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# Effects of Financial Integration on Financial Development and Economic Performance of the SACU Countries[♣]

By

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Abstract

*This paper examines the effects of financial integration on financial development and economic performance of the SACU countries within a country-specific framework. The paper employs four measures of financial integration, two measures of financial development and real per capita output and annual time series from 1970 to 2004 for the analysis. The econometric analyses were carried out using the Johansen cointegration and error correction modelling techniques. The effects of financial integration were mixed, but what is apparent is that countries that are more integrated to South Africa produce more discernible evidence of positive effects of financial integration. The paper attributes the weak gains from the official integration arrangement to weak institutional and structural impediments in the countries.*

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## 1. Introduction

Internationally, there is a growing interest in regional and global financial integration of which developing African countries are not left out. Economic theory suggests that financial integration promotes economic growth and enhances welfare by providing opportunities for more efficient allocation of resources, portfolio and risk diversification and allowing higher profitability of investment, as well as by helping to promote domestic financial development, especially in developing countries (see World Bank 1997, Obstfeld 1998, Agenor 2003, Gourinchas and Jeanne 2003, Prasad, Rogoff, Wei and Kose 2004, Obstfeld and Taylor 2004, Klein 2005). However, the question of whether financial integration truly benefits developing countries and if it does, under what conditions, has been hotly debated without any consensus till date. While several authors (see for Agenor 2003, De Gregorio, 1998, Lane and Milesi-Ferretti 2003, Obstfeld and Taylor 2004) and some international institutions such as the IMF and the World Bank (Demirguc-Kunt and Levine 1996, World Bank 1997, Nissanke and Stein 2003:289) present arguments that favours a positive influence of financial integration, others did not.

Critics even include prominent mainstream economists, such as Jagdish Bhagwati, who strongly favoured free trade in goods and services, but argued that the risks of global financial integration outweigh the benefits. In an influential article published in *Foreign Affairs* in 1998, Bhagwati argued that the 'claims of enormous benefits from free capital mobility are not persuasive' and added that the 'substantial gains (from capital account liberalization) have been asserted, not demonstrated' (p.7). Other critics include influential economists such as Lord Eatwell and Dani Rodrik.

Eatwell (1997:2) as quoted in Obstfeld and Taylor (2004:4), contends that, since the 1960s, free international capital flows have been associated with a deterioration in economic efficiency (as measured by growth and unemployment). In like manner, Rodrik (1999:30) noted that "openness to international capital flows can be especially dangerous if the appropriate controls, regulatory apparatus and macroeconomic frameworks are not in place". Also, commenting on the subject after a review of the issues, the then Chief Economist and Director of Research for the IMF, Kenneth Rogoff, noted that "these days everyone agrees that a more eclectic approach to capital account liberalization is required" (Rogoff, 2002:55).

On empirical research front, the controversy remains since the studies obtained mixed results. While some studies find support for a positive effect of financial integration, others could not and even in some cases a significant negative effects were obtained. In addition, known

previous studies on the subject employ cross-sectional and panel framework in which developed and developing countries are grouped together in the analyses (e.g. Quinn 1997, Kraay 1998, Rodrik 1998; Klein and Olivei 1999, Edwards 2001, Reisen and Soto, 2001, Edison et al, 2002, Klein 2003). Even in studies where some attempts were made to differentiate between developed and developing countries, in such studies, the results obtained are still a broad generalisation about the effects of financial integration in developing countries. Given the differences in the level of institutional development, economic performance, and political environment among developing countries, such generalisation may not apply to any specific country.

Very important too, the cross-section/ panel data frameworks have another limitation, in that they cannot be used to determine the causal link between financial integration and economic performance of countries involve since the possibility of differences in causality pattern across countries is likely. Arestis and Demetriades (1996), for instance, have provided evidence that shows that the causal link between finance and growth is crucially determined by the nature and operation of the financial institutions and policies pursued in each country.

Against the backdrop of the controversies surrounding the effects of financial integration and the limitations of previous studies, this study analyses the effects of financial integration among the Southern African Customs Union (SACU) countries – Botswana, Lesotho, Namibia, South Africa and Swaziland. The focus on these developing countries in Africa is particularly necessary because many of the theoretical arguments are centred on the advantages of the integration to developing countries, especially in Africa.

With regard to the SACU countries, there has existed a long history of official integration arrangements such as the Common Monetary Area (CMA) comprising of South Africa, Lesotho, Namibia and Swaziland - while Botswana may be regarded as a *de facto* member. Studies such as Aziakpono (2006 a and b), Sander and Kleimeier (2006) and Nielsen, et al. (2005) have shown that by virtue of the official financial integration arrangements, the financial systems in the SACU countries are highly integrated, particularly, that those of the other SACU countries (Botswana, Lesotho, Namibia and Swaziland - BLNS) are integrated with that of South Africa, with the degree of their integration varying from one country to the other. This, as theory suggests, should provide opportunities for risk-sharing, domestic financial system development and economic growth. However, there is still a wide disparity in the level of development of their financial systems and their economic performance between South Africa and the other four countries and between each other. Thus, investigating the effects of financial integration among

the SACU countries should not only serve to confirm whether or not financial integration has worked in the manner that its advocates or critics claimed it would, but also would help to provide useful insight into possible pitfalls that must be avoided by developing countries that are in the process of forming a regional integration, for them to derive the desired gains from such integration arrangements.

The specific objectives of the current study are: to investigate, using different indicators, whether financial integration has truly stimulated domestic financial development and economic growth among the SACU countries or not; and to determine whether countries that are more integrated with South Africa benefit more from integration than those that are not.

The empirical analysis employs the co-integration and error correction techniques using the Johansen approach to estimate the models for each country in a country-specific spirit. This method is further used to explore the causal relationship between financial development, integration and output and, at the same time to overcome the problem of spurious regression that may arise when the series are not stationary.

The rest of the paper is organized as follows: Section two reviews the conceptual and measurement issues; Section three presents the analytical framework for the study, Section four presents the results and Section five concludes the argument.

## 2. Conceptual and measurement issues

In order to put the discussions that follow in perspective, this section presents a conceptual definition and measurement of financial integration.

### *2.1. Financial Integration: definition*

The international finance and economic literature does not offer a unique definition of financial integration. Terms such as financial openness, external financial liberalization, financial globalization and capital account liberalization and the like have also been used in connection to financial integration, especially in the empirical literature, where they are often measured in the same way. Edison *et al.* (2002) refer to international financial integration as "the degree to which an economy does not restrict cross-border financial transactions". Schmukler and Zoido-Lobaton (2001) define financial globalization as the integration of a country's local financial system with international financial markets and institutions. In addition, it was recognized that this integration typically requires liberalization of the domestic financial sector as well as the capital account. Thus, according to them, integration takes place when liberalized economies experience an increase in cross-country capital movement, including active participation by local borrowers

and lenders in international markets and a widespread use of international financial intermediaries.

According to Prasad *et al.* (2003:4) financial globalization and financial integration are different concepts. In their view, while financial globalization is an aggregate term that refers to global linkages through cross-border financial flows, financial integration refers to an individual country's linkages to international financial markets. They however argue that the two terms are closely related, in that increasing financial globalization is closely associated with rising financial integration on average. Hence, the authors use the two terms interchangeably. Moreover, Prasad *et al.* (2003:7) differentiate between *de jure* and *de facto* financial integration. According to the authors, *de jure* financial integration represents policies associated with capital account liberalization, while *de facto* financial integration represents actual capital flows. They note that *de facto* financial integration is not a variable that a country's government can easily regulate. For instance, they argue that in practice even though a country may have tight capital controls on paper, the degree of *de facto* financial integration might still be high, if such controls can be easily evaded. On the other hand, some countries (especially in Africa) may have few formal restrictions on capital account transactions, but have not experienced significant capital flows; hence they have low *de facto* financial integration.

Held *et al.* (1999:189) contend that financial integration represents strictly the "extent to which the prices of, and returns to, assets are equalized between different national financial markets". This view is also held by Adam *et al.* (2002:4), who state that "financial markets are integrated when the law of one price holds". According to them, assets generating identical cash flows should command the same returns, regardless of the domicile of the issuer and of the asset holder, if the markets are integrated.

The different views about financial integration in the literature can generally be grouped into those who emphasis the degree to which the prerequisites for financial integration are fulfilled and those who view integration in terms of the consequences or integration outcomes.

A common precondition for financial integration is the removal of any administrative and market-based restrictions on capital movement across borders and the removal of regulatory, legal and tax discrimination between foreign and domestic suppliers of financial services (Von Furstenberg, 1998 and Brahmbhatt, 1998). While some of these barriers may be obvious (capital control or restrictions on entry of foreign banks), others are more subtle, 'behind-the-border' barriers that can derive from differences in national regulatory systems, licensing of service

providers or government procurement practices that discriminate against foreign suppliers (Brahmbhatt, 1998). A classical example is when governments require all its agencies to hold their bank accounts only with domestic banks.

The removal of these regulatory and administrative impediments, that is, financial openness or external financial liberalization, allows: residents to move their funds and to hold financial assets abroad; private firms to borrow freely in foreign financial markets; residents to make financial transactions in foreign currencies; as well as non-residents to invest freely in domestic markets (Esen, 2000:5). Thus capital account liberalisation or financial openness leads to international capital mobility (see for instance, Edison *et al*. 2002:2-3).

However, the free movement of capital may not always imply financial integration, which is much more difficult to achieve than international capital mobility. This point is illustrated in Prasad *et al.* (2004:9), who, as noted above, distinguish between *de jure* and *de facto* financial integration. The *de jure* integration focuses on the degree of capital account restrictions or restriction on capital flows, while the *de facto* integration captures the 'realized capital flows'. Based on these classifications, the authors identify four possible outcomes. Firstly, drawing from the experience of industrialized countries, the authors observe that the removal of restrictions on capital flows could lead to a high level of actual capital flows. Secondly, the authors, citing the experience from some developing countries (Latin American countries in the 1970s and 1980s), indicate that capital account restriction may be ineffective in controlling actual capital flows. This may occur, for instance, in the event of capital flight that could result in 'involuntary *de facto* financial integration' in economies that are *de jure* closed to financial flows, i.e. 'integration without capital account liberalization'. The third scenario is termed 'liberalization without integration', a situation in which countries (such as some African countries) have few capital account restrictions, but experience very low levels of capital flows. Finally, it is possible to find a situation in which countries with closed capital accounts are also effectively closed in terms of capital flows. Thus, as noted earlier, the removal of legal restrictions on cross-border capital flows is insufficient to achieve financial integration.

