics tests on the model of choice. Additional conclusions were drawn from the results of the SUR model.

4.4.1 The Pooled OLS Regression Model

The following regression model was used, with the main assumption being that the corporate tax rate has a negative effect on FDI.

$$FDI_{c,t} = \beta_0 + \beta_1 * CIT_{c,t} + \beta_i * X_{c,t} + e_{c,t} \qquad (4\text{-}15)$$

where:

FDI measures the country's ratio of foreign direct investment to GDP

CIT is the country's statutory corporate tax rate

X is the set of country-specific variables that have been identified to impact FDI. These are the GDP annual growth rate, the inflation rate, the population growth rate, trade openness, government effectiveness, political stability, and control of corruption.
e is the residual term
c= 1, 2, ..., 5 SACU member states
t= 1, 2, …, 20 years

The equation can be also captured as follows:

$$FDI_{c,t} = \beta_0 + \beta_1 * \mathrm{LCIT}_{c,t} + \beta_2 * GDP_{c,t} + \beta_3 * INF_{c,t} + \beta_4 * LOP_{c,t} + \beta_5 * POP_{c,t} + \beta_6 * GE_{c,t} + \beta_7 * CCR_{c,t} + \beta_8 * PS_{c,t} + e_{c,t}$$

where:

$\mathrm{LCIT}_{c,t}$ is the log of the corporate tax rate of country c, at time t

$GDP_{c,t}$ is the real GDP growth rate of country c, at time t

$INF_{c,t}$ is the annual inflation rate of country c, at time t

$LOP_{c,t}$ is the log of trade openness of country c, at time t

$POP_{c,t}$ is the annual population growth rate of country c, at time t

$GE_{c,t}$ is the government effectiveness index of country c, at time t

$CCR_{c,t}$ is the control of corruption index of country c, at time t

$PS_{c,t}$ is the political stability index of country c, at time t.

4.4.2 The Fixed-Effects Model

Since the OLS model ignores the differentiating country factors that may exist, i.e., individuality (heterogeneity), the FE model explicitly accounts for heterogeneity by allowing different intercepts for each country, through introducing dummy variables. It was estimated as follows:

$$FDI_{c,t} = \beta_0 + \beta_1 * CIT_{c,t} + \beta_c * X_{c,t} + (country\ fixed - effects) + e_{c,t} \quad (4\text{-}16)$$

$$FDI_{c,t} = \beta_0 + \beta_1 * CIT_{c,t} + \beta_2 * X_{c,t} + \omega_c + e_{c,t} \quad (4\text{-}17)$$

where: ω_c represents the country-specific heterogeneity

c= 1, 2, ..., 5 SACU member states

t= 1, 2, …, 20 years

Since there are five SACU member states (cross sections), an expanded version of the model becomes:

$$FDI_{c,t} = \beta_0 + \beta_1 * \mathrm{D}_1 + \beta_2 * \mathrm{D}_2 + \beta_3 * \mathrm{D}_3 + \beta_4 * \mathrm{D}_4 + \beta_5 * \mathrm{CIT}_{c,t} + \beta_6 * X_{c,t} + e_{c,t} \quad (4\text{-}18)$$

where $\mathrm{D}_{1,}\ \mathrm{D}_{2,\ ...,}\ \mathrm{D}_4$ are the dummy variables. As stated in the discussion of the LSDV model, for n cross sections, n-1 dummy variables are introduced in order to avoid the dummy variable trap.

4.4.3 Seemingly Unrelated Regression Method (SUR)

For the SUR model, the individual equations for each of the SACU member states were estimated as a system. Each of the equations contain the same dependant and independent variables and are as follows:

***Botswana**: FDIBW = C(1) + C(2)*LOGCITBW + C(3)*GDPBW + C(4)*INFBW+ C(5)*LOGOPBW + C(6)*POPBW + C(7)*GEBW + C(8)*CCRBW + C(9)*PSBW* (4-19)

***Eswatini:** FDIES = C(1) + C(2)* LOGCITES + C(3)*GDPES + C(4)*INFES + C(5)*LOGOPES + C(6)*POPES + C(7)*GEES + C(8)*CCRES + C(9)*PSES* (4-20)

***Lesotho:** FDILS = C(1) + C(2)*LOGCITLS + C(3)*GDPLS + C(4)*INFLS + C(5)*LOGOPLS + C(6)* POPLS + C(7)*GELS + C(8)*CCRLS + C(9)*PSLS* (4-21)

***Namibia:** FDINA = C(1) + C(2)*LOGCITNA + GDPNA + C(4)*INFNA + C(5)*LOGOPNA + C(6)* POPNA + C(7)*GENA + C(8)*CCRNA + C(9)*PSNA* (4-22)

South Africa: *FDISA = C(1) + C(2)*LOGCITSA + C(3)*GDPSA + C(4)*INFSA + C(5)*LOGOPSA + C(6)*POPSA + C(7)*GESA + C(8)*CCRSA + C(9)*PSSA* *(4-23)*

where:

C(1) is the intercept

C(2), C(3), …. , C(9), are the coefficients for the independent variables.

The Wald test was then used to test for heterogeneity of the coefficients.

4.5 Panel Unit Roots Tests

In panel datasets, it is essential to first check for unit roots, as their presence in time series may lead to incorrect interpretation of the results. The addition of the cross-section dimension to the time series dimension can offer an advantage in testing for nonstationarity and co-integration, since cross sections increase the datasets used in such tests, thus improving their power (Barreira & Rodrigues, 2005). However, this cross-section dimension also introduces some new issues, namely cross-section dependent findings in small samples, which can lead to bias in usual panel data unit roots.

Normally, panel unit roots tests can be categorised into two classes. In one class, the cross-sections are assumed to have homogeneous autoregressive coefficients, which assumes a common unit root process. In the other class, individual unit roots are assumed with a first order autoregressive parameter that varies with cross sections. The empirical analysis in this study adopted the Levin, Lin and Chu (LLC) test (2002) from the first group and the Im-Pesaran-Shin (IPS) test (2003) from the second group. Each of these tests is described in further detail below.

4.5.1 Levin, Lin and Chu (LLC) (2002)

Levin, Lin and Chu (2002) is among the most cited studies when testing for stationarity in panel datasets. The LLC test allows for possible correlation and heteroskedasticity, while still assuming continued independence across cross sections (Munongo, 2015). The assumption is that both N (groups or individuals) and T (time series observations) tend to infinity, but that T increases at a faster rate, such that:

$$N/T \rightarrow 0$$

The LLC test assumes homogeneous autoregressive coefficients between individuals, that is,

$$p_i = p, \text{ for all i.}$$

Where p denotes the autoregressive coefficients.

The null and alternative hypotheses under the LLC are stated as:

H_O: Each individual time series contains a unit root

H_A: Each time series is stationary

The test employs a cross-equation restriction on partial autocorrelation coefficients under the null hypothesis, which results in a test that is much more powerful than a unit root test performed for each individual. The equation for the LLC analysis may be specified as follows:

$$\Delta y_{it} = p y_{it-1} + \alpha_{0i} + \alpha_{1i}\, t + u_{it}\,,\ i = 1,2,\ldots,N\,;\ t = 1,2,\ldots,T \qquad \textit{(4-24)}$$

incorporating a time trend (α_{1i} t) as well as individual effects (α_i). “The deterministic components are an important source of heterogeneity in this model since the coefficient of the lagged dependent variable is restricted to be homogeneous across all units in the panel”, Barbieri (2006).

$u_{it}$is assumed to be independently distributed across individuals and follows a stationary invertible Autoregressive Moving Average (ARMA) process for each individual:

$$u_{it} = \sum_{j=1}^{\infty} \theta_{ij}\ u_{it-j} + \varepsilon_{it} \qquad \textit{(4-25)}$$

According to Barbieri (2006), there are some limitations in the LLC test, such as its dependence upon the assumption that the cross sections are independent. This limitation therefore makes the test inappropriate when there is cross-sectional correlation. Another major limitation of this test is that the autoregressive parameters are considered to be identical across the panel:

$$H_0: p_1 = p_2 = \cdots = p_N = p = 0$$

$$H_A: p_1 = p_2 = \cdots = p_N = p < 0$$

In contrast, the IPS test overcomes this limitation, since it examines panel unit root tests without assuming identical first-order correlation.

4.5.2 IM, Pesaran and Shin (IPS) (2003)

The IPS test uses the likelihood framework, and it allows for concurrent stationary and non-stationary series, (Barbieri, 2006). This assumption implies that the autoregressive coefficients, p_i can differ between individuals.

The null hypothesis under the IPS is stated as follows:

$$H_0: p_i = 0, \text{ for all i}$$

And the alternative hypothesis becomes:

$$H_A: p_i < 0, \text{ for i= 1, …, N, and } p_i = 0, \text{ for i=} N_1 + 1, \ldots, \text{ N (with 0 < N1 ≤ N)}$$

The null hypothesis assumes that each series in the panel contains a unit root whereas for the alternative hypothesis, the assumption is that not all (but some) of the individual series have unit root.

The IPS test averages the individual augmented Dickey-Fuller (ADF) unit root test statistics computed for each cross-section using the t-bar statistic.

$$t = \frac{1}{n}\sum_{i=1}^{N} t_{pi} \qquad (4\text{-}26)$$

Where t_{pi} is assumed to be independent and identically distributed (iid) and have finite mean and variance. The t_{pi} is used to test for the null hypothesis of the IPS test.

