

11-1-2010

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### Recommended Citation

Mupimpila, Chris and Funjika, Patricia (2010) "Growth and Regional Integration: The Case of the Southern African Development Community," *Zambia Social Science Journal*: Vol. 1: No. 2, Article 5.  
Available at: <http://scholarship.law.cornell.edu/zssj/vol1/iss2/5>

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# Growth and Regional Integration: The Case of the Southern African Development Community

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*The neoclassical growth model is augmented with structural variables to analyse the determinants of economic growth in the Southern African Development Community. The results show that physical capital, exports, infrastructure, and human capital have a positive and significant effect on economic growth. However, inflation and external debt service have a negative but significant impact on economic growth in the region. In addition, the results suggest that the underdevelopment of the financial sector is a source of heterogeneity among member countries. Therefore, to promote growth and deeper integration in the region, it is necessary to address the underlying causes of inflation, debt, and the underdevelopment of the financial sector.*

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## 1. Introduction

The Southern African Development Community (SADC) is a regional grouping of fifteen countries in Southern Africa. The SADC considers regional integration to be a channel for enhanced development among the member countries. For this purpose, the organisation has adopted macroeconomic indicators for stability and convergence, such as inflation and the ratio of the government budget deficit to the gross domestic product (GDP). Studies that have analysed macroeconomic stability and convergence in SADC show that some countries have achieved the targets while others have not (Chipeta and Schade, 2007; Tabengwa and Salkin, 2006). Other studies have focused on the comparative and institutional aspects of regional integration in SADC (Hansohm, et al., 2005; Clapham, et. al., 2001). However, there are still unanswered questions on the sources of economic growth in the region. What factors determine growth in SADC? Answers to these questions can help SADC set priorities for the future. Besides, it is now evident that economic growth induces deeper regional integration. In the past, there was a recurrent view that regional integration stimulates rapid economic growth. Evidence now shows the opposite to be true; that rapid economic growth is a precursor to advanced regional integration (Tjonneland, 2005; Chinsinga, 2002; Mills and Sidiropoulos, 2001; Mutschler, 2001).

This article analyses the factors which determine economic growth in SADC. The article is organized as follows: section 2 presents background information

about the objectives and institutions of SADC. Section 3 provides an outline of the model and data sources. The results of the study are analyzed in section 4. Finally we present a summary and conclusions of the article in section 5.

## **2. SADC Objectives and Institutions**

SADC is the successor to the Southern African Development Coordination Conference (SADCC), which was initiated by the then Front Line States, namely: Angola, Botswana, Mozambique, Tanzania, and Zambia (Rangasamy et. al., 2000; Ostergaard, 1990; Hanlon, 1984). These countries were known as Front Line States for two reasons. First, the countries were in close proximity to apartheid South Africa. Second, they were united in their support for the independence of Zimbabwe and Namibia, and the ending of apartheid in South Africa. Besides, the Front Line States were economically heavily dependent on South Africa for transport and communications, and trade and investment. To counter the challenge posed by the Front Line States, South Africa, in the late 1970s, attempted to create its own regional grouping, the so-called “Constellation of Southern African States” or “CONSAS.”

In 1979, the Front Line States held a conference in Arusha, Tanzania, which was a prelude to the formation of the SADCC. In April 1980, heads of government and representatives from nine Southern African countries met in Lusaka, Zambia, to launch the SADCC. The original members were: Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe. The principal objectives of the SADCC were to reduce dependence on South Africa and to secure external funding for regional projects.

The SADCC was governed by a Summit of heads of state, a Council of Ministers, a Standing Committee of officials and a Secretariat, based in Gaborone, Botswana. The SADCC's Programme of Action was implemented through economic sectors which were assigned to member countries to coordinate. However, the organization considered transport and communications to be the main priority, because the region acutely depended on South Africa in this sector.

In retrospect, it has been noted that the SADCC succeeded in securing external funding, in sustaining the international campaign against apartheid, and in inculcating a sense of regional identity among its member countries (Rangasamy et. al., 2000; Ostergaard, 1990). However, the main failures of the SADCC were on lessening dependency on South Africa and on external funding. Furthermore, the SADCC was a competitor to the Preferential Trade Area (PTA) for Eastern and Southern Africa. Several members of the SADCC were also members of the PTA. Attempts to address these problems led to the restructuring of the organization in the late 1980s and 1990s. The Southern African Development Community (SADC) was established, in August 1992, as the successor to the SADCC.