Financial integration also requires freedom to trade in financial services through both cross-border provisions and foreign establishments (von Furstenberg 1998:55). Financial integration thus entails more than just the freedom of individuals or firms (both domestic and foreign) to move their funds across-borders and to make transactions in foreign currencies; it also involves the cross border penetrations of financial institutions themselves. Such foreign

involvement in a country's intermediation and financial system can help to bring a country's financial development up to international standards and help mobilize domestic savings. This, as noted by von Furstenberg (1998:55), can contribute to international financial integration without appreciable net international flows of capital being associated with a particular activity or their sum total. Thus, while restrictions to cross-border capital movements could prevent financial integration, elimination of such restrictions is not sufficient to achieve it.

Von Furstenberg (1998:57) also identifies institutional prerequisites that range from the introduction of standardized, internationally tradable financial products and of quotations and trading systems to the development of international conventions, as well as the adoption of mutually recognized regulatory, supervisory, large-value transfer and final-settlement practices. Some of these systems and standards can result from private laws and industry protocols, while others call for the direct involvement of governments and their international agents (see von Furstenberg, 1998:57 for an account of the evolution of some of these systems).

Prasad *et al.* (2003:10) also recognize good macroeconomic policies and good domestic governance (which includes transparency of government operations and a low level of corruption) as important factors in investment flows from international mutual funds. In addition, the existence of mutual confidence and the ability to form reputation capital and charter value to provide a firm basis for trust in the suppliers' financial services and in the appropriateness of their incentives are essential.

Other institutional prerequisites include the existence of a transparent and efficient legal system and quality law enforcement as well as respect for property rights and good accounting standards.

The foregoing shows that financial integration depends on the degree to which the prerequisites for financial integration (such as removal of all legal restrictions on capital flows, the prevalence of enabling institutional and macroeconomic policy environments, good domestic governance and a developed domestic financial system) are fulfilled. The attainment of this will be manifested in different ways. This brings us to the next aspect of financial integration, the outcomes of integration.

The outcome-based views of financial integration focus either on quantities, such as volumes of international capital flows, the correlation between savings and investments or on prices, for example the prices of financial service/product or yield on assets. Some of these will be discussed under measures of financial integration below.

In sum, the foregoing shows that the removal of legal barriers to capital mobility may not instantaneously result in financial integration, instead, financial integration will gradually result from an organized process requiring many formal and practical elements of institutionalization and a system of rules which allows international financial markets to develop and to function both competitively and securely. When a country implements capital account liberalization by removing any existing administrative and market-based restrictions on capital movement across borders and barriers to entry of foreign financial institutions, this sets in motion the process of financial integration. Gradually, the country's financial market structure and products may become similar to the international markets. As other enabling environments emerge, the domestic financial markets may gradually become part of the world market, synchronizing interest rate movements, saving and investment activities, and the accumulation of physical capital stocks (Le, 2000:4). With full integration, domestic interest rates become exogenous (determined outside the economy) in a small open economy, and households' choices between consumption/saving and investment become completely separated.

Since countries around the world can hardly fulfil the entire necessary preconditions stated above, it is not expected that most countries will have full financial integration; instead financial integration will exist in a continuum – from those that have very low to those with a high level of financial integration.

Next we consider some of the measures of financial integration.

### *2.2 Measuring Financial Integration*

Measuring financial integration is as difficult as defining it. In practice different measures of financial integration have been proposed and used to determine the degree of financial integration among countries. The measures can generally be grouped into two kinds: the rule-based or *de jure* measures (focusing on prerequisites for integrations) and quantity-based measures that are based on integration outcomes. Here we provide a selective review of some of the measures of financial integration, beginning with rule-based measures and followed by outcome measures.

#### *Rule-based Measures*

#### *IMF-Restriction measure*

The most commonly used rule-based measure of financial integration is based on the International Monetary Fund's *Annual Report on Exchange Arrangements and Exchange*

*Restrictions* (AREAER). AREAER includes a summary table in which a row (line E.2 titled 'Restriction on payments for capital transaction') contains annual information on capital control for different countries for the period between 1966 and 1996. From 1997, the report expanded the set of items that reflect the presence of capital controls to include 13 categories, including for the first time a distinction between restriction on inflows and restrictions on outflows that in turn introduce a structural break to the measure. Because of this break in the measure, most authors use it only for the earlier period – 1966 to 1996 (see for instance Edison *et al*. 2002:6 and Eichengreen and Leblang, 2003)

The IMF-restriction measure classifies countries on an annual basis by the presence or absence of restrictions, hence it is a zero-one dummy variable. The measure equals one in years where there are restrictions on capital account transactions and zero in years where there are no restrictions on transactions (Edison *et al*. 2002:6). In practice, the measure has been used in slightly different ways to measure the level of financial openness (integration). For instance several authors (e.g. Grilli and Milesi-Ferretti, 1995; Rodrik, 1998 and Klein and Olivei, 2001) used the average of the measure for the entire period, in this case, the higher the value the more the restrictions and thus less openness.

Another variation of the measure is referred to as *Share* in Edison *et al.* (2003:6). *Share* is a variable that reflects the proportion of years in which countries had liberalized capital accounts. For instance, if, out of 10 years, the IMF AREAER indicates capital accounts were restricted in 5 years, then the *Share* would be 0.5. See for instance Grilli and Milesi-Ferretti (1995); Rodrik (1998) and Klein and Olivei (2001).

An advantage of this method, as pointed out by Edison *et al*. (2002:2), is that it is a direct proxy for government impediments. However, as noted by the same authors, it is difficult to use the measure to accurately gauge the magnitude and effectiveness of government restrictions. In other words, the IMF restriction measure does not distinguish between strongly administered capital controls and those that are somewhat more porous (Edison *et al*. 2003:7). Besides, the indicator measures controls on residents, rather than non-residents (Kraay, 1998:5). An added difficulty with the use of the measure relates to the structural break in the measure since 1997 because of the change from one entry to 13 entries that cannot easily be mapped onto each other. This means that the measure is only available until 1995. Thus any analysis of financial integration post 1997 cannot make use of the measure.

An attempt to overcome one of the weaknesses of the IMF-restriction indicator, namely, its inability to distinguish between different intensities of capital restrictions, was made by Montiel and Reinhart (1999). Combining the IMF and country-specific information, the authors constructed an index of capital control intensity in 15 countries for the period 1990-1996. Their index takes three values, 0, 1 or 2 to indicate a closed to an open capital account in that order. Despite the improvement over the IMF indicators, as noted by Edward (2001:7), the index remains very general and does not capture the subtleties of actual capital restrictions.

***Quinn's Measure***

Quinn's (1997) measure represents a major improvement on the IMF-restriction measure by trying to capture the intensity of enforcement of controls on both the capital and current account transactions. The author constructed the index for 64 countries (including only South Africa in the SACU) from 1958 to 1990. Based on the IMF's narrative description of capital account restrictions, Quinn assigned scores to gauge the intensity of capital restrictions. For inward and outward capital account transactions, the author scored the countries on a scale of 0-4; while for current account transactions a scale of 0-8 was used. These were combined to form a 0-12 score, ranging from most closed (0) to most open (12) economy. In addition, Quinn added another dimension for 'international legal agreements that constrain a nation's ability to restrict exchange and capital flows; its scoring was 0, 0.5, 1, 1.5, or 2, ranging from not at all to very constrained' (p.535). Combining the latter with the former, Quinn obtained a 0-14 measure of financial openness. This was further used to generate a measure of change in international financial regulation by taking the first difference of financial openness index. Similarly, Quinn generated a measure of capital account liberalization by taking the first difference of the scoring for the capital account transactions.

Unlike the IMF-restriction measure, the Quinn measure provides information about the magnitude of restrictions, rather than simply classifying countries as closed or open (Edison *et al.* 2002:7), but, like the IMF-restriction measure, it also directly represents government impediments. Since the index was computed for a different period, it makes it easy to investigate the effects of capital account liberalization on economic growth. The measure, however, is plagued by many problems. First, as noted by Edison *et al.* (2002:2), the measure does not accurately gauge the magnitude and effectiveness of government restrictions. Besides it is highly subjective in that the scores assigned, based on the narrative descriptions, depend on the

researcher's opinion. In addition, the measure is rarely available for non-OECD countries, which limits its application to developing countries and for more recent years.

Lee and Jayadev (2005), using the same methods as Quinn (1997), constructed a similar indicator for the period 1973–1995, which represents a major update of the index and for a larger number of countries.

***Outcome-based measures***

We consider price-based measures and quantity-based measures.

***Price-based measures***

Price-based measures of financial integration seek to equate rates of return or prices of similar assets or financial products or services across different economies. Such measures are based on the premise that, in a highly integrated financial market, the law of one price should hold. Under the assumption that there is free movement of capital and low or no transaction costs, the law of one price implies that similar assets should yield the same return irrespective of the country of domicile and the currency in which they are denominated. In what follows attention is focused on the two main aspects of price-based measures, namely, interest parity or arbitrage conditions and bank charges.

Arbitrage conditions seek to equate rates of similar financial assets across different countries. The literature on arbitrage conditions uses the extent of equality of interest rates to measure the degree or intensity of financial integration (see for instance, Cheung, Chinn and Fujii, 2002). The different interest rate parity conditions include: covered interest parity (CIP), uncovered interest parity (UIP), real interest parity (RIP) and closed interest parity (CLIP)[1]. A comparison of the different parity conditions shows that the CLIP and CIP are narrower concepts and more often hold, especially for the industrialized countries, than the other two (von Furstenberg 1998:65). UIP and RIP are much broader concepts and often hold only in the long run.

Another price measure of financial integration uses the differential in financial services prices, such as bank charges (Adam *et al*. 2002:6). Increased competition because of the entrance of foreign banks and the ability of domestic residents to access funds from abroad should reduce the differentials in banks' charges for similar products or services (such as credit cards, ATM cash withdrawals, stop orders) across integrating countries. Thus, in an integrated financial system, the differential in charges across countries should be close to zero.