Even though the null hypothesis is the same for both the LLC and IPS tests, a direct comparison of the results is impossible since they have differing alternative hypotheses. According to (Barbieri, 2006: 17) “the alternative hypothesis in the LLC test the provides for individual stationary series with identical first order autoregressive coefficient” whereas the IPS test provides for different individual first order autoregressive coefficients”.

4.6 Diagnostic Tests

In choosing the most suitable model between the OLS and FE models (that is, to determine if after the introduction of the dummy variables we are able to significantly

reduce the previously unexplained variation), generally the restricted or partial F-test and the Wald test, each of which is discussed in the following sub-sections.

4.6.1 Restricted or Partial F-test

The restricted F-test is used as a direct test to determine if the FE model is better than the pooled OLS model. This test is referred to as the 'restricted' or 'reduced' model because it utilizes the pooled OLS model, which has one intercept and fewer coefficients. The FE model, on the other hand, is said to be complete or unrestricted, because it incorporates more intercepts and coefficients.

The null hypothesis for the restricted F-test is as follows:

$$H_0: all\ differential\ intercepts\ are\ equal\ to\ zero\ (0)$$

Or

$$H_0: \beta_1 = \beta_2 = \cdots = \beta_n = 0$$

The null hypothesis attempts to verify if the differentials in the intercepts are equal to zero. The F-statistic is given by:

$$F = \left(\frac{SSE_R - SSE_C}{K_C^*}\right) / \frac{SSE_C}{n - K_C} \qquad (4\text{-}27)$$

Or alternatively,

$$F = \left(\frac{R_C^2 - R_R^2}{K_C^*}\right) / \frac{1 - R_C^2}{n - K_C} \qquad (4\text{-}28)$$

(which should give the same results)

where:

SSE_R is the SSE for the pooled OLS (restricted) model

SSE_C is the SSE for the FE (complete) model

R_C^2 is the value of R-squared for the pooled OLS (restricted) model

R_R^2 is the value of R-squared for the FE (complete) model

n is the sample size

K_C is the number of coefficients in the complete model

K_C^* is the number of additional coefficients in the complete model

The decision criterion is that the null hypothesis is rejected if the p-value is less than 0.05, concluding that the inclusion of the differential intercepts improves the model significantly. Therefore, in such a case, the FE model is selected as the best suitable model and the pooled OLS is rejected. This shows how important it is to take into account the differentiating characteristics of the individual units in the panel dataset.

4.6.2 Wald test

The Wald test is another statistical test used to compare regression models and decide on a best-fitting model. It tests whether the differential intercepts are equal to zero.

Similar to the restricted F-test, the null hypothesis for the Wald test is as follows:

$$H_0: all\ differential\ intercepts\ are\ equal\ to\ zero\ (0)$$

Or

$$H_0: \beta_1 = \beta_2 = \cdots = \beta_n = 0$$

If the p-value of the F-statistic is less than 0.05, the null hypothesis is rejected, concluding that the differences are significant. As such, accounting for heterogeneity in the model is important.

Since both tests are conducted to test the same hypothesis – namely that the differential intercepts are equal to zero – and they basically arrive at similar conclusions, only the Wald test was conducted for this study.

4.7 Conclusion

This chapter has discussed the theoretical foundations and empirical applications of the models that are used in this study. The data sources for the variables are the World Bank Database, UNCTAD, the OECD database, the Tax Foundation database and other selected country specific websites. The key purpose of the study is to establish the existence of a relationship between CIT rate cuts and incoming foreign

investments in the SACU region. In order to address stationarity in the panel dataset before estimating the regression models, the IPS and LLC tests were used. Pooled OLS regression, FE regression and SUR methods were used to study the hypothesized relationship; the shortcomings of the data set resulted in non-use of the RE model. For further diagnostics check on the models and choosing the best fitting model for the analysis, the Wald test was used choose between the pooled OLS model and the FE model.

5. CHAPTER 5 – RESULTS

5.1 Introduction

This study involves all five SACU member states, and the estimations were run for two panel datasets. Panel 1 includes all SACU countries and panel 2 was estimated for the four smaller SACU countries, excluding South Africa. The exclusion of South Africa in panel 2 is intended to remove its dominance from the analysis and present a set of results that are more focused on the smaller member states.

This empirical analysis and discussion of results chapter is structured as follows: Section 5.2 discusses the descriptive statistics of the variables, Section 5.3 shows a graphical representation of the variables, Section 5.4 presents the unit root testing results, and Section 5.5 presents the correlation testing results. Furthermore, the results of the pooled OLS regression are discussed in Section 5.6, the fixed-effects model results are presented in Section 5.7, the diagnostics test results are presented in Section 5.8, the results of the SUR are discussed in Section 5.9, and Section 5.10 summarises the results.

5.2 Descriptive Statistics

Descriptive statistics provide simple summaries of the data to describe its basic characteristics. Such statistics are divided mainly into two groupings: measures of central tendency, and measures of spread (variability). Central tendency measures include the mean (average of dataset), median (middle value) and mode (the value that appears the most times). For measuring spread, the measures include (but are not limited to) the standard deviation (average distance between each value and the mean), range (difference between the minimum and maximum values), percentiles (measure of position), skewness (measure of asymmetry), and the kurtosis (existence of outliers).

The descriptive statistics of the data are shown in Table 5.1, for both panel 1 and panel 2. There are no clear differences between the descriptive statistics of the two panels. Most variables on both panels have a similar minimum and maximum, with the exception of inflation and trade openness. Net FDI inflows as a percentage of GDP have a minimum value of -2.9%, maximum value of 10.50% and a mean of 3.00% on panel 1, with similar minimum and maximum values for panel 2 and an average of 3.37%. The standard deviation for FDI is 2.57 for panel 1 and 2.68 for panel 2, indicating that the values do not vary too widely from the mean.

The Log CIT has a minimum value of 3.09, a maximum value of 3.56, and an average of 3.35 for both panels. The standard deviation for the two panels shows a minimal difference – 0.14 for panel 1 and 0.16 for panel 2, indicating that the values are much closer to their average than for the other variables, that is, the LogCIT has the least data dispersion among all the variables.

Similar minimum and maximum values are observed for GDP growth, at -7.65% and 12.27% respectively for both panels, with differing mean values of 3.23% for panel 1 and 3.37% for panel 2. GDP recorded the highest standard deviation when compared to the other variables, at 2.94 for panel 1 and 3.15 for panel 2. The standard deviation for inflation is recorded at 2.50 for panel 1 and 2.58 for panel 2, indicating that inflation values for all the SACU countries are not too widely dispersed from the mean.

Log openness (LogOP) has the second lowest level of data dispersion among the variables, with a standard deviation of 0.35 for panel 1 and 0.28 for panel 2. For population growth, the minimum is recorded at -0.62% and a maximum of 2.20% for both panels, with averages of 1.18% for panel 1 and 1.12% for panel 2. This variable also displays a low level of variation from the average, with a standard deviation of 0.67 for panel 1 and 0.74 for panel 2.

The governance indicators also broadly display the least dispersion, indicating somewhat similar governance dynamics across the SACU member states. Government Effectiveness ranges from a minimum of -0.53 to a maximum of 1.22 for both panels, with an average of 0.22 for panel 1 and 0.23 for panel 2. The Control of Corruption Index has a minimum of -1.05 and a maximum of 0.73 for both panels, with an average of 0.00 for panel 1 and -0.01 for panel 2. The Political Stability Index has a minimum of -0.50 and a maximum of 1.20 for both panels, with an average of 0.27

for panel 1 and 0.37 for panel. All three governance indicators are observed to have low levels of data dispersion with a standard deviation range of 0.44 to 0.56 across all three.