Unlike its predecessor, SADC was formed by a treaty, which gave it legal status. In addition, SADC was established mainly to promote regional integration in Southern Africa. This was in accordance with the 1980 Lagos Plan of Action

and the 1991 Abuja Treaty. In 1994, South Africa became a multiparty democracy with the ascendance to majority rule and joined SADC. Mauritius joined the regional bloc in 1995. The Democratic Republic of Congo (DRC) and Seychelles joined in 1997. Over time, the membership of SADC grew; by 2010, there were fifteen countries, namely; Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, the Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

SADC retained the administrative structure of the SADCC. The member countries that joined the organization after the restructuring were given new sector responsibilities. Thus, for instance, South Africa, upon joining in 1994, was assigned the Finance and Investment portfolio. In 1996, the SADC Organ on Politics, Security and Defense Cooperation was established. The Organ was established in order to deal with political and security issues affecting SADC. By the year 2000, SADC countries had signed 11 protocols, seven of which were ratified by member countries (Rangasamy, 2001:35). Those that were ratified and are at the stage of implementation are the protocols on: Immunities and Privileges, Shared Water Course Systems, Energy, Transport, Communications and Meteorology, Combating Illicit Drug Trafficking, Trade and Mining.

In 2001, SADC was restructured by ending the system of sectoral project and co-ordinating units, which by then were twenty-one, and were scattered among SADC member countries (Tjonneland, 2005). By the reforms of 2001, the units and commissions were closed down and consolidated into four clusters known as directorates. These are run by the SADC Secretariat. The four directorates are: trade and investment, infrastructure and services, food and agriculture, and human development and special programmes. In 2003, SADC issued two new strategic plans: the Regional Indicative Strategic Development Plan (RISDP); and the Strategic Indicative Plan for the Organ on Politics, Defense and Security Co-operation (SIPO). According to the RISDP, SADC should be a free trade area by 2008, a customs union by 2010 and a common market by 2015 (SADC, 2003:115). SADC also aspires to form a Tripartite Free Trade Area (TFTA) with the Common Market for Eastern and Southern Africa (COMESA) and the East African Community (EAC) by 2012. The TFTA will have trade and tariff implications for member countries in all the three blocs. It also changes SADC's internal vision as laid out in the RISDP. Overall, the objective of the RISDP is the integration of SADC into the global economy through: "increased SADC share of trade and investment in total global trade and investment; increased SADC trade and investment with other regional economic blocs," (SADC, 2003: 115). The extent to which SADC can integrate into the world economy through trade and investment depends on the degree to which SADC grows. Therefore, it is necessary to know the factors which determine growth in SADC.

### **3. Model Specification and Variables**

We are motivated by a neoclassical production function. We postulate a production function (Andreosso-O'Callaghan, 2002; Mankiw et al., 1992; Chenery et. al., 1986) of the form:

$$Y_{it} = (L_{it} K_{it} X_{it})$$

$$i = 1, \dots, N; t = 1, \dots, T \quad (1)$$

where  $i$  denotes countries and  $t$  denotes time. In this case,  $Y_{it}$  is real output per capita in country  $i$  at time  $t$ .  $L_{it}$  and  $K_{it}$  are the conventional neoclassical growth variable labour and capital inputs, respectively.  $X_{it}$  is a vector of structural variables. The specific estimated equation is:

$$GDP_{it} = \beta_0 + \beta_1 LF_{it} + \beta_2 GFCF_{it} + EXP_{it} + LE_{it} + INFRA_{it} + SE_{it} + DEDTS_{it} + INFL_{it} + IR_{it} + MON_{it} + DC_{it} + \mu_{it} \quad (2)$$

where  $GDP_{it}$  is real GDP per capita and  $L_{it}$  is total labour force. The variable  $GFCF_{it}$  is real gross fixed capital formation. This is the capital input. The structural variables are: real exports ( $EXP_{it}$ ), life expectancy at birth ( $LE_{it}$ ), infrastructure ( $INFRA_{it}$ ), secondary school enrollment as percent of total enrollment ( $SE_{it}$ ), total debt service on external debt ( $DEDTS_{it}$ ), inflation ( $INFL_{it}$ ), real interest rate ( $IR_{it}$ ), money supply (M2) as percent of GDP ( $MON_{it}$ ) and domestic credit provided by the banking sector as a percent of GDP ( $DC_{it}$ ) and  $\mu_{it}$  is the error term. As indicated earlier, when the SADCC was formed in 1980, it gave priority to transport and communications, in order to reduce its dependency on South Africa. Thus, in the present study, three types of infrastructure are used: paved roads as percent of total roads, telephone lines per 100 people, and mobile and fixed line subscribers per 100 people. The data for the study was obtained from the World Bank's World Development Indicators for 2009. This was pooled across the 15 SADC countries over the period 1990 to 2007. This formed a panel dataset of 270 observations.