[1] See von Furstenberg (1998) and Cheung, Chinn and Fujii (2002) for a description.

***Quantity-based measures***

The traditional quantity-based outcome measures of financial integration involve the use of the investment-savings correlation and consumption correlation, as well as the volume of capital flows across countries.

*Investment-Savings correlation*

The investment-savings (I-S) view of financial integration posits that in full financial integration, domestic investment should be largely independent of domestic savings, since the former can be financed from foreign saving. The view is based on the effects financial integration has on the relationship between private saving and corporate investment. The I-S correlation measure of financial integration is closely linked to the interest parity conditions discussed above; the I-S correlation argument can only hold for financial integration if domestic interest rates are equal to the world interest rate. Both the I-S and the interest parity conditions assume complete arbitrage in a perfect world capital market (Feldstein and Horioka, 1980:317).

Feldstein and Horioka (1980) pioneered this line of research. They argued that "with perfect world capital mobility, there should be no relation between domestic saving and domestic investment: saving in each country responds to the worldwide opportunities for investment while investment in that country is financed by the worldwide pool of capital. Conversely, if incremental saving tends to be invested in the country of origin, differences among countries in investment rates should correspond closely to differences in saving rates" (p.317). Thus, large correlations between national saving and investment would indicate strong segmentation of financial markets in the world or the region concerned. However, since the I-S correlations focuses on aggregate saving and investment within an economy, the approach does not identify which of the financial markets are insufficiently integrated and cause the correlations to be high (Adam *et al.* 2002:9). Similarly, in the case of regional financial integration, the approach does not differentiate between capital flow within the integrating region and the rest of the world. Another weakness of the I-S approach is shown in the empirical literature reviewed by von Furstenberg (1998:72). The empirical investment-saving correlations yield measures without theory that defy substantive interpretation. For instance, as noted by von Furstenberg (1998:72): "they cannot be made to speak to the issue of international financial integration in a way that relates to optimal intertemporal consumption smoothing or to any other welfare-relevant results that might be deduced from worldwide financial integration".

*Consumption correlation*

The consumption correlation view of financial integration relies on consumer choices based on the idea that the integration of financial markets allows for international risk sharing. It assumes that the time preference rates and the relative degree of risk aversion of consumers are the same in all the countries, as well as international real-interest parity conditions at any level of national indebtedness (von Furstenberg, 1998:73). In addition, all risk-sharing opportunities are fully exploited by the consumers (Adam *et al*. 2002: 10). In the strength of these assumptions full financial integration would imply the convergence of the growth in *per capita* consumption of all the integrating nations (Bayoumi and MacDonald, 1995: 557). In other words, if per capita rates of consumption growth differ significantly between countries, then real interest rates are not the same and the capital markets are not integrated between the countries (von Furstenberg, 1998:73).

In comparison with Feldstein and Horioka's investment-saving correlation approach, the consumption correlation approach is capable of distinguishing between the contributions of different financial markets (Adam *et al.* 2002: 10).

*Capital flows across countries*

The use of the volume of capital flows across countries as a measure of financial integration has become very common in the finance literature (e.g. Kraay, 1998; Held, *et al.* 1999; Edison, *et al.* 2002; Lane and Milesi-Ferretti, 2002 and Prasad *et al.* 2004). Two groups of capital flow measures of financial integration are commonly used. The first group is based on the assets and liabilities of the national banking sector (deposit money banks). These sets of indicators try to measure the extent of home bias of the domestic banking sector. Adam *et al.* (2002:20) argue that the home bias should disappear when financial markets are perfectly integrated. If the banks' assets and liabilities are largely domestic, then they are home biased, hence less integration. We refer to the first indicator in this category as FIA, which expresses foreign assets as a ratio of the total assets of national the banking sector. A second indicator is FIL, which is the ratio of national banking sector foreign liabilities to total liabilities. The third indicator in this group is FIT, which is the ratio of the sum of foreign assets and liabilities to the sum of total assets and liabilities of the banking sector. Lastly, the sum of the foreign assets and liabilities is expressed as a percentage of GDP and it is represented as IFIA. It would have been more rewarding to use the actual assets and liabilities flows across the SACU countries in the computations. However, the lack of data on cross-country capital flows among SACU countries constrained us to use the aggregate flows reported in International Monetary Fund (IMF)

International Financial Statistics (IFS). Thus, the integration captured in these measures represents integration with the rest of the world and not just with member states.

The second group also provides broad measures of financial integration and is based on a nation's flows of foreign assets and liabilities, as reported in IMF IFS under the international liquidity positions. The indicators follow the notion that, with financial openness, the ability of both (1) foreigners to invest in a country and (2) residents to invest abroad will increase. Some of the indicators based on this notion of financial integration are: the ratio of flows of foreign assets to GDP and the ratio of flows of foreign liabilities to GDP, the ratio of the sum of foreign assets and liabilities to GDP (or total foreign trade -import plus export). Components of capital flows such as FDI and portfolio inflows and outflows as a share of GDP have also been used as measures of financial integration (Edison *et al.* 2002 and Held *et al.*1999)). Schmukler and Zoido-Lobaton (2001) further grouped capital flows into two categories, namely, public flows, which refer to official development assistance and aid, and private capital flows, which consist of private debt and non-debt flows. Data limitation prevented us from using this second group of indicators in our analysis.

## 3. Analytical framework and Econometric procedure

Our task here is to choose an appropriate framework that will enable us to achieve the goals of this study, namely to determine the effect of financial integration on financial development and economic growth in each of the SACU countries. The second objective will be accomplished by specifying bi-variate models of output and financial integration on one hand, and financial development and financial integration on the other. Each of these is described in turn, followed by the econometric techniques and the data requirement and sources

### 3.1 Output and financial development models

Traditionally, empirical growth models investigating the relationship between output and financial development (FD) or international financial integration (IFI) by regressing a measure of economic performance (Y) on FD or IFI along with other control variables. Similarly, models of FD seeking to explain the role of IFI also regress FD on a measure of economic performance and IFI along with other control variables. As a starting point for this on-going research, the current paper focuses on the bi-variate relationship between output and financial integration on one hand, and FD and IFI on the other. For convenience, we describe the structure of our model

using a bi-variate vector autoregressive and error correction model framework in which two variables enter as endogenous variables.

Though economic theory indicates some possible costs of financial integration, there is overwhelming evidence of a potentially significant and positive contribution through several channels by financial integration to economic growth and welfare, especially in developing countries. Such channels include augmenting domestic savings, international risk sharing and consumption smoothing, transfer of technology and managerial know-how, stimulation of domestic financial sector development, macroeconomic discipline and signalling (World Bank, 1997; Obstfeld, 1998; Wincoop, 1999; Agenor, 2003; Gourinchas and Jeanne, 2003, Prasad, *et al.*, 2004; Obstfeld and Taylor, 2004; Klein, 2005).

On the other hand, a survey of the bourgeoning empirical literature by several authors, such as McLean and Shrestha (2002), Edison *et al*, (2004) and Prasad *et al*. (2004), did not provide proof of a robust, definitely positive and significant effect of financial integration on economic growth and welfare. Indeed, for most developing countries, the surveys suggest a weak and sometimes negative relationship between economic growth and financial integration. Since most of the studies used cross-country/panel regression approaches, the results refer to the average effect of the variable across the countries studied and not to any specific country. Also, the question of causality cannot be satisfactorily addressed in a cross-section framework.

On the relationship between financial development and financial integration, economic theory suggests several channels through which financial integration could foster a deeper financial system[2]. These include *inter alia* by promoting increased competition, by stimulating the development of the domestic banking supervisory and legal framework, by enhancing access to international capital and by contributing to the stability of the domestic financial system (Agenor, 2003; Giannetti, *et al,* 2002; Caprio and Honohan, 1999; World Bank, 1997 and Levine, 1996). Empirical studies on this relationship are very few. Such studies, based on cross-country growth regression, in some instances (De Gregorio, 1998; Klein and Olivei, 1999) found a significant contribution of financial integration to economic growth, while others found a negative relationship. In the case of studies that obtained a significant positive relationship, the outcome was driven by the industrial countries included in the sample.

### *3.3 Data scope and sources*

[2] The theoretical literature also suggests a number of ways that financial openness could negatively affect the domestic financial systems (see Agenor, 2003; Giannetti *et al.* 2002, and World Bank, 1997)

Data for the output and financial development models covers the period 1970 to 2004, however, for many series, data was not available for the entire period. The series ranges from 29 to 34 continuous annual observations. Though they have limited observations, annual series have been preferred in many empirical time series studies of the finance-growth relationship (e.g. Demetriades and Hussein, 1996; Luintel and Khan, 1999), since they provide a more robust long-run relationship (Hakkio and Rush, 1991). All the variables used for the models are transformed into natural logarithms. The data was obtained from IMF IFS September 2005 CD-ROM.

In line with standard practice (e.g. King and Levine, 1993a and 1993b, Demetriades and Hussein, 1996, Arestis and Demetriades, 1997, Luintel and Khan, 1999) we used *per capita* real GDP as a measure of economic performance among the SACU countries and it was calculated as a ratio of real GDP to total population of each country. We used four measures of financial integration for which data was fairly easily available for most of the countries –FIA, FIL, FIT and IFIA, as described above (section 3.1b).

Two indicators are used to proxy financial development: the ratio of private credit granted by commercial banks to nominal GDP and liquid liabilities of commercial banks to nominal GDP. The two indicators are chosen in line with numerous earlier studies (see for instance, McKinnon, 1973; King and Levine, 1993a and 1993b; Demetriades and Hussein, 1996; Levine, 1998; Levine and Zervos, 1998; Luintel and Khan, 1999 and Levine, Loayza and Beck, 2000). Besides the fact that both indicators are frequently used in empirical studies and are well based on theory, the availability of comparable data for the indicators in the SACU countries also led to their choice.