Table 5.1: Descriptive Statistics for the Dependent and Independent Variables

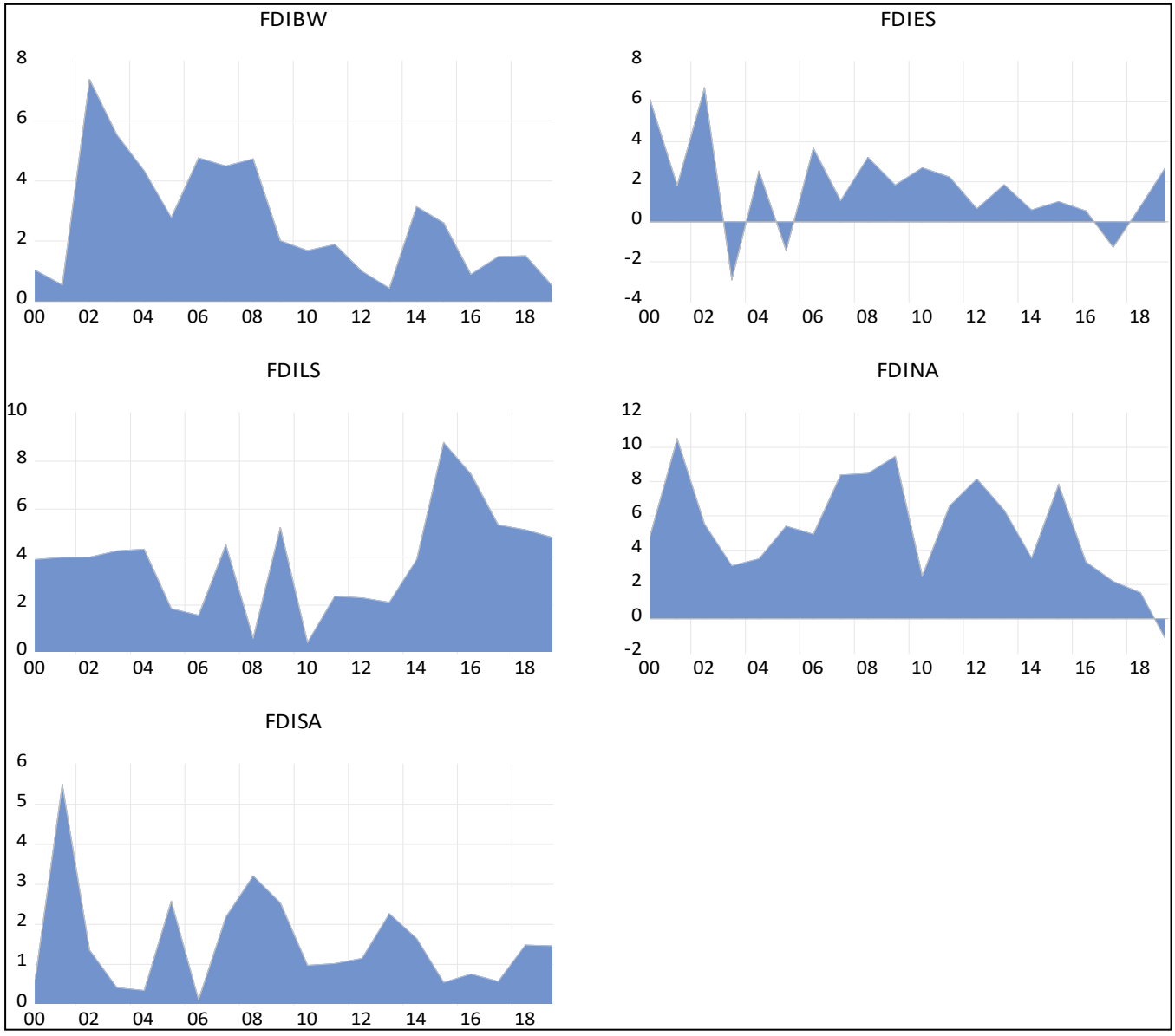
Statistic	Panel 1					Panel 2				
	Mean	Median	Maximum	Minimum	Std. Dev.	Mean	Median	Maximum	Minimum	Std. Dev.
FDI	3.00	2.44	10.50	-2.91	2.57	3.37	3.00	10.50	-2.91	2.68
LOGCIT	3.35	3.35	3.56	3.09	0.14	3.35	3.40	3.56	3.09	0.16
GDP	3.23	3.53	12.27	-7.65	2.94	3.37	3.83	12.27	-7.65	3.15
INF	6.35	5.97	12.72	1.42	2.50	6.53	6.14	12.72	2.28	2.58
LOGOP	4.56	4.51	5.29	3.92	0.35	4.68	4.58	5.29	4.28	0.28
POP	1.18	1.33	2.20	-0.62	0.67	1.12	1.13	2.20	-0.62	0.74
GE	0.22	0.18	1.22	-0.53	0.44	0.23	0.18	1.22	-0.53	0.48
CCR	0.00	0.11	0.73	-1.05	0.51	-0.12	-0.01	0.73	-1.05	0.50
PS	0.27	0.06	1.20	-0.50	0.54	0.37	0.37	1.20	-0.50	0.56

Source: Author's calculations from UNCTAD and World Bank Databases using E-views 10

5.3 Graphical Representation of Variables

Graphical presentation of data in research is an important step as it helps to understand the underlying patterns in the data, through creating visual representations thereof. This can also help in understanding the correlations between the different variables in a dataset. Graphical analysis of variables can also enable the detection of stationarity in the dataset. This section presents the graphical presentation of the dependent variable, FDI.

Figure 5.1: Graphical Presentation of FDI Inflows into the SACU Region



Source: Author's calculations using E-views 10

Figure 5.1 presents the graphical analysis of the net FDI inflows into the SACU region. The FDI levels here are presented as a percentage GDP of each of the respective countries. From the graph, it is noted that the net FDI trends into the SACU countries have been volatile throughout the twenty-year period. Eswatini and Namibia even recorded negative net FDI inflows in some of the years implying that in those respective there were more outgoing investments than those than came in. From this analysis, it is already showing that the SACU economies have been unable to maintain a steady increase in their incoming FDI for the past two decades, thus requiring strengthening of more initiatives targeted at attracting investors into the region.

5.4 Unit Roots Tests

In applied research, testing for unit roots in panel data is crucial, since models based on panel data – where the variables under study are non-stationary – may lead to inaccurate results. This study employed the LLC and IPS unit roots tests, thereafter combining both results to arrive at final conclusions.

5.4.1 LLC Test Results

The null hypothesis of the LLC panel unit root test is that series results are non-stationary, and the alternative hypothesis is that the series is stationary. The stationarity test results for the variables using the LLC test are shown in Table 5.2. The results indicate that FDI, GDP, inflation and population are all stationary at level I (0) for panel 1, with the rest of the variables being stationary after first differencing, I (1). For panel 2, GDP, inflation and population are all stationary at I (0) and all the other variables are stationary after first differencing, I (1).

Table 5.2: Stationarity Test Results using the LLC Unit Root Test

Dependent and Independent Variables	Panel 1	Panel 2
	Integration Order	Integration Order
	Statistic	Statistic
	Probability Value	Probability Value
FDI	I (0)	I (1)
	-2.35222	-4.72069
	0.0093***	0.0000***
LOGCIT	I (1)	I (1)
	-2.55132	-1.625
	0.0054***	0.0521*
GDP	I (0)	I (0)
	-3.07566	-2.44546
	0.0011***	0.0072***
INF	I (0)	I (0)
	-3.57432	-2.43545
	0.0002***	0.0074***
LOGOP	I (1)	I (1)
	-4.23748	-3.47957
	0.0000***	0.0003***
POP	I (0)	I (0)
	-8.54206	-6.94111
	0.0000***	0.0000***
GE	I (1)	I (1)
	-3.87526	-2.90867
	0.0001***	0.0018***
CCR	I (1)	I (1)
	-5.05208	-4.39085
	0.0000***	0.0000***
PS	I (1)	I (1)
	-3.86364	-2.98808
	0.0001***	0.0014***

Source: Author's calculations using E-views 10. Levels of significance denoted *** for 1%, ** for 5% and * for 10%

5.4.2 IPS Test Results

The results of the IPS panel unit root test are presented in Table 5.3. The null hypothesis under the IPS panel unit root test is that the series is nonstationary, and the alternative hypothesis then assumes stationarity. The results obtained from the IPS test indicate similar stationarity conclusions to the LCC test for panel 1, where only FDI, GDP, inflation and population are stationary at level. Similarly, for panel 2, GDP, inflation and population are all stationary at I (0). However, CIT is stationary at second differencing, I (2), and the rest of the variables are stationary after first differencing, I (1).

Table 5.3: Stationarity Test Results using the IPS Unit Root Test

Dependent and Independent Variables	Panel 1	Panel 2
	Integration Order	Integration Order
	Statistic	Statistic
	Probability Value	Probability Value
FDI	I (0)	I (1)
	-2.3836	-5.34092
	0.0086***	0.0000****
LOGCIT	I (1)	I (2)
	-2.01333	-4.27045
	0.022**	0.0000***
GDP	I (0)	I (0)
	-2.88342	-2.45833
	0.002***	0.0070***
INF	I (0)	I (0)
	-2.55545	-1.63584
	0.0053***	0.0509*
LOGOP	I (1)	I (1)
	-4.08799	-3.40121
	0.0000***	0.0003***
POP	I (0)	I (0)
	-8.88745	-7.67791
	0.0000***	0.0000***
GE	I (1)	I (1)
	-5.27338	-4.85461
	0.0000***	0.0000***
CCR	I (1)	I (1)
	-4.99225	-4.53509
	0.0000	0.0000***
PS	I (1)	I (1)
	-4.87652	-4.41038
	0.0000***	0.0000***

Source: Author's calculations using E-views 10. Levels of significance denoted *** for 1%, ** for 5% and * for 10%

The conclusions on the integration order of variables consider the findings of both the LCC and IPS tests. Since the two tests yield broadly similar results, the study concludes that for panel 1, FDI, GDP, inflation, and population are stationary at level and CIT, openness, government effectiveness, control of corruption, and political stability are integrated of order one. For panel 2, the study concludes that GDP, inflation, and population are stationary at level; FDI, openness, government effectiveness, control of corruption, and political stability are integrated of order one; and CIT is integrated of order two. Based on these unit root test results, the variables are then differenced as per their order of integration during the estimation of the regression models.

5.5 Correlation Testing Results

Correlation coefficients are generally a measure of a linear relationship between two variables. They normally give an indication of the extent to which variables are associated or correlated with each other. Correlation analysis is related to regression in that it studies associations among different variables and a correlation between variables can be either negative or positive, and weak or strong as captured by the correlation coefficients. Correlation analysis does not, however, establish a cause-effect relationship between the variables – it only indicates the extent to which they are associated.

Table 5.4 presents the correlation matrix of the dependent and independent variables of the study. The p-values for each of the correlation coefficients are also indicated, to show the significance of the coefficients.