#### 4. Empirical Results

The empirical model in equation 2 was estimated by panel data estimation, the advantages of which are well documented (Baltagi, 2005; Hsiao, 1985). The approach enables us to test for heterogeneity among SADC member countries, given that the countries differ in geographical size, income, population, etc. The approach also increases the degrees of freedom and gives a better understanding of empirical issues than the use of time series or cross sectional data separately.

The study used Pooled Ordinary Least Squares (POLS) and Panel Least Squares (PLS). The results of the regressions are in tables 1 to 4. In the case of the pooled cross sections, we had to determine whether the fixed effects (FE) or random effects (RE) model is supported by the data. We used the Likelihood ratio test for fixed effects and the Hausman (1978) test for random effects. The empirical results are depicted in the tables. Columns 1 and 2 in table 1 show results for the fixed effects model. Columns 3 and 4 in table 2 show the results for the random effects model.

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Table 1: Determinants of Economic Growth in SADC: Fixed Effects Model (Pooled OLS, 1990 – 2007)

Dependant Variable (rgdppc)	1		2	
	Coef	t	Coef	t
Constant	4.290	0.468	6.837	0.761
Labour force (lftot)	-0.507	-0.710	-0.484	-0.669
Gross Fixed Capital Formation (rgfcf) 0.660		0.181	1.107	0.096
Roads, paved % of total roads (infra2)	-0.005	-1.496	-0.003	-1.156
School Enrolment, Secondary (Sesec)	0.014**	3.623	0.015**	3.894
Real Exports (rexp)	0.206	1.077	0.174	0.910
Life Expectancy at Birth (lexp)	0.003	0.524	0.0007	0.137
Debt Service on External Debt, total current US\$ (Debt-service)	0.065	1.064	0.043	0.739
Inflation (%) (inflationcp) 0.653		0.099	1.041	0.058
Mobile and Fixed line telephone subscribers per 100 (infra1)	0.002	0.625	0.002	0.667
Domestic Credit by Banking Sector (Doms)	0.003	1.095		
Money and Quasi Money (M2) as % of GDP (mqmy)	-0.010	-1.565	-0.005	-1.106
Real Interest Rate (rinr)	0.003	0.849	0.002	-0.798
Adj. R-Squared	0.99		0.99	
D-W Statistic	1.29		0.70	
F-Statistic	512.55		523.89	
N	30		30	
Cross sections included	11		11	

Notes: \* indicates 10% confidence level and \*\* indicates 1% and 5 % confidence levels.

The result in table 1 and 2 show clearly that it is the inclusion or exclusion of financial sector variables that supports the fixed or random effects model. The financial sector variables used in the study are: domestic credit provided by the banking sector as a percentage of GDP, money and quasi-money (M2) as a percentage of GDP, and real interest rate. Although these variables are statistically insignificant, their inclusion as regressors, in columns 1 and 2 in table 1 reveals that SADC member countries have unique features or characteristics. The countries are heterogeneous (the fixed effects model). In their analysis of ten SADC countries, Chipeta and Schade (2007: 21), state that, "... despite [the] widespread commitment to similar, relatively orthodox macroeconomic and trade policies, widely divergent macroeconomic and economic conditions prevail across the ten countries." How can we explain this lack of convergence in SADC?