The ratio of private credit to nominal GDP (FDC) indicates the important role played by the financial sector, especially the deposit money banks, in the financing of the economy. It isolates credit issued to the private sector from credit issued to governments, government agencies and public enterprises. Also, it excludes credit issued by the Central Bank[3] (Levine, *et al*. 2000). The underlying assumption is that credit provided to the private sector generates increases in investment and productivity to a much larger extent than credit to the public sector. It is also argued that loans to the private sector are given under more stringent conditions and

[3] A general finding is that Central Banks lose relative importance as one moves from low to high-income countries, and other financial institutions gain relative importance. Thus, by excluding central bank credit, private credit provides a measure of relative size of financial intermediaries (Beck et al 1999).

that the improved quality of investment emanating from financial intermediaries' evaluation of project viability is more significant for private sector credit[4] (Levine and Zervos, 1998 and Levine, 1998).

The ratio of liquid liabilities of commercial banks to nominal GDP (FDL), where liquid liabilities equal demand deposits plus time and savings deposits, provides an alternative to a broad money ratio, especially when dealing with developing countries (see Demetriades and Hussein, 1996 and Luintel and Khan, 1999). The argument is that in developing countries, a large component of the broad money stock is currency held outside the banking systems. Therefore, in principle, a rising ratio of broad money to income may reflect the more extensive use of currency than an increase in the volume of bank deposits. Following this argument, bank deposit liabilities, which exclude currency in circulation from the broad money stock, have been used as a better measure of financial depth and thus of the overall size of financial development. This indicator however, has been criticized in a number of ways (see Aziakpono, 2004).

### 3.4 Econometric procedure: unit roots, cointegration and causality testing

***Unit root tests***

A natural starting point for any time series analysis is to test for the stationarity of the time series data to be used. For the purpose of this study, we used the modified Dickey-Fuller (DF) test, based on generalized least squares (GLS) detrending series (commonly called the DF-GLS test), as proposed by Elliot, Rothenberg and Stock (1996) and the Ng and Perron (2001) tests for unit root. While the standard Dickey-Fuller and Philip-Perron (PP) tests commonly used have been criticized for their poor size and power properties[5], Elliot, Rothenberg and Stock (1996) have shown that the DF-GLS test is almost uniformly most powerfully invariant. Similarly the Ng and Perron (2001) test, which is another modification to the standard argument Dickey-Fuller (ADF) test, has good size and power properties (Rapach and Weber, 2004:415). In both tests the unit root hypothesis is tested against the alternative of no unit root.

***Cointegration and error correction framework***

[4] However, where private loans are politically influenced, this ratio may not be efficient.

[5]The poor size and power properties refer to the tendency to over-reject the null hypothesis of non-stationarity when it is true and under-reject it when it is false. See Harris (1995:39) for a detailed discussion of these problems as they relate to ADF and PP unit root tests.

Following the practice in standard econometric literature, a typical $VAR(k)$ model can be represented as:

$$\Delta X_t = \Pi X_{t-1} + \sum_{t=i}^{k} \Gamma_i \Delta X_{t-i} + \varepsilon_{kt} \qquad (2)$$

where $X_t = (X_{1t}, X_{2t})$ is an 2x1 vector of $I(1)$ variables, $\Delta X_t$ are all $I(0)$, $\Gamma_i$ are 2x2 coefficient matrices; $\varepsilon_{kt}$ are normally and independently distributed error terms; and $\Pi = 0$ if there is no cointegration.

Since $\Delta X_t ... \Delta X_{t-k+1}$ are all $I(0)$, but $X_t$ is $I(1)$, in order for this equation to be consistent, $\Pi_i$ would not be of full rank, i.e. equal to 2 in the bi-variate model. If we let its full rank be n (=2 in our case) and its reduced rank r, if r = 2, then the variables in $X_t$ are $I(0)$, while if the rank of $\Pi_i = 0$, then there are no cointegrating relations (Harris, 1995:79). Usually $\Pi_i$ has a reduced rank, that is $r \leq (n-1)$, in which case it can be decomposed as:

$$\Pi_i = \alpha\beta' \qquad (3)$$

where $\alpha$ is a $n \times r$ matrix and $\beta'$ is a $r \times n$ matrix. Then $\beta' X_{t-1}$ are the $r$ cointegrated variables, $\beta'$ is the matrix of coefficients of the cointegrating vectors, i.e. the long-run coefficients, and $\alpha$ has the interpretation of the matrix of error correction terms[6].

The rank of the matrix $\Pi_i$ and the number of cointegrating relation(s) will be determined using the two commonly used likelihood ratio (LR) test statistics, as provided in Johansen (1988), i.e.: the trace statistic ($\lambda_{trace}$) and the maximum eigenvalues ($\lambda_{\max}$) with their test statistics given respectively as follows:

$$\lambda_{trace} = -T \sum_{i=r+1}^{n} \log(1 - \hat{\lambda}_i) \qquad (4)$$

$$\lambda_{\max} = -T \log(1 - \hat{\lambda}_{r+1}) \qquad (5)$$

where $\lambda_i$ is the $i-th$ largest eigenvalue of the $\Pi_i$ matrix in equation (3). The tests will be conducted both under the null hypothesis that r = 0 and then that r = 1. Following Hang *et al*. (2000:424) we employed p values to test for cointegration and the null hypothesis is tested

[6] This is Granger's representation theorem.

sequentially from low to high values of r. The testing in the sequence ends when the null hypothesis is not rejected for the first time.

Once cointegration is found among the variables, the next step is to place a normalization restriction to identify the true cointegrating vector (Luintel and Khan, 1999). Following Arestis and Demetriades (1997), each vector will be normalized on the variable for which clear evidence of error correction (i.e. where the coefficient of $\alpha$ is negative and significant) is found. Considering our two-variate VAR model for output and financial integration as an example, and assuming the tests suggest one cointegrating relation and we place $\beta_{11} = 1$, the normalization restriction is thus:

$$\begin{pmatrix} \Delta LRPY \\ \Delta LFI \end{pmatrix} = \begin{pmatrix} \alpha_{11} \\ \alpha_{12} \end{pmatrix} \begin{pmatrix} 1 & \beta_{12} \end{pmatrix} \begin{pmatrix} LRPY_{t-1} \\ LFI_{t-1} \end{pmatrix} \qquad (6)$$

Given the objective of our study, we would be inclined to normalize on the output variable as in equation (6), if the corresponding loading factor, $\alpha_{11}$ is negative and significant.

If an economically meaningful cointegrating relation is established, we would also be interested to know the direction of causation between output and financial integration. Several causality test methods exist and the choice of a particular method depends on whether the time series are stationary or not, and if non stationary, whether they are cointegrated or not. For stationary series, the standard Granger causality test would be applicable, while for non-stationary but non-cointegrated series, the Granger causality test would be applied to the series in first difference (Demetriades and Hussein, 1996). In the case of cointegrated series, several authors (e.g. Hall and Wickens, 1993; Hall and Milne, 1994; Toda and Phillips, 1993 and Luintel and Khan, 1999) have proposed the test for causality in an ECM framework. Following Hall and Milne (1994) and Luintel and Khan (1999), we used the notion of a weak exogeneity test suggested by Johansen (1992)[7] to test for long run causality between the variables[8]. This would be done by placing a zero restriction on the column of $\alpha_i$, *i.e.* Ho: $\alpha_i$ = 0, in the matrix $\Pi_i = \alpha\beta'$ (equation 3 above).

[7] A variable is said to be weakly exogenous if the error correction term is statistically insignificant in the relevant equation, in which case the variable is not adjusting to the long-run equilibrium path (Boulila and Trabelsi, 2003:12).

[8] Similar application of the test in the finance-growth relationship can be found in Demetriades and Hussein (1996) and Arestis and Demetriades (1997).

Using our example above, if the null hypothesis that $\alpha_{12} = 0$ is rejected, then financial integration is not weakly exogenous in the vector, implying that output does cause financial integration in the long run. Similarly, rejection of the null hypothesis that $\alpha_{11} = 0$ means output is not weakly exogenous, thus financial integration causes output. However, a non-rejection of $\alpha_{11} = 0 \cap \alpha_{12} = 0$ implies an independent relationship between output and financial integration.

## 4. Empirical results

### *4.1. Preliminary data analysis*

***Capital flows***

Table 1 provides summary of the statistics of the indicators of financial integration and financial development. Figures 1 - 4 present a graphical representation of the four capital flow measures of financial integration for the SACU countries. Using the first indicator, FIA, as represented in Figure 1 and the first column of Table 1, one can see that the banking sectors in Lesotho and Swaziland, in that order, are more integrated with the rest of the world than the other three SACU countries. Of the remaining three, the South Africa is the least integrated, followed by Namibia and then Botswana. It can also be observed that the ratio of banking sector foreign assets to total assets has grown since 1994 in all the countries, with the exception of Namibia. Understandably, the South African banking sector, with an assets ratio of approximately 1%, carried out very little business abroad during its political isolation. While the trend has changed since 1995, South African banking remains largely home biased, compared to the rest of the SACU countries, using the FIA measure of financial integration.

With regards to the second indicator of financial integration, FIL, which represents the willingness of foreign investors to invest in the domestic banking system, South Africa leads the group, followed by Namibia. The others (Botswana, Lesotho and Swaziland) had significant lower foreign liability ratios. The period since 1994 has witnessed an increase in this indicator in Lesotho, Namibia and South Africa, whereas, for Botswana and Swaziland, it plummeted.

The third indicator (FIT) combines the first two. Comparing the first two indicators (FIA and FIL) one can see clearly that there was a significantly larger outflow of funds from the domestic banking sector than there were inflows in Lesotho and Swaziland. In the case of Botswana, while the outflow of funds was higher than the inflows, the gap was not very wide.

Namibia seems to have a more even flow of finance to and from the banking sector. In the South African case, the flow was skewed more toward inflows rather than outflows.

The last indicator (IFIA) puts Botswana in a clear lead over the other countries. The indicator also suggests an increase in the level of integration since 1994 for Botswana and South Africa, whereas, for the other countries, the difference between the two periods was marginal. Evidently, from the foregoing, one can see that the capital flow indicators produced a mixed pattern of financial integration among the SACU countries. What seems obvious is the fact that South Africa gave more evidence of a home bias than the other countries, followed by Namibia. For the rest of the countries, the evidence is not conclusive.