Table 5.4: Correlation Matrix for all Variables

	FDI	LOGCIT	GDP	INF	LOGOP	POP	GE	CCR	PS
FDI	1.0000								

LOGCIT	0.2789	1.0000							
	(0.005)***	-----							
GDP	0.0260	0.0481	1.0000						
	0.798	0.635	-----						
INF	0.2770	0.1220	0.0325	1.0000					
	(0.005)***	0.227	0.748	-----					
LOGOP	0.2088	- 0.0155	0.0028	0.2119	1.0000				
	(0.037)**	0.878	0.978	0.034	-----				
POP	0.1186	- 0.1536	0.0345	-0.0259	-0.6650	1.0000			
	0.240	0.127	0.733	0.798	-	-----			
GE	0.1156	- 0.4080	0.1858	0.0706	-0.2549	0.6328	1.0000		
	0.252	-	0.064	0.485	0.011	-	-----		
CCR	-0.0160	- 0.1398	0.1346	0.0295	-0.6329	0.6650	0.7878	1.0000	
	0.869	0.165	0.182	0.771	-	-	-	-----	
PS	0.2671	- 0.1868	0.2288	0.0615	0.0031	0.5876	0.7875	0.5388	1
	(0.007)***	0.063	0.022	0.543	0.976	-	-	-	-----

Source: Author's calculations using E-views 10. Levels of significance denoted *** for 1%, ** for 5% and * for 10%

From the correlation matrix it is noted that variables that have a significant correlation with the dependent variable – as indicated by their significant p-values – are the corporate tax rate, inflation rate, openness and political stability.

From the literature it is noted that an indication of a weak association between two variables through correlation analysis does not imply that there will be no significant prediction through regression of the same variables. Therefore, the study proceeded

to include even those variables with a much weaker association, such as the GDP growth rate and control of corruption.

In regression analysis, when the independent variables are not only correlated to the dependent variable, but also correlated to each other, it is referred to as multicollinearity, (Shrestha, 2020). This occurrence can result in some of the statistically significant variable turning out to be insignificant, thus affecting the overall results of the model. According to Shrestha (2020), a correlation coefficient that is close to 0.8 indicates the likelihood of collinearity.

From the correlation matrix, government effectiveness has a notably high correlation with control of corruption (0.7878), and political stability (0.7575), implying that the same information is captured by the other two variables. As such, government effectiveness was dropped from the regression models.

5.6 Pooled OLS Model

To study the impact of variations in the corporate tax rate on net FDI inflows, the pooled OLS regression was run first for panel 1 (which includes all five SACU member states) and then for panel 2 (which excludes South Africa). Next, the FE model was run for both panel 1 and panel 2; and then the Wald test was applied in order to ascertain the better fitting model (between pooled OLS and FE) for the purposes of this study.

The results for the pooled OLS regression are shown in Table 5.5. The main independent variable is the CIT rate, with other control variables: GDP growth, inflation, openness, population growth, government effectiveness, control of corruption and political stability. The results indicate that for both panels, the CIT rate has a negative relationship with FDI inflows (regression coefficients=-6.189 for panel 1 and -9.061 for panel 2), which supports the initial hypothesis that the two variables are negatively associated. The noted negative effect is insignificant however, implying that there are other variables that have a much stronger influence on the level of FDI inflows into the SACU region. In terms of the magnitude of the regression co-efficients, the impact of an increase in the CIT rate becomes larger for panel 2, with FDI inflows expected to decline by 9.06% when the CIT rate is increased by 1%.

Table 5.5: Pooled OLS Regression Results

Independent Variables	Panel 1	Panel 2
	(Statistic)	(Statistic)
	Probability Value	Probability Value
LOGCIT	(-6.188905)	(-9.061051)
	0.1889	0.1103
GDP	(0.002139)	(0.056093)
	0.9807	0.6061
INF	(0.210257)	(-0.093667)
	0.0578*	0.5067
LOGOP	(2.567734)	(0.579447)
	0.4400	0.8984
POP	(0.504062)	(-0.202531)
	0.1939	0.6646
CCR	(2.412495)	(3.229528)
	0.3403	0.3038
PS	(0.759986)	(1.873397)
	0.6249	0.3306

Source: Author's calculations using E-views 10. Levels of significance denoted *** for 1%, ** for 5% and * for 10%

For panel 1, the pooled OLS model indicates that the effects of inflation (price level) on incoming FDI into the SACU region are significant. Under inflation, if SACU experiences a 1% increase in price levels, FDI will be positively affected by 0.21%. However, when South Africa is excluded, there are no significant variables under the pooled OLS model. For both panels, the CIT rate, governance indicators and openness have the highest coefficients, indicating a much higher impact in value terms on FDI inflows.

However, the pooled OLS model gives a weak relationship ($R^2 = 0.121\ for\ panel\ 1\ and\ R^2 = 0.081\ for\ panel\ 2$) between FDI inflows and the independent variables. The F-statistic for the pooled OLS model for panel 1 is 1.619 (prob-0.141), whereas for panel 2 the F-statistic is 0.808 (prob-0.584) and both are insignificant.

The pooled OLS model assumes that all the SACU countries have the same characteristics – an assumption that cannot be easily verified, considering some of the distinct country characteristics that were presented in the previous chapter. This then makes it difficult to ignore that heterogeneity may exist in the analysis. Heterogeneity here refers to country-specific characteristics that are unobserved, including for example, different macroeconomic conditions amongst these five countries. When these characteristics are ignored across countries, then the estimation camouflages their effects, and they end up in the error term. As such, the error term in the pooled OLS model then violates the assumption of a zero covariance and white noise, as it will contain these country-specific characteristics. The analysis therefore proceeded to apply the FE model to the data set.

5.7 Fixed-Effects Model

Table 5.6 shows the results of the FE regression, which uses the same dependent and independent variables as the pooled OLS for both panel 1 and panel 2, and the main independent variable remains the CIT rate. The results indicate that for panel 1, the CIT tax rate has a negative relationship (coefficient =-6.665) with FDI inflows, which remains insignificant however, as per results of the pooled OLS model. This negative coefficient shows that when the CIT rate is increased by 1%, the level of FDI inflows decreases by 6.67%. Along with the CIT rate, other variables noted to have an insignificant relationship with FDI inflows for panel 1 are GDP growth, inflation and trade openness (although these variables indicate a positive relationship).

Population growth – used as an indication of available market size – has a significant positive association with the level of FDI coming into the SACU region for panel 1. The regression shows that if the population growth increases by 1% (indicating an expansion in the available market size), it is likely to stimulate growth of 2.81% in incoming FDI flows.

Control of corruption and political stability are both significant influencers for FDI, with the control of corruption having a higher coefficient value, after the CIT rate. This implies that a 1% improvement in this country governance index will have a much higher influence in the level of incoming FDI. The control of corruption has a coefficient

of 4.197 (significant at the 10% level), and political stability has a coefficient of 0.840 (also significant at the 10% level). The analysis therefore establishes that, for panel 1 under the FE model, population growth, political stability and control of corruption are the variables that have a substantial influence on the FDI inflows.

Table 5.6: Fixed-Effects Regression Results

Variable	Panel 1	Panel 2
LOGCIT	(-6.664758)	(-12.86774)
	0.1227	**0.0369****
GDP	(0.025178)	(0.165496)
	0.8022	0.2396
INF	(0.065114)	(-0.384059)
	0.6888	0.1103
LOGOP	(1.557307)	(-5.754512)
	0.6300	0.2400
POP	(2.806396)	(1.370628)
	0.0021***	0.2808
CCR	(4.196963)	(4.299353)
	0.0968*	0.2433
PS	(0.839781)	(3.801611)
	0.0831*	**0.0904***

Source: Author's calculations using E-views 10. Levels of significance denoted *** for 1%, ** for 5% and * for 10%

For panel 2, the CIT rate has a significant negative relationship with FDI inflows, with the highest coefficient (-12.868) out of all the independent variables, and significant at the 5% level. This means that for every 1% increase in the CIT rate in these countries, their level of FDI inflows will decrease by 12.87%, which is a significant negative impact.

Unlike in panel 1 where both the governance indicators are significant, for panel 2, only political stability shows a significant positive association with FDI, with a coefficient of 3.802 (significant at the 10% level). Another distinction between the two panels is that inflation and openness have a negative association with FDI in the

smaller SACU countries (panel 2), as opposed to the whole of SACU where the relationship is positive.

The FE model produced estimations that have a slightly better goodness of fit, with an improved $R^2\ of\ 0.579\ for\ panel\ 1\ and\ R^2 = 0.483\ for\ panel\ 2$. The F-statistic for the model for panel 1 is estimated at 2.992 (prob-0.0001), whereas for panel 2 the F-statistic is 1.525 (prob-0.105).

5.8 Diagnostic Tests

The next step of the empirical analysis was to establish a more suitable model for the study between the pooled OLS and FE models. The study used the Wald test to reach the conclusion. The null hypothesis for the test is that all differential intercepts are equal to zero, implying that any differentiating characteristics of the countries in the study are not as important for the analysis. When the test statistic is less than the critical F-value and, or when the probability value of the test statistic is less than 5%, the analysis rejects the pooled OLS, and therefore the FE is selected as the best suiting model instead of pooled OLS.

5.8.1 The Wald Test

The results of the Wald test in Table 5.7 show that the F-statistics for both panel 1 and panel 2 are significant. The F-statistic for panel 1 is significant at the 1% level of confidence, with a p-value of 0.000, and therefore the null hypothesis is rejected for panel 1. Therefore, the FE model was chosen for panel 1, with the results indicating a significant relationship between incoming FDI and the three explanatory variables: population growth, political stability and control of corruption.

On the other hand, for panel 2, the F-statistic (although significant at the 10% level confidence), has a probability value of 0.0728 which is greater than the p-value 0.05, and therefore the null hypothesis cannot be rejected. As such, for panel 2, the pooled OLS model cannot be rejected. However, the pooled OLS for panel 2 indicated no significant relationship between the FDI and the independent variables.