Table 2: Determinants of Economic Growth in SADC: Random Effects Model

(Pooled OLS, 1990-2007)

Dependant Variable (rgdppc)	3		4	
	Coef	t	Coef	t
Constant	0.139	0.301	-0.594	-0.809
Labour force (lftot)	-0.602**	-16.347	-0.652**	-12.05
Gross Fixed Capital Formation (rgfcf)	0.285**	7.287	0.335**	5.717
Roads, paved % of total roads (infra2)	-0.002	1.697	0.001	0.937
School Enrolment, Secondary (Sesec)	0.006**	2.755	0.002	0.670
Real Exports (rexp)	0.446**	17.020	0.467**	12.438
Life Expectancy at Birth (lexp)	-0.004	-1.519	-0.002	-0.498
Debt Service on External Debt, total current US\$ (Debtsservice)	0.053	1.658	0.060	1.324
Inflation (%) (inflationcp)	-0.001**	-2.142	-0.0006	-0.769
Mobile and Fixed line telephone subscribers per 100 (infra1)			0.003**	2.215
Telephone lines per 100 people (infra4)			0.003	1.014
Adj. R-Squared	0.99		0.99	
D-W Statistic	0.41		0.59	
F-Statistic	262.43		293.67	
N	23		23	
Cross sections included	10		10	

Notes: \* indicates 10% confidence level and \*\* indicates 1% and 5 % confidence levels.

In the 1980s and 1990s, SADC succeeded in attracting substantial development finance from industrialized countries. The resources were used, among others, for regional projects in infrastructure. During that time, SADC had more than 21 sector co-ordination units in the 12 member countries (see section 2). However, as noted by Tjonneland (2005), the projects implemented by the units were national and not regional in scope. They, therefore, did not have a regional impact. The units also suffered from inertia and blurred vision. It can, therefore, be argued that SADC lost two decades when external finance was much more accessible than in recent times, but little progress was made to implement regional development programmes. Thus, by the reforms of 2001, the 21 sector units and commissions were closed down and consolidated into four clusters known as directorates, which are now run by the SADC Secretariat. The 2001 reforms were aimed at making SADC adapt to changing circumstances and problems. However, the reforms have not achieved their purpose because of the constraints on the SADC Secretariat. The Secretariat is merely an administrative institution, without the capacity or political power to force member countries to comply with the SADC agenda. The new SADC Treaty of 1992 precludes such power. Furthermore, the Secretariat does not have adequate capacity to evaluate and monitor the implementation of SADC projects (Tjonneland, 2005).

For these reasons, macroeconomic convergence is slower than expected. Besides, the strength of SADC does not only depend on the Secretariat, but on

the strength of the constituent member countries as well. If member countries are weak economically and politically, these weaknesses will be transmitted to SADC as a whole. Although eleven protocols have been signed and seven have been ratified, SADC countries differ in their capacities to implement the protocols and agreements. Therefore, only a few of the protocols that are of practical value have been implemented (Mills and Sidiropoulos, 2001).

This article shows that the factor that is significant for economic growth in the fixed effects model in SADC is human capital formation. This is represented by secondary school enrolment. However, in the random effects model depicted in table 2, columns 3 and 4, suggests that, apart from human capital formation, there are other factors which significantly determine economic growth in SADC. These are labour force, capital, exports, inflation and infrastructure.

All these variables have the expected signs. All, except labour force and inflation, have a positive effect on growth. The results show that inflation has a significant but negative effect on economic growth in SADC. This is expected. Inflation raises macroeconomic instability and reduces the attractiveness of the investment climate in the region. This is particularly so when we consider that inflation in Zimbabwe has, in recent years, been the highest in the world, with a record of 1,593% in January 2007 (The Zimbabwean, 2007:5).

The Zimbabwean experience has been employed by some analysts to illustrate the impact of instability on regional integration. According to Mills and Sidiropoulos (200: 2), there is a paradox in regional integration. Regional stability requires that member countries be integrated deeply, but this in itself increases the degree to which the countries transmit instability to one another. The paradox is that, while deeper integration is necessary for stability, it also increases the transmission of instability. When member countries are well integrated, the instability that occurs in one country rapidly spreads elsewhere in the regional bloc. This point has been succinctly stated by Cleary (2001:95):

Conflict, as the contagion effect of recent events in Zimbabwe makes clear, has deleterious effects on global investor confidence outside the narrow confines of the country in which it occurs. When conflict is widespread – as it is in Africa – those with no driving economic interest in distinguishing one polity from another, will tend, as we have seen recently, to generalize sweepingly.

Thus, while convergence and deeper integration are noble goals, these processes also generate negative externalities. The results of the pooled regressions in this article show that when SADC countries exhibit the same characteristics of homogeneity, there are more factors that are significant for economic growth than under conditions of heterogeneity. To the degree that it reduces heterogeneity among member countries, macroeconomic convergence should be growth promoting in SADC. The results of the study suggest that financial sector variables are a source of heterogeneity among SADC member countries. Convergence in the financial sector is, therefore, necessary for growth. This is especially so when we consider the 'contagion effect' of instability (Cleary,

2001) and its negative externalities (Mills and Sidiropoulos, 2001).