A preliminary examination of the data on financial development and output in the SACU countries, as represented in Figures 5, 6 and 7 and Table 1, reveals some characteristics of the countries. Firstly, as shown in the last two columns of Table 1, one can see that on average South Africa has the highest level of financial development, followed by Namibia, while the other three have mixed patterns. Of particular note is the fact that the total private sector credit of commercial banks as a ratio of GDP (FDC) in South Africa significantly exceeds the total liquid liabilities of the banks as a share of GDP (FDL). What this suggests is that, in South Africa, the commercial banks' credit to the private sector must have been financed partly from sources outside the domestically mobilized deposits, and it has become increasingly so, since 1994. On the other hand, apart from Namibia, where the two indicators (FDC and FDL) were almost equal, for the rest of the countries, there is a huge and widening gap between them, with the FDL greater than FDC. In the case of Lesotho and Swaziland, the two indicators have also witnessed a decline since 1994. This suggests two possible outlets of funds, especially from Lesotho and Swaziland. On one hand, individuals and firms, seeking better returns and a safer place for their investments, may have chosen to bypass the domestic banking system and operate accounts directly abroad (mostly in South Africa). This may account for the drop in domestic deposits mobilized by banks. On the other hand, the banks themselves, as they seek better returns and a safer place for investments, may have increasingly bypassed the domestic economy, and instead invested abroad. The latter point is supported by the fact observed earlier relating to the high level of foreign assets and low level of foreign liabilities held by the domestic banks, especially in Lesotho and Swaziland.

Another feature of the SACU countries that is evidenced in the data is the wide disparity in their economic performance, as reflected in their *per capita* outputs. As shown in Figure 7, South Africa for the most part has the largest *per capita* GDP, followed closely by Botswana, but, since 1998, Botswana has overtaken South Africa. Namibia lies in the middle, closely followed by Swaziland, while Lesotho has the lowest *per capita* income for the entire period. Could there be some association between the level of economic performance and financial integration and development among these countries? We turn to this question next using cointegration analysis.

### *4.2. Cointegration analysis*

The analyses begin with a test of the unit root using the DF-GLS and Ng and Perron (2001) tests. All the tests and the subsequent estimations were carried out using E-views 5. The summary of results of these tests is report in Table 2, details not reported here on account of space, show that all the variables are first difference stationary, i.e. I(1), except the LFIL in Botswana and the LFIA in Swaziland, which are level stationary, I(0), while in the case of the LFIL in Lesotho, the stationarity level could not be determined.

Consequent upon the results of the unit root tests, we proceed to test for the presence or absence of cointegrating relationship(s) in the series using the trace statistic and maximum eigenvalues as discussed earlier. The results of the bi-variate cointegration analysis are reported in Table 3 for Botswana, Table 4 for Lesotho, Table 6 for South Africa and Table 7 for Swaziland. In the case of Namibia, the analysis was carried out using OLS since the number of observations was limited and the results are reported in Table 5. For each country, the results are organized into three panels. The first panel contains the results of the relationship between financial development and financial integration. Here we estimated eight different bi-variate models, pairing each of the two indicators of financial development with the four indicators of financial integration. The second panel presents the two bi-variate models' results for the relationship between output and financial development, which pair each of the two indicators of financial development with output. The last panel reports the results of the relationship between outputs and financial integration and it contains four different models estimated for a pair of output and each of the four indicators of financial integration. For each country, the results reported are only those for which cointegration was found and a meaningful cointegrating relation was identified. For each case we reported the trace statistics and maximum eigenvalues,

the corresponding VAR order and deterministic trend assumption, the weak exogeneity test results, the long run parameters and the coefficient of the error correction term, as well as the residual diagnostic test results. Each country's results are now discussed in turn.

***Botswana results***

Of the eight bi-variate models estimated for the financial development-integration relationship, only two produced cointegrating relationships based on the trace test. These are: the relationship between the domestic liquid liability ratio (FDL) and foreign liability ratio (FIL), and the relationship between FDL and the foreign assets and liabilities as a ratio of total assets and liabilities (FIT). A test of weak exogeneity shows that, in both cases, the financial development indicator was weakly exogenous, while both the financial indicator measures is endogenous. Thus, causality runs only from financial development to financial integration. Similarly, each of the loading factors corresponding to the financial development indicator was insignificant, while those of the financial integration measures were both significant with the right sign. Hence, the two models were normalized on the financial integration variable. The long-run slope parameters that represent the effect of financial integration on financial development were both positive, but only one was significant, that of FDL on FIL. The results, therefore, show that the development of the domestic financial system in Botswana leads to greater integration, but not vice versa. In particular, it suggests that improvement in the domestic financial system that results in increased domestic deposit mobilization would also lead to increased bank foreign liabilities.

Cointegration was found in the two estimated relationships between financial development and output. The exogeneity test indicates a two-way causal relationship between FDC and output, but with a stronger causality running from financial development to output; while between FDL and output causality runs only from financial development to output. In both relationships, the long-run slope parameters show negative, but only one weakly significant (at 10%) effect of financial development on output. This confirms previous findings that financial development does not promote output growth in Botswana (Aziakpono, 2005a).

The next estimations explore the relationship between financial integration and output. Of the four bi-variate models estimated, three found cointegration between financial integration and output, and in all of them, the exogeneity tests suggest that causality runs from financial integration to output. In the case of the last two measures of financial integration, FIT and IFIA, the exogeneity results seemingly suggest a rejection of the null hypothesis of weak exogeneity;

however, since the loading factors in both cases had positive signs, we treat the results as not robust. The long-run coefficients of financial integration were all negative and significant, thus suggesting that financial integration has not stimulated economic performance in Botswana, but rather it has inhibited it.

In summary, our results show that financial integration negatively and significantly affects output growth in Botswana, while the effects on financial development were not discernible. However, the results do confirm that domestic financial development does positively stimulate financial integration in the country.

***Lesotho results***

The results suggest a weak long run relationship between financial integration and domestic financial development. Of the eight bi-variate models estimated, cointegration was found only in the relationship between FDC and FIT. Similarly to Botswana, financial development was weakly exogenous, while financial integration was endogenous, thus showing that causality runs from financial development to financial integration and not the other way round. In addition, the coefficient of the error correction term for FDC was not significant, while that of FIT was well behaved; hence it was normalized on FIT. The long-run slope parameter was positive and significant, thus confirming that domestic financial development promotes integration in Lesotho.

On the relationship between financial development and output, cointegration was found in the two models estimated. The weak exogeneity test showed that output was endogenous in the relationship between it and FDC, while in the case of the relationship between output and FDL, the null of weak exogeneity was rejected for the two variables. This suggests that output and financial development, to some extent, mutually cause each other in Lesotho. The long-run parameter gave a mixed sign of the effects of financial development on economic growth. In the case of the FDC, the coefficient was positive and significant at 10% level of significance, while the coefficient of FDL was negative and significant at 1% level of significance. While this confirms the results of a previous study in terms of the signs, the previous study did not find the coefficients significant (Aziakpono, 2005).

The results seem to suggest strong evidence of a long-run relationship between financial integration and output, since cointegration was found in three out of the four relationships estimated. The exogeneity tests also robustly show that financial integration was weakly exogenous, but output was not. Hence causality runs solely from financial integration to output

in Lesotho. The long-run coefficients of financial integration, however, produced mixed effect. While two of the measures of financial integration (FIA and FIT) show negative effects, though not significant, the IFIA produced a positive and significant effect on output.

In summary, as in Botswana, the analysis could not detect any direct effects of financial integration on domestic financial development in Lesotho, however, there is slim evidence suggesting that domestic financial development could foster financial integration in the country. On the effect of financial integration on output, while there was a strong indication that financial integration did affect economic performance, the nature of the effect, whether positive or negative, was not definite.

***Namibia results***

The results from Namibia could have helped to provide an answer to the question of whether countries more integrated to South Africa benefit more from integration or not, since earlier analyses show that it was more integrated to South Africa than the rest of the SACU countries. However, because of the limited number of observations in the data, we could not carry out the usual cointegration analysis; instead we estimated the models using the OLS method, which makes the results less comparable to those of the other countries. In order to avoid a possibility of interpreting spurious results, we selected our models for interpretation using two simple tests. Firstly, we compared the Durbin-Watson (DW) statistics with the coefficient of determination ($R^2$) as a simple rule of thumb to determine whether the results are spurious or not. If the $R^2$ is greater than the DW statistics, we suspect spurious results (Gujarati, 2003:824). Secondly, we used the cointegrating regression Durbin-Watson statistics (CRDW) test to determine whether there is possibility of cointegration between the two series. Here we simply used the DW statistics obtained from the OLS estimation to test the null of no cointegration between the series. The null hypothesis is rejected if the DW is greater than the standard critical values (0.511 for 1%, 0.386 for 5%) (Gujarati, 2003:824).

In all the estimated equations reported in Table 11, the $R^2$ is less than the DW, and, except for two relationships, the null of no cointegration was rejected at the 5% level of significance, using the CRDW test. Thus, it is possible that the estimates could give some insight into the nature of the effects of financial integration on financial development and output, although the exact direction of causality was not apparent.

The effects of financial integration on financial development were mixed, but some patterns do emerge. The measure by the ratio of foreign assets to the total assets of the domestic

banking sector, the FIA produced a significant negative effect on the two indicators of financial development. This suggests that increasing domestic banks' holdings of foreign assets (outflows of funds) hinders the development of the domestic financial system. On the other hand, the coefficients of the FIL were positively related to domestic financial development, though only one of the two was significant. This confirms the classical argument that inflow of funds should help to strengthen the capacity of the domestic financial system (Edison *et al.* 2002). The results also produce evidence of similar effects of financial integration on output as in the case of financial development.

Regarding the effects of financial development on output, the estimated coefficients for both indicators were positive and significant. This suggests that, in Namibia, the development of the domestic financial system fosters economic growth. In sum, the results suggest a significant effect of financial integration on financial development and economic performance, but whether the effect is positive or negative depends on the source of the integration. If integration results in inflow of funds, the effects will be positive, while the reverse will be the case if integration leads to an outflow of funds.