Table 5.7: Results of the Wald Test

	Test Statistic	Probability
Panel 1	26.73008	0.0000***
Panel 2	1.971899	0.0728*

Source: Author's calculations using E-views 10. Levels of significance denoted *** for 1%, ** for 5% and * for 10%

The conclusions about the most suitable model for the panel data analysis therefore are that the FE model is used for drawing conclusions on the study. For the whole of SACU, the distinct country characteristics have to be taken into account. However, for panel 2, after excluding South Africa from the data, the country-specific characteristics of the smaller SACU countries are not as important for the analysis.

Since the FE model was chosen as the most suitable one for the analysis , a further diagnostic test for cross-section dependence was conducted using the Pesaran CD (cross-section dependence) statistic and the result is shown in table 5.8.

Table 5.8: Results for Cross-Section Dependence Test

	Test Statistic	Probability
Panel 1	-3.245375	0.0012
Panel 2	-3.369772	0.0008

Source: Author's calculations using E-views 10. Levels of significance denoted *** for 1%, ** for 5% and * for 10%

The null hypothesis for the test is that there is no cross-section dependence (correlation) in the residuals. Therefore, since the probability values of 0.0012 for panel 1 and 0.0008 for panel 2 are less than 0.05, we reject the null hypothesis, thus implying that the error terms in the model are cross-sectionally correlated. The study then proceeded to run the SUR model which accounts for cross-equation dependence.

5.9 SUR Model Results

The regression results for the SUR model are shown in Table 5.9. The SUR is considered most appropriate when analysing panel data for units that operate in the same environment, but with different factors of concern, and provides more efficient estimates since it accounts for cross-equation dependence. The SUR estimated the five country-specific linear equations jointly in order to account for likely correlation of their error terms across equations. The dependent and independent variables are the same in all five individual equations.

Table 5.9: SUR Model Results

Variable	Panel 1	Panel 2
LOGCIT	-0.224165	-2.218093
	0.7978	0.2432
GDP	-0.047264	-0.069992
	0.3786	0.2704
INF	0.141733	0.250114
	0.0387**	**0.0027*****
LOGOP	5.732409	5.929019
	0.0001***	**0.0003*****
POP	1.654715	1.979972
	0.0111**	**0.0060*****
CCR	2.145938	1.147815
	0.0030***	0.3248
PS	-2.337773	-2.171827
	0.0017***	**0.0471****

Source: Author's calculations using E-views 10. Levels of significance denoted *** for 1%, ** for 5% and * for 10%

For panel 1, the model indicates that the significant variables in influencing FDI inflow are the inflation rate, openness, population growth and control of corruption (all of which have a positive association with FDI inflows), and political stability (which has a negative relationship with FDI inflows). Openness has the highest coefficient of 5.732, implying that the magnitude of its impact is higher compared to the other variables,

followed by the control of corruption with a coefficient of 1.655. This means that a 1% increase in the level of openness, and a 1% increase in effective control of corruption, would result respectively in a 5.7% and a 1.7% increase in the level of incoming FDI, respectively. Political stability, on the other hand, indicates a negative association with FDI, where a 1% improvement in political conditions resulting in a 2.3% decrease in net FDI inflows. The CIT rate had an insignificant relationship with the FDI, along with the GDP growth rate. For panel 1, the results of the SUR model differ from those of the FE model, in that they reveal additional significant variables: inflation and openness.

For the smaller SACU countries in panel 2, the model also indicates a negative association between the main variable of interest, CIT (coefficient of -2.218), similar to the FE model, but it is insignificant on the SUR model. The results indicate that inflation, openness, population growth and political stability have a significant relationship on FDI inflows, in line with the results for panel 1. Openness and population growth have the highest coefficient values of 5.929 and 1.980 respectively, indicating that they have a much higher impact on the dependent variable compared to the other variables.

The Wald test was then used to test for heterogeneity of the coefficients in the SUR model and the results are shown in Table 5.10.

Table 5.10: Wald Test Results for the SUR Model

	Test Statistic	Probability
Panel 1	426.2343	0.0000***
Panel 2	309.5387	0.0000***

Source: Author's calculations using E-views 10. Levels of significance denoted *** for 1%, ** for 5% and * for 10%

As per the results of the Wald test for both panels, the probability value of 0.0000 is less than the p-value of 0.05, and as such, the null hypothesis of homogeneity of the coefficients is rejected. The conclusion is that there is heterogeneity in the coefficients, thus making the SUR model valid for both panels in the panel dataset.

5.10 Summary of the Results

The study covers the period 2000 to 2019, during which each of the SACU member implemented one or more rate cuts to their respective statutory CIT rates. In order to remove South Africa's dominance on the other four SACU member countries (Botswana, Eswatini, Lesotho and Namibia), two panel regression models were run in which panel 1 covers the whole SACU and panel 2 excludes South Africa. The data analysis examined the relationship between FDI inflows and the CIT rate, and other independent variables as control variables, namely: GDP growth, inflation, openness, population growth, control of corruption and political stability.

The study ran the pooled OLS, FE and SUR models on panel data sourced from the World Bank, UNCTAD and various other websites, and conclusions were drawn from the selected models. The Wald test was used to establish the most suitable model for the panel data analysis between the pooled OLS and FE model. For panel 1, the FE model was identified as the better model. This implies that various country-specific characteristics need to be taken into account when conducting the analysis on the data for the whole region. On the other hand, for panel 2 whilst the FE model was significant, the pooled OLS model could not be rejected, implying that in the smaller SACU countries, it is not so important to account for heterogeneity.

The SUR method – considered to be more flexible than the FE model – was conducted to ascertain whether there might be any improvements in analysing the panel data. Notably, for both panel 1 and 2, there were more significant variables in the SUR model in comparison to the FE model.

From the data analysis, the study established that the main variable of interest – the CIT rate – is empirically proven to have a negative bearing on incoming investments into the SACU region. For the FE model this is true for both scenarios (the whole SACU region and the one that excludes South Africa). However, this negative association is not significant at the SACU level, a finding that is consistent with other studies (Benassy-Quere, 2004; Nassution, 2020).

On the other hand, for the smaller SACU member states, the CIT rate cut is proven to be the most significant variable in influencing the level of incoming FDI into these

economies, in line with conclusions from other studies (Sato, 2012; OECD, 2016; Edo *et al*., 2020). This finding validates the argument that South Africa has a notable dominance on the other SACU member states at the regional level, because even though their incoming FDI is collectively significantly related to their CIT rate movements, such an impact becomes insignificant when including the South African economy. The SUR model also yielded similar results where a negative link was established between the CIT rate and FDI inflows, which however was insignificant for both panels.

The SUR model established that the inflation rate and trade openness have a positive and significant relationship with FDI inflows at both the SACU level and when South Africa is excluded. These findings are in line with conclusions from other studies, including Nassution (2020) and Edo *et al.* (2020). On the other hand, both variables were found to have an insignificant relationship with FDI inflows in the FE and pooled OLS models. For panel 1 the link between the variables was positive, whereas for panel 2, both inflation and openness were negatively related to FDI inflows.

Population growth – used as a proxy for available market size – was also established to have a significant impact on the level of incoming FDI for the SACU region by the FE model. This again confirms theoretical arguments and conclusions about market size being one of the major factors investors consider when seeking host countries for their investments (Wolff, 2007; OECD, 2016). The significant relationship is true only for the SACU region as a whole, and when South Africa was excluded, the results became insignificant. This is in line with the fact that, since South Africa is the largest among the SACU member states, incoming investments into the union are likely to consider predominantly South Africa in terms of market size. The SUR model had positive significant relationships for population growth and FDI on both panels.

Governance indicators were also established to have a significant effect on FDI inflows into the SACU region, namely control of corruption (positive) and political stability (negative). In line with other studies such as Nassution (2020) and OECD (2016), SACU governance conditions at a particular point in time play a pivotal role in attracting investors. In a surprising contrast, this study found a negative relationship between political stability and FDI inflows, implying that investors are likely to reduce their investment in the SACU region when political condition improves. In the case of corruption, the findings are as expected: the less corrupt the countries are, the more

investment they are able to attract into the region. These findings are true for the entire SACU region, as well as when South Africa is removed from the panel (as shown in the FE model) and these results are supported by findings from Rodriguez-Pose and Cols (2017).

GDP growth was established to have a positive association with FDI inflows, both at the SACU level and when South Africa is excluded. This relationship is however insignificant, which conflicts with findings from Wolff (2007), Nassution (2020) and Edo *et al.* (2020).

6. CHAPTER 6 - SUMMARY, EXPECTED CONTRIBUTION AND POLICY RECOMMENDATIONS

6.1 Introduction

This chapter provides a summary of the study and the conclusions drawn from the findings. Additionally, the chapter briefly discusses the policy implications and expected contribution of the study. It is structured as follows: Section 6.2 summarises the findings of the study, Section 6.3 discusses the expected contribution of the study, and the policy recommendations are summarised in Section 6.4. The last section highlights possible areas for further research in the subject area.

6.2 Summary of Findings

Research findings on the drivers of FDI in various countries have highlighted a number of factors, with no uniform consensus as to the exact impact of these determinants on FDI inflows. From macroeconomic indicators to institutional arrangements, policies and governance conditions, the existence and significance of the relationship these variables have with FDI vary from one jurisdiction to another.