Tables 3 and 4 depict the results of Panel Least Squares (PLS). As is the case with other studies, we conducted panel unit root tests using different criteria. We incorporate the individual effects and the individual and trend effects. The tests conducted showed evidence of non-stationarity of the variables in levels. One of the ways of dealing with variables that are non-stationary at levels is to investigate the co-integration relationship between the variables (Hatanaka, 1996; Engle and Granger, 1987). Therefore, the Pedroni panel co-integration test was conducted (Baltagi, 2005; Hsiao, 1985). All the Pedroni panel test statistics reject the null hypothesis of no co-integration.<sup>1</sup>

Table 3: Determinants of Economic Growth in SADC  
(Panel OLS, 1990-2007)

Dependant Variable (rgdppc)	1		2	
	Coef	t	Coef	t
Constant	-1.802	-1.247	-0.696	-0.923
Labour force (lftot)	-0.460**	-5.548	-0.525**	-7.911
Gross Fixed Capital Formation (rgfcf) 5.695		0.265**	2.87	0.368**
Roads, paved % of total roads (infra2)	-0.002	0.775	0.002	0.919
School Enrolment, Secondary (Sesec)	0.010**	2.842	0.008**	2.948
Real Exports (rexp)	0.486**	10.15	0.463**	9.747
Life Expectancy at Birth (lexp)	0.299	1.055	0.007	1.416
Debt Service on External Debt, total current US\$ (Debtsevice)	-0.120*	-2.077	-0.167**	-3.576
Inflation (%) (inflationcp) 0.647		-0.0006	-0.0003	0.001
Telephone lines per 100 people (linfra4)	-0.006	-0.824		
Domestic Credit by Banking Sector (Doms)	-0.002	-1.628		
Money and Quasi Money (M2) as % of GDP (mqmy)	0.004	1.002	-0.001	-0.701
Real Interest Rate (rinr)	0.003	0.624	0.005	1.235
Adj. R-Squared	0.99		0.99	
D-W Statistic	2.65		2.69	
F-Statistic	472.94		525.49	
N	22		22	
Cross sections included	10		10	

Notes:

~ Regression with financial sector variables.

\* indicates 10% confidence level and \*\* indicates 1% and 5 % confidence levels.

Columns 1 and 2 in table 3 show the panel regression results with the financial sector variables included. Columns 3 and 4 in table 4 show the effects of excluding the financial sector variables. Evidently, the exclusion of financial sector variables

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is immaterial in the case of panel estimation, unlike the pooled regressions. This outcome suggests that when analysing growth factors, the estimation procedure matters. This is besides the regressors used in the procedure. In other words, it helps to analyse a problem by using different econometric techniques. Granted this approach, in itself, poses its own problems. As is clear from tables 3 and 4, panel results shed additional insight on the growth factors in SADC.

Table 4: Determinants of Economic Growth in SADC  
(Panel OLS, 1990-2007)

Dependant Variable (rgdppc)	3		4	
	Coef	t	Coef	t
Constant	0.133	0.084	-0.309	-0.176
Labour force (lftot)	-0.444**	-4.713	-0.497**	-4.770
Gross Fixed Capital Formation (rgfcf)	0.336**	3.976	0.362**	4.09
Roads, paved % of total roads (infra2)	0.005**	2.052	0.004	1.696
School Enrolment, Secondary (Sesec)	0.010**	2.332	0.008	1.475
Real Exports (rexp)	0.408**	7.602	0.426**	7.652
Life Expectancy at Birth (lexp)	0.014	0.046	0.035	0.112
Debt Service on External Debt, total current US\$ (Debtsservice)	-0.165**	-2.674	-0.147**	-2.255
Inflation (%) (inflationcp)	-0.001	-1.208	-0.001	-0.864
Mobile and Fixed line telephone subscribers per 100 people (infra1)			0.007	0.341
Telephone lines per 100 people (infra4)	-0.003	-0.504		
Adj. R-Squared	0.99		0.99	
D-W Statistic	1.53		1.4	
F-Statistic	393.66		389.55	
N	23		22	
Cross sections included	10		10	

Notes:

Regression without financial sector variables.

\* indicates 10% confidence level and \*\* indicates 1% and 5 % confidence levels.