***South Africa results***

Table 6 presents the results for South Africa. The analyses confirm the existence of a long-run relationship between the three measures of financial integration and one indicator of financial development (FDL). A test of weak exogeneity in the relationship between FDL and FIA rejects the null for FDL, but could not reject it in the case of the FIA, thus suggesting a one-way causality running from FIA to FDL. In the other two relationships, the null of weak exogeneity was rejected in all the cases, implying a two-way causality between the measures of financial integration and financial development. The long-run parameters produced a very robust positive effect of financial integration on domestic financial development in South Africa which is irrespective of the source of the integration.

On the relationship between financial development and output, our analysis could not detect any long-run relationship between the variables. This is contrary to the results in Luintel and Khan (1999) which indicate evidence of cointegration in a tri-variate model using data for the period 1958 to 1995. The authors also obtained a significant and positive effect of financial

development[9] on logarithms of real GDP per capita. Further investigation is called for to unravel this contradiction.

As shown in the second panel of Table 12, two indicators of financial integration (FIA and FIL) were found to be cointegrated with per capita output. The weak exogeneity results were robust to the effect that financial integration was weakly exogenous, while output was not in the relationships. The long-run coefficients, however, were significant, and in line with the theory gave mixed effects of financial integration on output. Like in Namibia, the coefficient of FIA was negative while that of FIL was positive. This suggests again that the effects of financial integration on economic performance depend on the source of the integration.

In summary, our results reveal a significant and positive effect of financial integration on financial development in South Africa, but surprisingly, no discernible long-run relationship between financial development and output was found. Lastly, the effect of financial integration on output depends on the flows of funds caused by the integration process, whether they are outflows (negative effect) or inflows (positive effect).

***Swaziland results***

Two sets of cointegrating relationships were obtained between financial integration and financial development in Swaziland. The first is between FDC and FIT and the second is between FDL and FIL. In the first relationship, the null of weak exogeneity was rejected for both variables, but appears stronger for the FDC than the FIT. The effect of FIT on FDC was positive and significant, thus suggesting that financial integration promoted financial development. In the second relationship, the null of weak exogeneity could not be rejected for FDL, whereas it was rejected for the FIL, suggesting that the causal relationship runs from financial development to financial integration. The long-run effect of financial development on financial integration was significant and positive. What is apparent from these results is the possibility of financial integration to stimulate financial development through its effect on increasing domestic credits. On the other hand, improvement in the domestic financial system, evident in increased domestic deposit mobilization, in turn causes greater foreign investors' confidence in the domestic financial system, thereby attracting foreign liabilities (inflows of funds), via this channel increasing financial integration.

[9] Financial development was measured in a slightly different way from this study. The authors measured it as a ratio of total deposit liabilities of deposit banks to one period lagged nominal GDP, while we use the level of nominal GDP instead.

The two bi-variate models of the relationship between financial development and output produce evidence of a long-run relationship between the variables. However, in both models, the null of weak exogeneity could not be rejected for the real per capita output, but was rejected for the two financial development indicators. It is thus evident that causality runs from output to financial development in Swaziland. This shows that the development of the domestic financial system depends largely on the economic performance of the country.

Regarding the relationship between financial integration and output, the results in Table 13 show strong evidence of a long-run relationship between the variables. The first relationship, between output and FIL, gave evidence of mutual causation between the variables, as the null of weak exogeneity was rejected in the two variables. On the other hand, for the relationship between output and FIT, causality seems to run only from output to FIT. Lastly, in the relationship between output and IFIA, the weak exogeneity tests suggest that causality runs from IFIA to output. The long-run coefficients in the three relationships were very significant, but produced mixed effects. While the first two relationships produced negative effects, the last relationship suggests a positive effect.

Overall, the effect of financial integration in Swaziland was inconclusive. On the relationship between financial integration and financial development, the analyses showed some evidence of a mutual reinforcement between them. On the other hand, the relationship between output and financial integration gave inconclusive results.

## 5. Conclusion

In this paper, we have examined the effects of financial integration on financial development and output amongst the SACU countries within a country-specific framework. First, using four measures of financial integration and two measures of financial development and real per capita output, we examined the effect of financial integration on financial development and economic performance. Of interest to us too, was the question of whether countries that are more integrated with South Africa benefit more from financial integration than those that are not. To our knowledge this is the first study to investigate the effects of financial integration within a country-specific framework. Where sufficient data permitted, the econometric analyses were carried out, using the Johansen cointegration and error correction modelling techniques.

Our findings can be summarized as follows: Firstly, the effects of financial integration were mixed, but what is apparent is that countries that are more integrated to South Africa produce more discernible evidence of the positive effects of financial integration. At the lowest level in the hierarchy of integration to South Africa, we found that in both Botswana and Lesotho, no direct effects of financial integration on domestic financial development could be found; in Swaziland, the analysis shows some evidence of mutual reinforcement between them; in Namibia, the results suggest a significant effect of financial integration on financial development, but whether the effect is positive or negative depends on the source of integration. The results reveal a significant and positive effect of financial integration on financial development in South Africa

Secondly, the effects of financial integration on economic performance in the SACU countries resemble the effects on financial development. Firstly, the results show that financial integration negatively and significantly affected output growth in Botswana; secondly, in Lesotho, while there was a strong indication that financial integration does affect economic performance, the nature of the effects, whether positive or negative, was not definite; thirdly, in Swaziland, the relationship between output and financial integration gave inconclusive results. Fourthly, in Namibia, the results suggest a significant effect of financial integration on economic performance, but whether the effect is positive or negative depends on the source of the integration. If integration results in an inflow of funds, the effects will be positive, while the reverse will be the case if integration leads to an outflow of funds. Lastly, in South Africa, as in Namibia, the effect of financial integration on output depends on the flows of funds caused by the integration process and whether they are outflows (negative effect) or inflows (positive effect).

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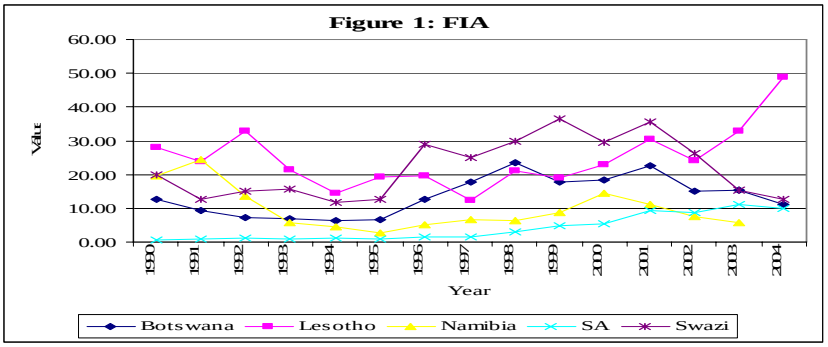


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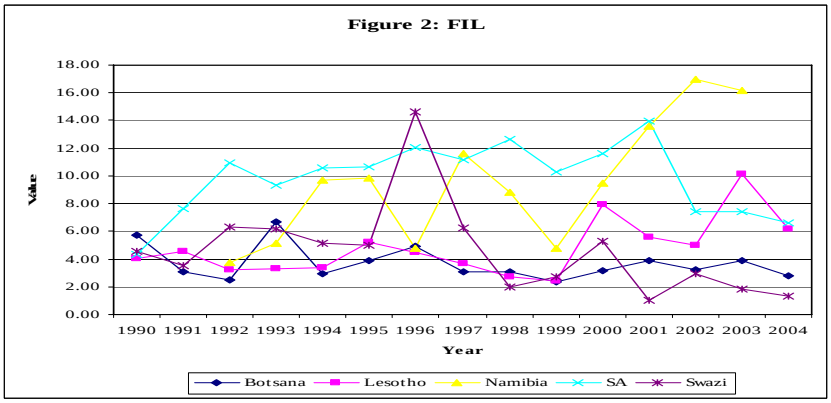


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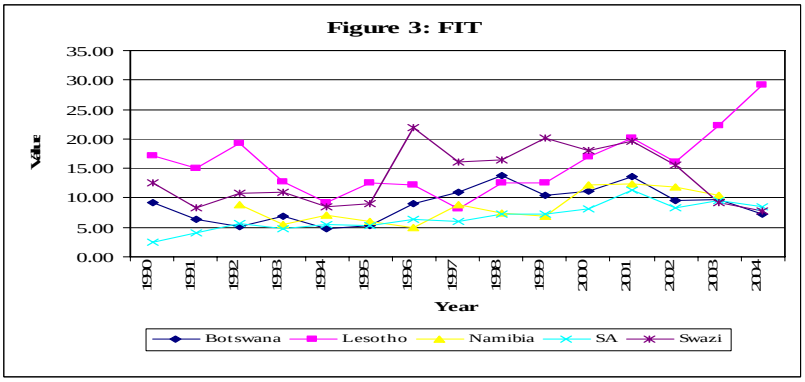


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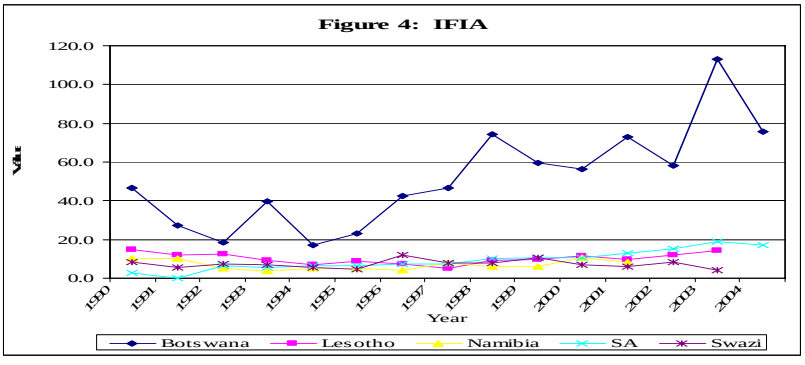