Corporate taxation has been among the common variables whose impact on FDI has been studied over the years, for country specific cases and country groupings. While the conclusions have differed from one study to the next in terms of the link between the two variables, for the most part, the common argument is that there is a negative association between the CIT rate and incoming FDI. This means that a decrease in the CIT rate is expected to drive up the level of incoming FDI, and vice versa.

In the SACU region, a larger proportion of incoming FDI has been located in South Africa, compared to the other member states (Botswana, Eswatini, Lesotho and Namibia). South Africa has benefitted not only from its larger market size compared to the four smaller member states, but also from other favourable economic conditions, such as infrastructure development, an established financial system, and better opportunities in the mining and minerals sector, among others. The Botswana

economy has also been noted as one of the fastest growing economies in recent years, and continues to promote a variety of investment opportunities, (SACU, 2022).

The whole of the SACU region has been actively pursuing several initiatives to entice investors into investing in the region. In their 2022 SACU Investment Roundtable discussions, each of the SACU countries highlighted strides made over the years in improving their investment climate, including the regulatory space, trade agreements, sound macroeconomic policies, research and development, industry-specific opportunities, and tax incentives, (SACU, 2022). However, empirical evidence from an analysis of the data used in this study indicates that these SACU countries – and indeed, the entire African continent – are still lagging behind compared to other developing and developed economies, in terms of attracting FDI.

The aim of this study was to determine the nature of the relationship between changes in the CIT rate and FDI inflows for the SACU countries, covering the period 2000 to 2019. There were two main objectives of the study:

- To determine and analyse the effect of changes in the CIT rate on FDI inflows in the region;
- To determine and analyse the impact of other control variables (GDP annual growth rate, the inflation rate, population growth rate, openness, political stability and control of corruption) on FDI inflows in the region.

For the empirical analysis, two panel datasets were investigated. The panel 1 dataset consisted of all five SACU member states, and panel 2 excluded South Africa because of its dominance when compared to the other member states. This was done in order to exclude South Africa's outlier effect on the analysis and produce a set of conclusions that would be more directly applicable to the smaller economies. After testing for correlations and unit root, the estimation was done using three regression methods for panel data, namely the pooled OLS model, the FE model, with additional estimation using the SUR model. The results from the empirical analysis indicate that the independent variables have mixed impacts on each of the two estimated panels.

First, a statistically insignificant negative relationship was established between the CIT rate and FDI inflows for the whole of the SACU region, indicating that for the region, changes in the tax rate do not have a significant impact on attracting investing. When South Africa was excluded from the panel, the association between the variables

remained negative, but was also significant, with a much higher impact compared to the other independent variables. This then indicates that whilst as a region, changes in the CIT rate may be insignificant, its role in the smaller SACU states is significant. This further proves that the South African economy dominates the dynamics of the region, particularly in relation to the CIT rate, because of the different result that was observed after it had been excluded from the analysis.

Overall, the negative association between the two variables (CIT and FDI) is in line with the general argument – which has been confirmed by several other studies (see Chapter 5) – namely that the lower the tax rate, the more attracted investors will be to invest in a host country.

Second, even though the selected FE model indicate an insignificant relationship between FDI and the inflation rate and openness, the SUR model indicates a positive and significant association between those two variables and FDI inflows. This means that in both the SACU region as a whole, and for the smaller member states, higher prices and more openness in these economies to the rest of the world, imply that more investments would flow in. Other studies (see Chapter 5), however, have established a negative link between levels of inflation and FDI inflows.

Population growth was established as another variable that has a significant positive impact on FDI inflows in the whole of the SACU, particularly driven by the influence of the South African economy. The SUR model also established a similar association for the smaller SACU countries. The World Bank governance indicators: political stability and control of corruption were also established to have a significant relationship with the level of incoming FDI, for both panels.

Lastly, the GDP growth rate was established to have an insignificant positive relationship with FDI inflows into the SACU countries, under both scenarios. These findings are contradictory to conclusions from some other case studies where this association turned out to be significant.

6.3 Contribution of the Study

The findings from the study provide empirical evidence to support policy decisions in the SACU region. Even though research studying the link between FDI and the CIT

rate has been undertaken on selected African countries – and even on some economic blocks of the continent – according to the best knowledge of the researcher, this is the first such study to focus on the SACU region alone.

Most studies investigating the SACU region end up drawing conclusions for the South African economy alone, due to its size relative to the other member states. Therefore, this study provided a remedy by means of estimating two panels, one of which excluded South Africa, due to its dominance. As such, separate conclusions were drawn that are relevant to not only the entire region, but also to the smaller states on their own.

The study has established the economic and governance factors that significantly influence the level of incoming FDI into the region, which will make valuable input into future policy discussions. Lower corporate tax rates have been the subject of policy discussions in recent years, where an already fragile investment climate was exacerbated by the COVID-19 pandemic. This adversely affected the prospects of economies – particularly those in developing countries – to attract investment. As such, the findings of this study provide a suitable opportunity to support evidence-based policy decision making.

6.4 Policy Recommendations

Based on the conclusions drawn from the empirical analysis, this study recommends the following policy considerations for SACU countries:

- Policies on attracting FDI should go beyond the taxation space and the countries should pursue initiatives to promote effective governance and political stability. The results of the study have further supported arguments that good governance is critical in encouraging incoming FDI into economies.
- Corruption in African countries has been known to erode investors' trust in African governments – the more that countries control corruption, the higher will be the FDI inflows into their economies. Therefore, the SACU countries need to pursue strategies to directly combat levels of corruption.
- The significance of lower tax rates has been established for the smaller SACU economies. They are thus encouraged to pursue lower CIT rates, however with

caution, so as to maintain a proper fiscal balance between revenue collection and attracting investment.

- A wider range of taxation incentives is recommended at the SACU level, considering that the CIT rate in itself is insignificant. These include strengthening other incentives, such as sector-specific advantages for crucial economic sectors, among others.

6.5 Areas for Further Research

The study has been able to draw important conclusions about the relationship between the CIT rate and FDI inflows into the SACU region. Nevertheless, there may be further initiatives that could be investigated in future research studies. Due to limitations in obtaining data covering the study period, this study could not include several other important variables that have been identified in the literature as being crucial in attracting FDI. Therefore, future studies should include variables such as competitiveness, labour costs and productivity, infrastructure, education levels, and regulatory policies as more data becomes available. This would strengthen the estimation models and result in improved conclusions.