The results from the pooled and panel estimations show that labour force, capital and exports are significant for economic growth in SADC. The pooled results in tables 1 and 2 also show that inflation has a significant but negative effect on growth. On the other hand, the panel results, in tables 3 and 4 have two additional factors that are significant for growth in SADC. These are infrastructure and debt service on external debt. Infrastructure is measured by paved roads as percent of total roads. Table 4, column 3 shows that paved roads are significant while all the four regressions in tables 3 and 4 show that debt service has a significant but negative effect on growth in SADC.

The number of paved roads as a percent of total roads is found to have a positive and significant impact on growth in SADC. This finding is important in light of the fact that from its inception in the 1980s SADC gave priority to transport and

communications. This was in order to reduce its dependency on South Africa during the apartheid era. The fact that paved roads are positively and significantly related to growth in SADC suggests that the organization should value the investment in good roads. Poor infrastructure is considered to be one of the supply-side constraints to regional integration in SADC because it makes the transport network very costly. According to Mills and Sidiropoulos (2001: 6) transport costs account for more than 30% of the consumer prices for imports into SADC and for most of the goods produced in the region. Since these are reflected in the sales price, it is the case that transport costs are shifted forward to consumers, and as such, they are a hidden tax to consumers.

Furthermore, high transport costs retard intra-regional trade in SADC. It has often been said that intra-regional trade in SADC is very low. This is as compared to that of the other regional blocs, such as the Southern Common Market (Mercosur)<sup>2</sup> and the Andean Community (CAN)<sup>3</sup> in South America (Meyn, 2005; Chinsinga, 2002; Gibb, 2001; Mutschler, 2001). Intra-regional trade in SADC has, through the years, been estimated to be at 6% of total trade among member countries (Meyn, 2005; Rangasamy, 2000). Trade among SADC countries is low because the countries produce identical products. They, therefore, lack product complementarities. SADC countries are either mineral-based or rural-agrarian economies which are not diversified. The countries have low levels of industrialisation. They mainly depend on the export of primary commodities and the import of manufactured goods. Furthermore, intra-regional trade in SADC is retarded by a host of supply-side constraints, such as poor roads and unreliable services for water and electricity (Meyn, 2005; Chinsinga, 2002). South Africa, which has a diversified economy and comprises over 70% of SADC's GDP, is an exception (Mutscher, 2001:151).

The panel results in tables 3 and 4 show that debt service on external debt has a significant but negative effect on economic growth in SADC. This is as expected. Several SADC countries are in the category of highly-indebted countries. As a result, the countries spend considerable amounts of their export earnings to service the external debt. The opportunity cost of debt service includes forgone investment in health and education.

External debt service has other adverse effects on the economy. First, a significant part of the country's export earnings are spent on the repayment of the external debt. In the case of Africa, "approximately one of every four dollars earned is paid to service this debt" (Rampel, 1992:1). Secondly, the roots of the structural adjustment programmes (SAPs) implemented by these countries can be traced to the African debt crisis. It is because of the debt crisis that the International Monetary Fund (IMF) and the World Bank found it necessary to impose the structural adjustment programmes (SAPs) on these countries. In turn, the SAPs have worsened poverty and unemployment. Thirdly, as a result of the world debt crisis, the IMF and the World Bank initiated, in 1996, a debt relief programme to 40 Heavily Indebted Poor Countries (HIPC). Of the 40 countries, 29 are in Sub-Saharan Africa and six are in SADC.<sup>4</sup> However, it can be argued that HIPC debt

relief is a palliative and not a panacea. This is because of the stringent IMF and World Bank conditions in the programme. Furthermore, the savings from HIPC may be misused because money is fungible (Shah, 2001). The findings of this article are in line with the general view that external debt has a negative effect on growth.