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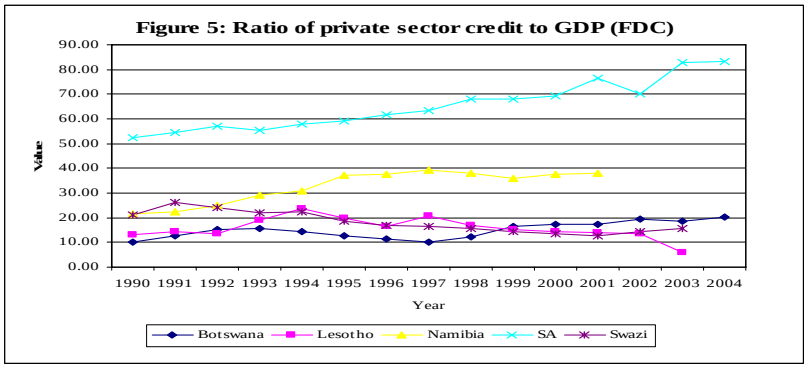


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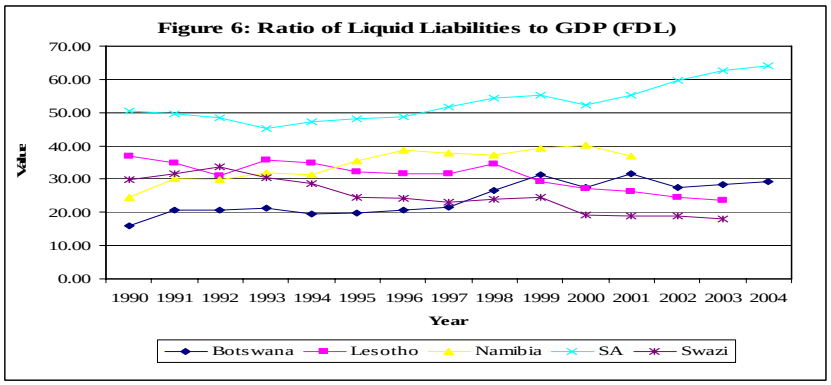


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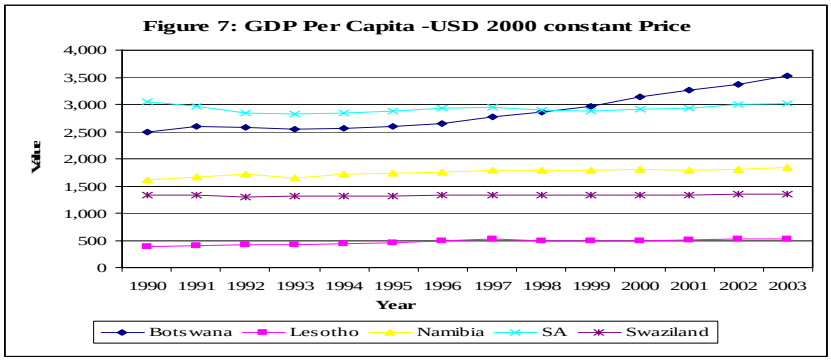


*Source: Data from World Bank World Development Indicator 2005 CD-ROM*

Table 1: Summary of indicators of financial integration and financial development in SACU

| Country | | FIA | FIL | FIT | IFIA | FDC | FDL |
|---|---|---|---|---|---|---|---|
| Botswana | 1990-94 | 8.54 | 4.19 | 6.46 | 29.8 | 13.63 | 19.59 |
| | 1995-04 | 16.1 | 3.43 | 10.1 | 62.2 | 15.52 | 26.37 |
| | 1990-04 | 13.6 | 3.69 | 8.87 | 51.4 | 14.89 | 24.11 |
| Lesotho | 1990-94 | 24.1 | 3.70 | 14.7 | 11.1 | 16.71 | 34.66 |
| | 1995-04 | 25.1 | 5.34 | 16.3 | 9.70 | 15.22 | 28.96 |
| | 1990-04 | 24.8 | 4.79 | 15.7 | 10.2 | 15.75 | 30.99 |
| Namibia | 1990-94 | 13.6 | 6.20 | 7.10 | 6.90 | 25.75 | 29.55 |
| | 1995-04 | 7.59 | 10.7 | 9.02 | 6.86 | 37.62 | 37.92 |
| | 1990-04 | 9.73 | 9.55 | 8.54 | 6.88 | 32.68 | 34.43 |
| S.A | 1990-94 | 1.00 | 8.55 | 4.51 | 5.30 | 55.40 | 48.20 |
| | 1995-04 | 5.61 | 10.4 | 7.81 | 11.8 | 70.20 | 55.20 |
| | 1990-04 | 4.08 | 9.77 | 6.71 | 9.90 | 65.29 | 52.90 |
| Swazi | 1990-94 | 15.0 | 5.13 | 10.2 | 6.74 | 23.06 | 30.85 |
| | 1995-04 | 25.2 | 4.29 | 15.4 | 7.60 | 15.38 | 21.73 |
| | 1990-04 | 21.8 | 4.58 | 13.7 | 7.29 | 18.13 | 24.99 |

**Table 2: Summary of unit root tests for variables used in the regressions**

| Country/ variable | LRPY | LFDC | LFDL | LFIA | LFIL | LFIT | LIFIA |
|---|---|---|---|---|---|---|---|
| Botswana | I(1) | I(1) | I(1) | I(1) | I(0) | I(1) | 1(1) |
| Lesotho | I(1) | I(1) | I(1) | I(1) | I(-) | I(1) | I(1) |
| Namibia | | | | | | | |
| SA | I(1) | I(1) | I(1) | I(1) | I(1) | I(1) | I(1) |
| Swazi | I(1) | I(1) | I(1) | I(0) | I(1) | I(1) | I(1) |
| **Tests were base DF-GLS and Ng and Perron methods.** | | | | | | | |

**Table 3: Bi-variate analysis of the effects of financial integration on Financial development and output 1970-2004: Botswana**

| | $\lambda_{trace}$ | $\lambda_{\max}$ | k | A | EG | Exog. test | | Const. | $\beta$ | $R^2$ | ECM | *S.Cor* | *Het.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FD | IFI | | | | | | |
| Model A (LFDL) | | | | | | | | | | | | | |
| LFIL* | 16.28 [0.04] | - | 2 | 3 | -1.67 (0.09) | 0.33 (0.57) | 10.27 (0.00) | -6.13 | 1.52 (2.09)b | 0.50 | -0.59 (-3.6 )a | 22.83 [0.00] | 47.95 [0.02] |
| LFIT* | 20.69 [0.04] | - | 2 | 2 | -1.72 [0.07] | 0.80 [0.37] | 5.74 [0.02] | -2.62 (-1.1) | 0.27 (0.35) | 0.31 | -0.55 (-3.0)a | 5.86 [0.21] | 41.83 [0.07] |
| Model B (LRY) | | | | | | | | | | | | | |
| | | | | | | LRY | FD | | | | | | |
| LFDC | 19.33 [0.07] | 15.95 [0.04] | 2 | 2 | -0.30 [0.57] | 11.99 [0.00] | 2.86 [0.09] | -9.18 (-6.9)a | -0.17 (-0.35) | 0.63 | -0.03 (-4.1 )a | 6.76 [0.15] | 24.49 0.75] |
| LFDL | 20.81 [0.04] | 12.37 [0.16] | 3 | 2 | -0.75 [0.38] | 2.83 [0.09] | 1.078 [0.29] | -5.57 (-2.3)b | -1.38 (-1.74)c | 0.60 | -0.02 (-2.7 )a | 4.38 [0.36] | 49.26 [0.21] |
| Model C(LRY) | | | | | | | | | | | | | |
| | | | | | | LRY | IFI | | | | | | |
| LFIA | 22.98 [0.02] | 19.05 [0.02] | 2 | 2 | -3.28 [0.02] | 15.06 [0.00] | 0.00 [0.99] | -9.44 (-60.2)a | -0.45 (-2.93)a | 0.67 | -0.05 (-4.7)a | 5.62 [0.23] | 30.27 [0.45] |
| LFIT | 27.11 [0.00] | 25.16 [0.00] | 2 | 3 | -0.19 [0.61] | 4.67 [0.03] | 18.73 [0.00] | -7.69 | -0.54 (-4.41)a | 0.49 | -0.02 (-2.1 )c | 4.25 [0.37] | 47.77 [0.02] |
| LIFIA | 33.82 [0.00] | 27.86 [0.00] | 2 | 2 | -1.04 [0.26] | 6.07 [0.01] | 15.65 [0.00] | -8.46 (-31.)a | -0.24 (-3.92)a | 0.47 | -0.03 (-2.6 )a | 3.51 [0.48] | 43.92 [0.05] |

Note: The parentheses [ ] is used to denote probability value, and ( ) represent t-values; a, b, and c represent 1%, 5% and 10 % significance levels respectively.; k is the VAR Order as selected by an appropriate information criterion. A- represent the deterministic trend assumption and *Normalized on financial integration variable.

**Table 4: Bi-variate analysis of the effects of Financial Integration on Financial Development and Output 1970 -2004: Lesotho**

| | $\lambda_{trace}$ | $\lambda_{\max}$ | k | A | EG | Exog. test | | Const. | $\beta$ | $R^2$ | ECM | *S.Cor* | *Het.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FD | IFI | | | | | | |
| Model A (LFDC) | | | | | | | | | | | | | |
| LFIT* | 18.25 [0.02] | 15.60 [0.03] | 2 | 3 | -4.03 [0.00] | 0.97 [0.33] | 7.13 [0.01] | -4.99 | 0.87 (6.24)a | 0.13 | -0.79 (-2.8)a | 4.03 [0.40] | 22.99 [0.82] |
| Model B (LRY) | | | | | | | | | | | | | |
| | | | | | | LRY | FD | | | | | | |
| LFDC | 26.77 [0.01] | 24.66 [0.00] | 2 | 2 | -0.15 [0.62] | 19.62 [0.00] | 0.92 [0.34] | -6.82 (-16.)a | 0.31 (1.94)c | 0.31 | -0.16 (-5.1)a | 7.53 [0.11] | 38.68 [0.13] |
| LFDL | 34.12 [0.00] | 34.11 [0.00] | 2 | 3 | -1.44 [0.14] | 17.28 [0.00] | 10.99 [0.00] | -10.0 | -0.73 (-4.78)a | 0.42 | -0.13 (-4.3)a | 1.07 [0.99] | 17.16 [0.97] |
| Model C (LRY) | | | | | | | | | | | | | |
| | | | | | | LRY | IFI | | | | | | |
| LFIA | 23.66 [0.02] | 20.02 [0.01] | 2 | 2 | -1.23 [0.19] | 15.10 [0.00] | 2.37 [0.12] | -6.36 (-5.5 )a | -0.50 (-1.41) | 0.23 | -0.06 (-4.6)a | 3.02 [0.56] | 36.69 [0.04] |
| LFIT | 23.76 [0.02] | 19.96 [0.01] | 2 | 2 | -0.70 [0.41] | 15.67 [0.00] | 1.96 [0.16] | -6.11 (-4.9)a | -0.69 (-1.54) | 0.27 | -0.06 (-4.8)a | 4.92 [0.30] | 30.29 [0.45] |
| LIFIA | 32.29 [0.00] | 27.92 [0.00] | 2 | 2 | -2.23 [0.03] | 19.03 [0.00] | 0.14 [0.71] | -9.21 (-35)a | 0.66 (6.41)a | 0.32 | -0.22 (-5.3)a | 5.53 [0.24] | 25.63 [0.69] |

Note: The parentheses [ ] is used to denote probability value, and ( ) represent t-values; a, b, and c represent 1%, 5% and 10 % significance levels respectively.; k is the VAR Order as selected by an appropriate information criterion.; A- represent the deterministic trend assumption. And *Normalized on financial integration variable.