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APPENDIX A: GRAPHICAL PRESENTATION OF ALL VARIABLES

Figure 7.1: Net FDI inflows as a percentage of GDP

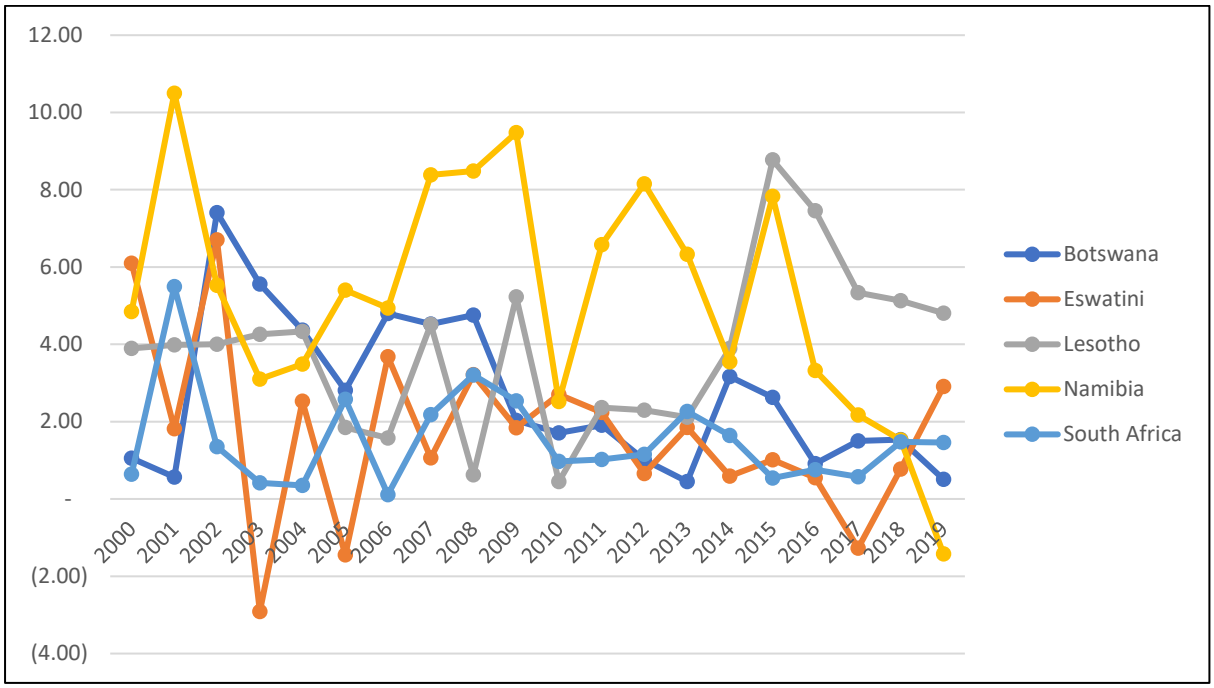

Figure 7.2: Statutory CIT Rates

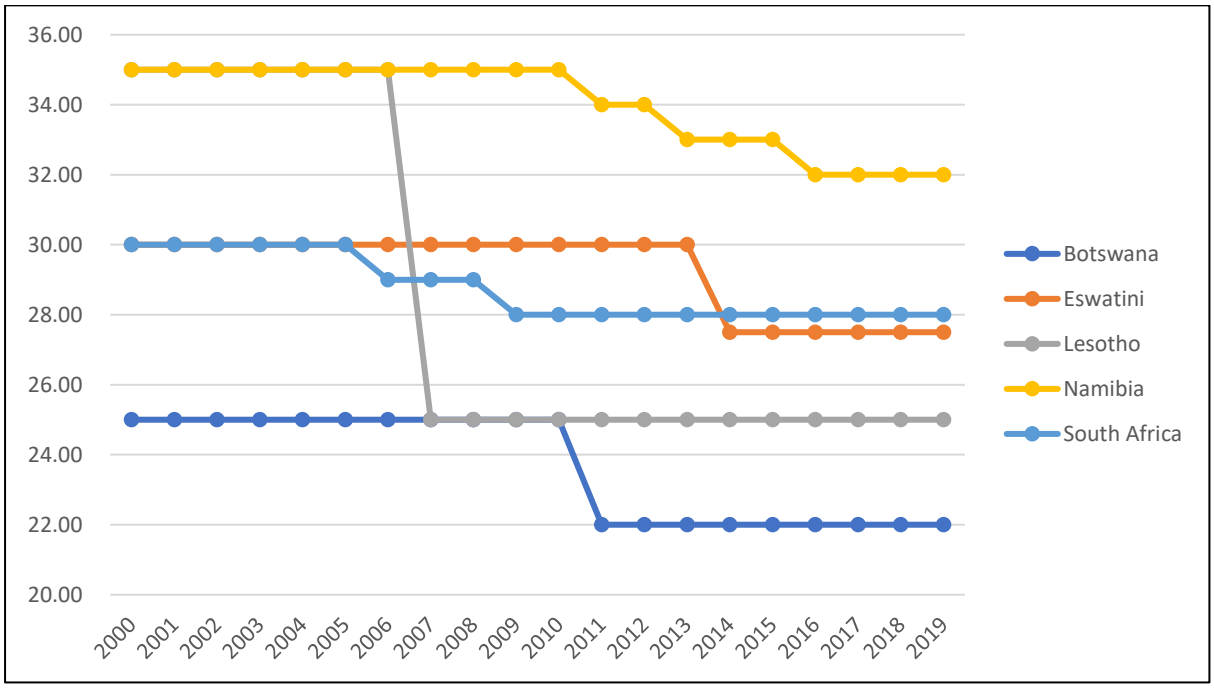

Figure 7.3: Annual Real GDP Growth Rates

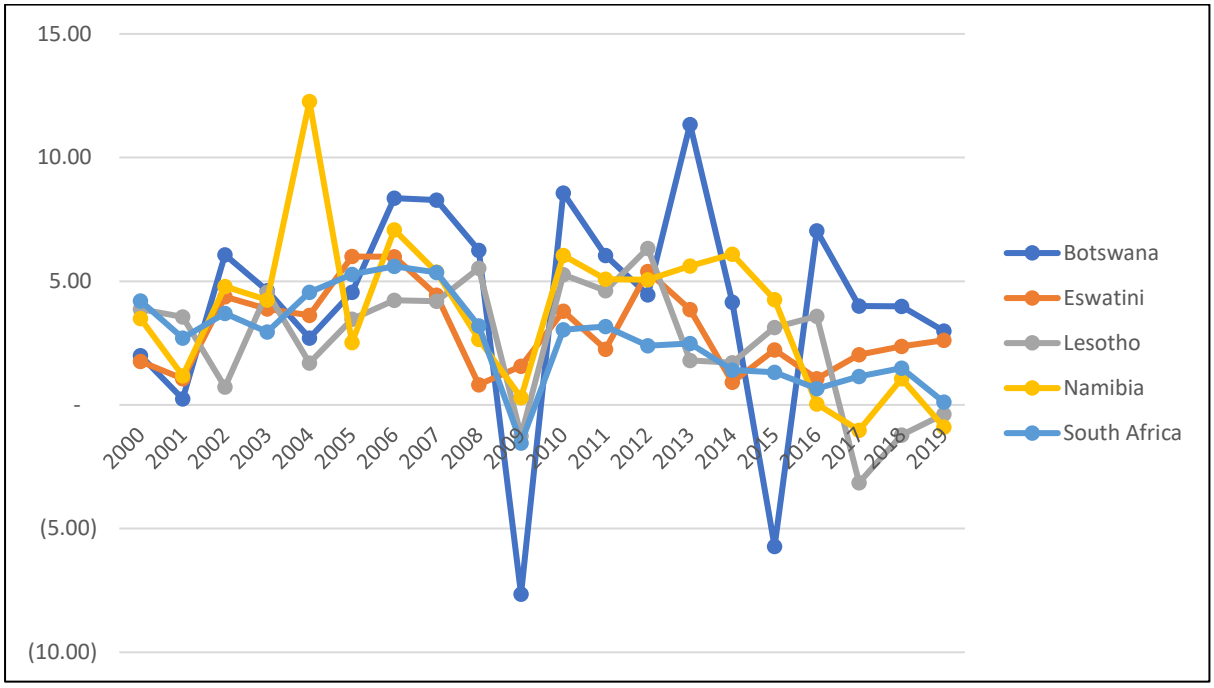

Figure 7.4: Annual Inflation Rates