This article also supports the view that improvements in human capital and economic growth are positively correlated. "Of all endowments, human capital probably does most to fuel long-term economic gains," (World Bank, 1994:5). Several studies have found a positive and significant relationship between human capital and economic growth (Easterly and Levine, 2001; Krueger and Lindahl, 2001; Bils and Klenow, 2000; Benhabib and Spiegel, 1994; Mankiw et al., 1992; Lucas, 1988). Mankiw et al. (1992) augmented the Solow growth model by including secondary school enrollment as the proxy for human capital formation. They considered three groups of countries: non-oil low-income, intermediate and OECD countries. Their results show that human capital accumulation is significant for growth in all the three groups of countries. Benhabib and Spiegel (1994) also used aggregate cross-country data to examine the role of human capital in economic development. They observe that human capital accumulation is significant for development because it facilitates technological adoption and innovation. Meanwhile, Easterlin (1981) asked the question: why isn't the whole world developed? In searching for answers to this question, Easterlin observed that the development of North America and Europe was generated by the diffusion of modern industrial technology in these countries. He, however, noted that the application of modern technology was preceded by massive investments in formal education, which later on made it possible to copy and apply modern technology. Going a step further, Ehrlich (2007) asked the question: why did the United States of America (USA) overtake Europe and become the economic superpower in the 20th century? He found that, compared to Europe, the USA had superior mass higher education, which helped it to overtake Europe. Simply stated, investment in human capital is good for economic growth.

This is confirmed in a study by Oketch (2006). Oketch's study looked at a sample of 47 countries. This included all SADC members except Namibia. The study established a positive and significant relationship between investment in human capital and economic growth. Case studies on SADC member countries report similar findings (Mupimpila, 2009, 2007a, 2007b; Siphambe, 2000; Ncube, 1999). In the present study both the pooled and panel results show that human capital has a positive and significant impact on economic growth in SADC.

Human capital formation also helps to explain the apparent paradox in the growth experience of African countries (World Bank, 1994). Accumulated evidence shows that per capita incomes and living standards fell in many African countries during the 1970s, 1980s and 1990s. For most SADC countries, real per capita incomes were lower at the beginning of the 21st century than in 1970 (Rangasamy, 2001:34). The paradox is that despite the fall in per capita incomes and living standards, Africa showed improvements in human capital. School

enrollments increased while the health and nutrition status showed improvements. According to the World Bank (1994), this paradox can be explained by the fact that human development was slowing down the protracted decline in economic conditions. The value of the investment in human capital is that, when circumstances allow, it stimulates growth, but in adverse conditions, it slows the downward spiral. The present study confirms the critical role of human capital in economic growth.

Growth can induce deeper regional integration, provided SADC addresses two perennial problems which sap the energy of the organization. First, SADC suffers from a redundant and moribund development strategy. In their study of 10 SADC countries, Chipeta and Schade (2007) found that in all but one country (Tanzania), economic growth and development targets are, for the most part, set without considering SADC priorities. In central and eastern SADC countries, the targets are formulated with the aid of the IMF and World Bank, and donor countries. Thus, with regards to growth and development targets, the regional development plan, the RISDP, is redundant and moribund. SADC countries should set their growth and development targets in the context of the regional agenda.

Second, SADC had, until recently, been a competitor to COMESA; particularly in the areas of trade and investment. SADC and COMESA have overlapping membership. Eight SADC member countries are also COMESA members.<sup>5</sup> SADC and COMESA have similar mandates, objectives and programmes. They both intend to create a customs union. Besides, there is already a customs union within SADC, the Southern African Customs Union (SACU)<sup>6</sup>. Therefore, the proposed TFTA between COMESA, EAC and SADC will obviously have significant implications on the economic growth of SADC, should the TFTA be implemented as planned. The proposal for the TFTA was the result of a joint summit held by COMESA, EAC and SADC in Kampala in 2008. It was decided that the three regional economic communities should be merged into one regional economic community. A free trade area should thereafter be established, to be followed by a customs union. It is expected that the FTA Agreement will be signed by member states in July 2011 and will be launched in January 2012. If it is effected, the TFTA will "...comprise 26 countries with a combined population of 527 million people, a combined GDP of US \$ 624 billion, a GDP per capita averaging US \$1,118 and make up half the African Union (AU) in terms of membership and just over 58% in terms of contribution to GDP and 57% of the total population of the African Union," (EAC, 2011:1). Clearly, the TFTA could be a catalyst for economic growth in SADC, because of the wider market within the TFTA and the unity of purpose in one large regional economic community. Besides, the SADC region has, in recent years, recorded positive growth rates. The issue, therefore, is how to sustain the positive growth rates and raise them over time.

## **5. Summary and Conclusions**

This article analysed the determinants of economic growth in SADC. We used the neoclassical production function, which was augmented by structural variables. These were real exports, life expectancy at birth, infrastructure, secondary school

enrollment, total debt service on external debt, inflation, real interest rate, money supply, and domestic credit provided by the banking sector. Pooled and panel estimation yield contrasting results in some cases, but similar results in others.