**Table 5 Bi-variate analysis of effects of financial integration on financial development and Output (OLS Estimation): Namibia**

| | OBS | Const. | $\beta$ | $R^2$ | *S.Cor* | *Het.* | *Norm* | DW |
|---|---|---|---|---|---|---|---|---|
| Model A (LFDC) | | | | | | | | |
| FIA | 12 | 39.61 (18.23)a | -0.68 (-3.98)a | 0.415 | 9.45 [0.01] | 2.50 [0.14] | 0.78 [0.68] | 0.46 |
| FIL | 10 | 28.07 (6.16)a | 0.83 (1.86)c | 0.24 | 1.97 [0.20] | 3.33 [0.10] | 0.64 [0.73] | 0.80 |
| FIT | 10 | 31.79 (8.167)a | 0.38 (0.90) | 0.04 | 3.20 [0.12] | 0.76 [0.50] | 2.11 [0.39] | 0.42 |
| IFIA | 12 | 36.92 (6.44)a | -0.62 (-0.69) | 0.055 | 17.32 [0.00] | 3.27 [0.09] | 1.46 [0.48] | 0.23 |
| (LFDL) | | | | | | | | |
| FIA | 12 | 38.06 (20.24) | -0.35 (-1.95)c | 0.166 | 3.17 [0.11] | 1.81 [0.22] | 0.52 [0.77] | 0.73 |
| FIL | 10 | 33.56 (9.01) | 0.28 (0.78) | 0.067 | 3.07 [0.12] | 2.46 [0.16] | 0.73 [0.70] | 0.77 |
| FIT | 10 | 33.03 (9.55) | 0.35 (0.93) | 0.063 | 6.41 [0.04] | 0.43 [0.67] | 0.84 [0.66] | 0.62 |
| IFIA | 12 | 36.38 (7.98)a | -0.28 (-0.38) | 0.022 | 7.71 [0.02] | 4.14 [0.05] | 0.76 [0.68] | 0.35 |
| Model B (LRY) | | | | | | | | |
| LFDC | 12 | 8.78 [0.00] | 0.01 [0.00]a | 0.706 | 0.07 [0.94] | 3.32 [0.08] | 0.22 [0.90] | 1.99 |
| LFDL | 12 | 8.695 [0.00] | 0.01 [0.00]a | 0.783 | 3.20 [0.09] | 1.36 [0.32] | 0.48 [0.79] | 2.93 |
| Model C: (LRY) | | | | | | | | |
| FIA | 14 | 8.98 [0.00] | -0.003 [0.08]c | 0.136 | 2.33 [0.15] | 0.086 [0.92] | 1.20 [0.55] | 0.68 |
| LFIL | 12 | 8.924 [0.00] | 0.004 [0.03]b | 0.295 | 1.27 [0.33] | 1.10 [0.37] | 1.23 [0.54] | 1.05 |
| LFIT | 12 | 8.901 [0.00] | 0.007 [0.03] | 0.333 | 2.63 [0.13] | 1.32 [0.31] | 0.71 [0.70] | 0.85 |
| LIFIA | 12 | 8.952 [0.00] | -0.001 [0.88] | 0.004 | 2.57 [0.14] | 2.48 [0.14] | 1.28 [0.53] | 0.48 |

Note: The parentheses [ ] is used to denote probability value, and ( ) represent t-values; a, b, and c represent 1%, 5% and 10 % significance levels respectively.

**Table 6: Bi-variate analysis of the effects of financial integration on financial development and Output 1970-2004: South Africa**

| | $\lambda_{trace}$ | $\lambda_{\max}$ | k | A | EG | Exog. test | | Const. | $\beta$ | $R^2$ | ECM | *S.Cor* | *Het.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FD | IFI | | | | | | |
| Model A ( LFDL) | | | | | | | | | | | | | |
| LFIA | 15.36 [0.05] | 14.54 [0.04] | 1 | 3 | -1.64 [0.09] | 8.96 [0.00] | 1.77 [0.18] | -3.78 | 0.43 (3.88)a | 0.19 | -0.09 (-3.0)a | 1.68 [0.79] | 33.17 [0.32] |
| LFIT | 27.64 [0.03] | 20.99 [0.03] | 2 | 4 | -0.70 [0.40] | 8.11 [0.00] | 5.32 [0.02] | -3.23 | 2.89 (4.5)a | 0.23 | -0.05 (-3.3)a | 1.67 [0.80] | 24.1 [0.77] |
| LIFIA | 26.86 [0.04] | 19.64 [0.04] | 2 | 4 | -0.92 [0.31] | 8.28 [0.00] | 2.79 [0.09] | -3.25 | 0.62 (5.3)a | 0.34 | -0.25 [-3.5]a | 0.68 [0.95] | 19.75 [0.92] |
| Model C (LRY) | | | | | | | | | | | | | |
| | | | | | | LRY | IFI | | | | | | |
| LFIA | 22.96 [0.11] | 19.91 [0.04] | 2 | 4 | -1.70 [0.08] | 15.80 [0.00] | 1.72 0.19 | -9.77 | -0.06 [-2.6]a | 0.04 | -0.53 (-4.6)a | 2.04 [0.73] | 29.95 [0.47] |
| LFIL | 19.63 [0.01] | 18.00 [0.01] | 2 | 3 | -3.27 [0.00] | 12.81 [0.00] | 0.29 [0.59] | -9.80 | 0.11 (7.9)a | 0.45 | -0.49 (-3.8)a | 1.57 [0.81] | 31.25 [0.40] |

Note: The parentheses [ ] is used to denote probability value, and ( ) represent t-values; a - represent 1%, significance levels respectively; k is the VAR Order as selected by an appropriate information criterion. A- Represent the deterministic trend assumption.

**Table 7: Bi-variate analysis of the effects of financial integration on financial development and Output: 1970-2004: Swaziland**

| | $\lambda_{trace}$ | $\lambda_{\max}$ | k | A | EG | Exog. test | | Const. | $\beta$ | $R^2$ | ECM | *S.Cor* | *Het.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FD | IFI | | | | | | |
| Model A (LFDC) | | | | | | | | | | | | | |
| LFIT | 20.81 [0.01] | 18.34 [0.01] | 1 | 3 | -4.02 [0.00] | 8.55 [0.00] | 3.45 [0.06] | 3.60 | 0.29 (4.83)a | 0.20 | -3.39 (-3.1)a | 7.41 [0.12] | 11.85 [0.86] |
| (LFDL) | | | | | | | | | | | | | |
| LFIL | 20.07 [0.04] | 22.83 [0.02] | 1 | 4 | -1.08 [0.25] | 0.17 [0.68] | 16.19 [0.00] | -3.81 (-4.2) | 0.10 (4.98)a | 0.03 | -0.04 (-2.9)a | 3.46 [0.48] | 26.55 [0.09] |
| Model B (LRY) | | | | | | | | | | | | | |
| | | | | | | LRY | FD | | | | | | |
| LFDC* | 24.56 [0.01] | 22.87 [0.00] | 4 | 2 | -2.24 [0.03] | 0.07 [0.78] | 21.09 [0.00] | -6.58 (-5.6)a | 0.54 (3.09)a | 0.70 | -0.56 (-4.89)a | 16.01 [0.00 | 64.82 [0.15] |
| LFDL | 22.92 [0.02] | 20.24 [0.01] | 4 | 2 | | 0.10 [0.76] | 17.35 [0.00] | -7.7 (-6.2)a | 4.95 (3.39)a | 0.63 | -0.06 (-4.46)a | 1.93 [0.75] | 59.9 [0.27] |
| Model C (LRY) | | | | | | | | | | | | | |
| | | | | | | LRY | IFI | | | | | | |
| LFIL | 16.33 [0.03] | 15.43 [0.43] | 2 | 3 | -2.58 [0.01] | 6.68 [0.01] | 7.43 [0.01] | -7.19 (-6.1)a | -0.13 (-4.79)a | 0.17 | -0.09 (-2.5)b | 7.67 [0.11] | 35.69 [0.22] |
| LFIT* | 21.21 [0.03] | 19.22 [0.01] | 2 | 2 | -2.93 [0.01] | 1.54 [0.22] | 15.13 [0.00] | -6.71 (-53.5)a | -3.47 (-4.9)a | 0.36 | -0.53 (-4.32) | 1.47 [0.83] | 29.16 [0.51] |
| LIFIA | 59.23 [0.00] | 51.1 [0.00] | 4 | 2 | -2.57 [0.01] | 37.99 [0.00] | 1.87 [0.17] | -7.92 (-74.2)a | 0.23 (4.2)a | 0.93 | -0.17 (-9.6)a | 0.58 [0.96] | - |

Note: The parentheses [ ] is used to denote probability value, and ( ) represent t-values; a, b, and c represent 1%, 5% and 10 % significance levels respectively; k is the VAR Order as selected by an appropriate information criterion. A- represents the deterministic trend assumption.