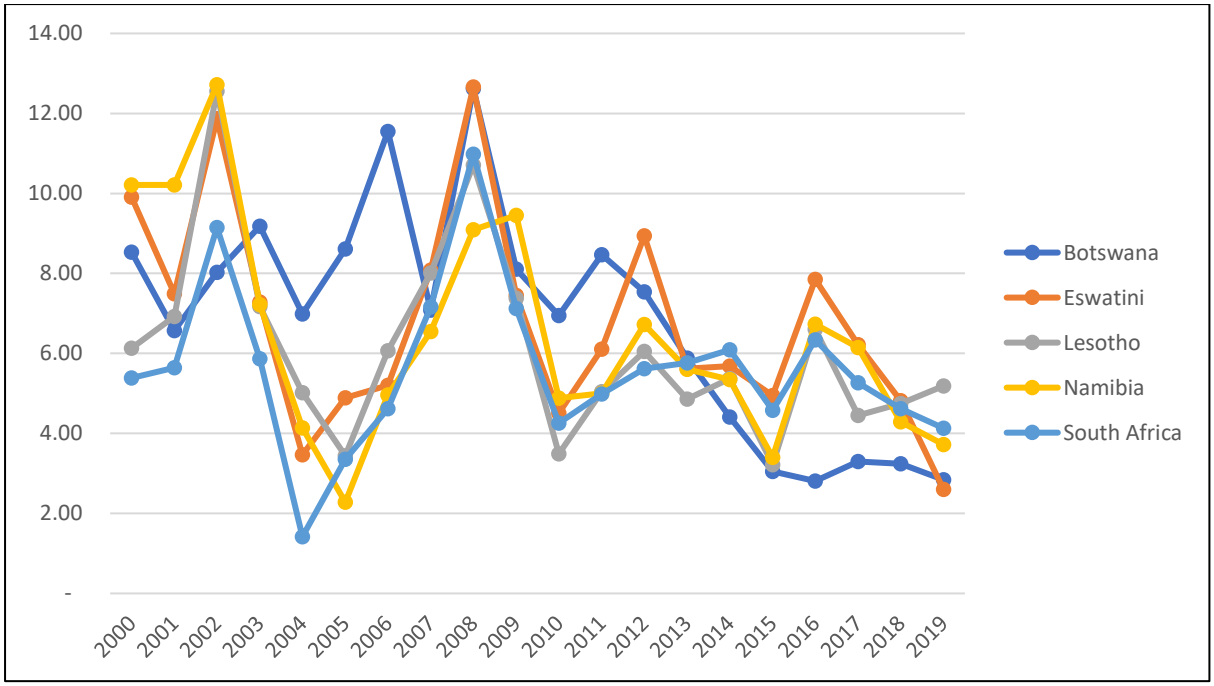

Figure 7.5: Trade Openness

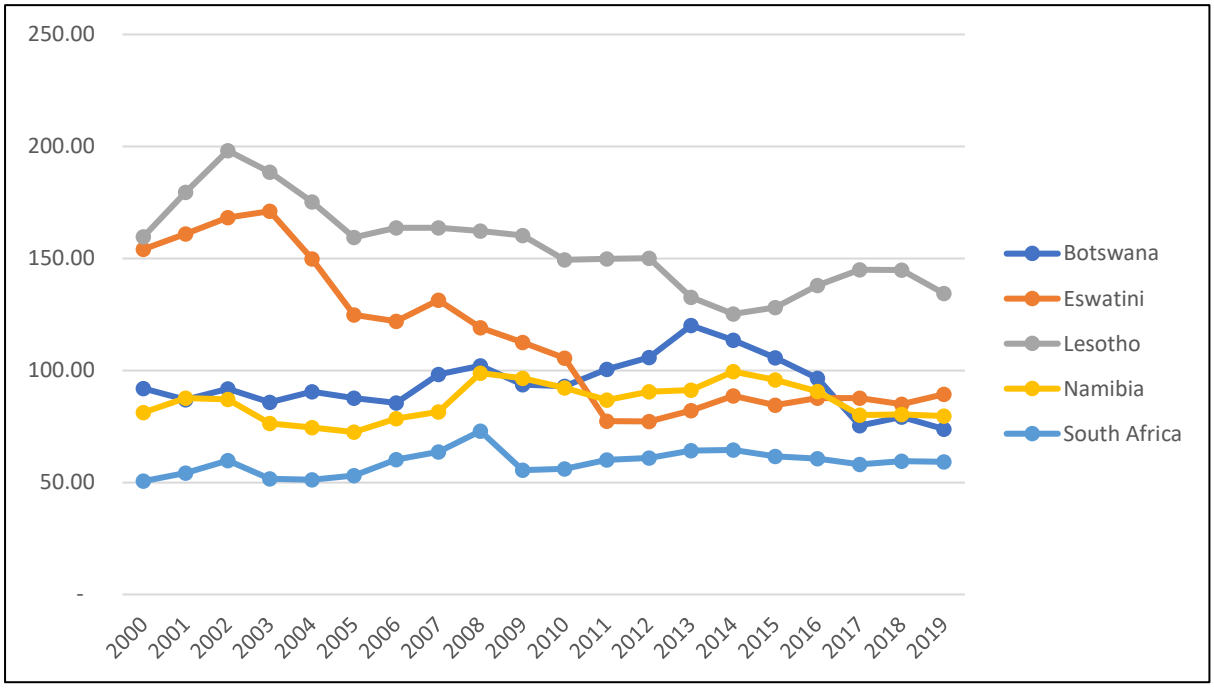

Figure 7.6: Annual Population Growth

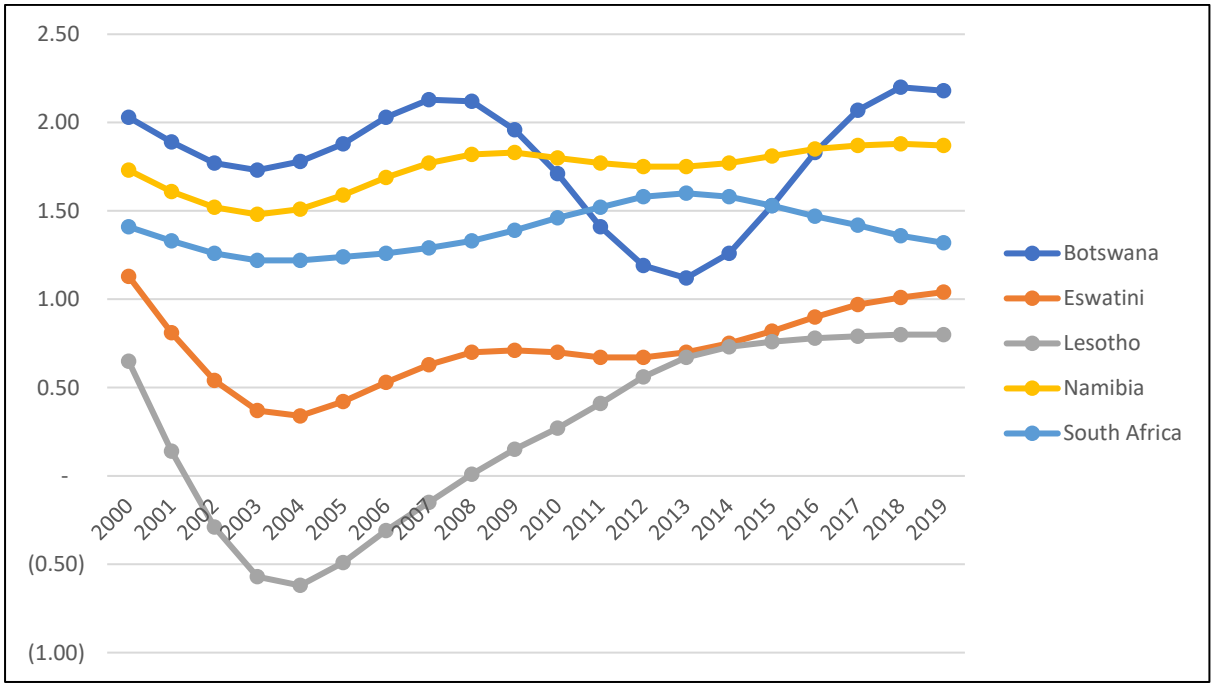

Figure 7.7: Government Effectiveness Index

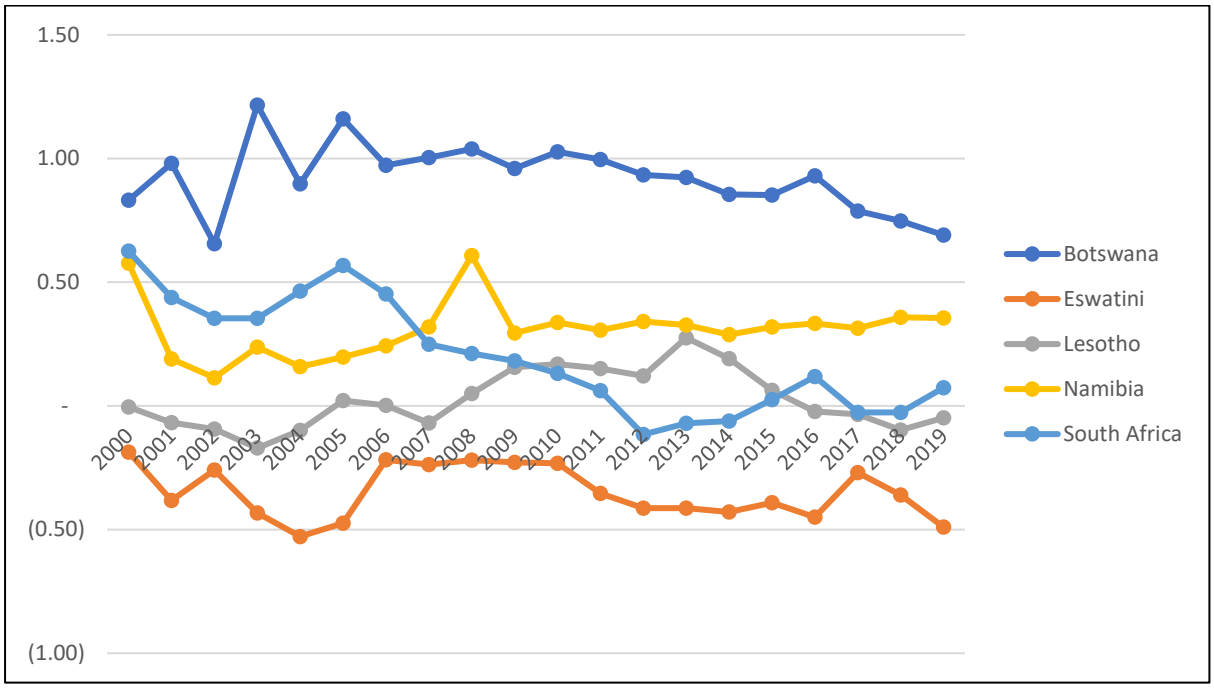

Figure 7.8: Control of Corruption Index

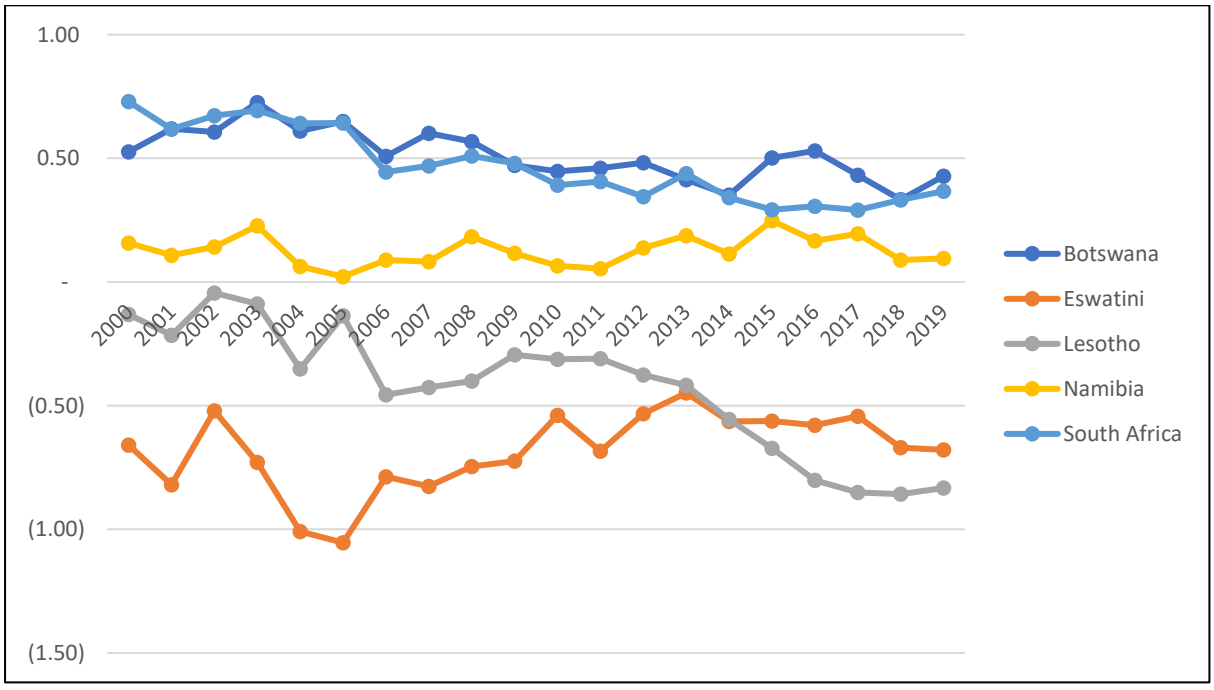

Figure 7.9: Political Stability Index