In the case of pooled cross sections, both fixed and random effects models are supported by the data, depending on the variables included in the estimation. The inclusion of financial sector variables is what supports the fixed effects model, while the exclusion of these variables yields the random effects model. In the fixed effects model, the factor that is significant for economic growth in SADC is human capital. However, the random effects model shows that other factors, together with human capital accumulation ( $SE_{it}$ ), significantly determine economic growth in SADC. These factors are: labour force ( $L_{it}$ ), physical capital ( $GFCE_{it}$ ), exports ( $EXP_{it}$ ), inflation ( $INFL_{it}$ ), and infrastructure ( $INFRA_{it}$ ). It is important to note the difference between human capital accumulation and labour force. One is about improvements in the quality of the labour force while the other is the number of employed and unemployed people actively seeking jobs. In the Solow growth model, an increase in population growth rate increases the labour force and lowers the steady-state capital-labour ratio. This results in a lower output per worker (Romer, 2006; Mankiw, 1997; Abel and Bernanke, 1995). This is considered to be the case in developing countries where there are high rates of population growth. Therefore, in the article, the negative but significant relationship between economic growth and labour force is not surprising. SADC consists of developing countries that are sub-divided into two groups (Mutschler, 2001). There are middle income countries with an annual per capita income of above US \$1,001<sup>7</sup> and low income countries<sup>8</sup>. Thus, in this study, the pooled results suggest that the variables included or excluded in estimation matter in the growth analysis of SADC countries.

By contrast, the panel results show that the inclusion or exclusion of financial sector variables does not matter. Therefore, empirical results depend on both the estimation procedure and the variables used in the estimation. Furthermore, the panel results show that two additional factors are significant for growth in SADC. These are infrastructure and debt service on external debt. As expected, paved roads and economic growth are positively correlated, while external debt service, like inflation, has a negative and significant impact on growth in SADC. This result confirms the general view that external debt service has a negative effect on growth.

Our analysis of the pooled and panel results shows that the factors that retard macroeconomic convergence in SADC are inflation and debt service on external debt. We should also add the underdevelopment of the financial sector as a constraint. The results of this study show that none of the financial sector variables are positively correlated to growth in SADC. M2 as a percent of GDP shows the extent to which the financial sector is well-developed (World Bank, 1994:25). Yet, in our study, this variable is insignificant for growth in SADC. The underdevelopment of the financial sector in SADC may be a microcosm of the problems of SADC. Chipeta and Schade (2007) have shown that, in almost all SADC countries, economic growth and development targets are set without

necessarily considering SADC priorities. This undermines the effectiveness of the RISDP. Besides, the priorities set in the RISDP will, undoubtedly, be affected by the proposed TFTA. However, if implemented as planned, the TFTA could stimulate growth in SADC, because of the expanded market and the harmony of interests in Eastern and Southern Africa.

When we look at the pooled and panel results, the study confirms the view that improvements in human capital have a positive and significant impact on growth. These findings are similar to those of other researchers who have either used cross section analysis which included most of the SADC countries or case studies on SADC member countries only. It can evidently be argued that, when circumstances are conducive, human capital stimulates growth, but in adverse conditions, it slows down the recession. The results of this study consistently suggest this to be the case in SADC. Therefore, human capital formation can be a basis for deeper integration in SADC. The other factors are investment in physical capital, exports, and infrastructure.

It is very clear that in recent years, the SADC region has recorded positive growth rates. The challenge, however, is how to sustain the growth rates and raise them in the long-run. This is one area that could be examined by future research. Furthermore, future growth analysis in SADC could employ other variables, such as the internet as an infrastructure variable.

#### **Notes:**

1. Results of the unit roots tests and Pedroni Panel cointegration test are available on request from the corresponding author at mupimpi@ub.bw
2. The Mercosur member countries are Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay.
3. The CAN member countries are Bolivia, Colombia, Ecuador, Peru and Venezuela.
4. These are the Democratic Republic of the Congo, Madagascar, Malawi, Mozambique, Tanzania and Zambia.
5. These are the Democratic Republic of the Congo, Madagascar, Malawi, Mauritius, Seychelles, Swaziland, Zambia and Zimbabwe.
6. This comprises Botswana, Lesotho, Namibia, South Africa and Swaziland.
7. These are Botswana, Mauritius, Namibia, Seychelles, South Africa and Swaziland.
8. These are the Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe.

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