Income Convergence in Southern Africa: A Nonlinear Time-Varying Coefficients Framework

Ntokozo Nzimande

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Abstract

This article investigated income per capita convergence in the Southern African Development Community (SADC) over the period 1980-2017 in a non-linear time-varying coefficients framework. The findings of the study suggested no overall income convergence in the SADC region, but evidence supporting the existence of convergence clubs was found indicating that the SADC comprises five convergence clusters, each converging to its own steady-state equilibrium. These findings suggest that, to promote convergence in the region, policies that explicitly target 'low-income' countries are warranted.

JEL Classification: O40, O41

1 Introduction

In the Southern African Development Community (SADC), knowledge about real economic convergence is essential in the on-going process of regional economic integration. The objective of the SADC regional integration is to promote economic convergence, i.e., reduction of cross-country income disparities, among others. Southern African Development Community is considered the largest regional economic community in Africa, with an aggregated GDP of US$655 billion in 2012. This is much higher relative to other blocs such as Economic Community of West African States (ECOWAS) and East African Community (EAC), whose combined GDP for the same period is $396 billion and $85 billion, respectively. Notwithstanding this, the region is among the most heterogenous economies in terms of income levels. For instance, according to World bank, Southern Africa can be stratified into four income categories as: *High Income*– Mauritius and Seychelles; *Upper Middle Income*– Botswana, Namibia and South Africa; *Low Middle Income*–Angola, Swaziland, Zambia, Comoros, Zimbabwe, Tanzania and Lesotho; and *Low Income*– Mozambique, Madagascar, Malawi and Democratic Republic of Congo (See also figure 1). What is worrying is that

*Senior Lecturer in the Department of Economics at the University of Cape Town, South Africa

over 60% of SADC economies fall in either the low-middle income or low-income categories. And all countries ranked in the low-income categories are far below upper cut-off level of US$1035. The lowest perfomer in the region is Malawi, with a GNI per capita of US$380. This is 33 times lower than Seychelles, which has GNI per capita of US$12900.

Borsi and Metiu (2015) held that income convergence is an essential ingredient for a successful adoption of common "structural and monetary policies". Consequently, countries wanting to establish a successful monetary union need to put in place policies that will foster income convergence. Consistently, the 2011 Regional Indicative Strategic Development Plan (RISDP) of the SADC region sets an agenda for both the nominal and real convergence prior to joining/or establishment of the envisaged monetary union. In addition, working towards this objective, drastic steps have been taken including the 'free' mobility of capital and people in the region, trade liberalisation, and harmonisation of financial systems across the region (Nzimande & Ngalawa, 2017a, 2017b). These initiatives, especially the liberalisation of trade, are expected to accelerate the convergence process. Krugman (1990), Romer (1986), among others, contended that increased integration could potentially result in increased income disparities. Intensified integration could lead to factors of production being concentrated to more advanced economies due to increasing returns to scale and spillovers. These contrasting views necessitate an empirical assessment of convergence in the SADC region—such an exercise could have in-depth policy consequences. For example, if deeper integration results in income divergences in the region, this would necessitate regional policies that will explicitly favour the less developed countries to curb income disparities (Beyaert, 2003; Jones, 2002).

The question of whether cross-country income disparities have a tendency to disappear over time always been fundamental to economists with interest in economic growth (Islam, 2003). This question is not just a heuristic exercise, but has central implications for economic welfare. The neoclassical growth model predicts that countries will have a tendency to converge based on the diminishing returns to capital; and, the marginal product of capital for countries with lower initial endowment of capital tend to be greater than that of countries with higher initial capital endowment (Solow, 1956; Swan, 1956). This enables them to grow faster than their developed counterparts and as a result, in the long-run, they eventually converge (Barrios, Flores, & Martınez, 2019). Consistent with this view, earlier empirical studies documented evidence that poor economies tendency for growth is markedly more rapid than than rich economies (among others, see Salai Martin, 1996).

In contrast to above-mentioned studies, Romer (1986) and Kaldor (1981) among others, argued that income per capita across economies is likely to grow boundless, and there is no reason to expect cross-country incomes to converge on a single steady-state. This is because economies of scale would result in the concentration of resources. As a result, economies that are ahead of the others are more likely to remain ahead—and would be able to attract more factors of production at the expense of the least developed economies (Martin &

Sunley, 1998). This controversy, as noted by Borsi and Metiu (2015), has spurred a wide range of definitions and empirical testing approaches of convergence. Additionally, it has been demonstrated that the neoclassical growth theory could yield multiple equilibria, with certain countries converging to a high steady-state output and some to a low-income steady-state. This is referred to as "club convergence".

Whilst the issue of convergence has been extensively debated, empirical studies tend to concentrate on OECD, Latin America, and Asia, and to the little extent, on African economies (King & Ramlogan-Dobson, 2015). The negation of the African continent in the convergence literature is puzzling given that it is an essential issue to the continent as the 'world's poorest' region. Venables (2010) explained that African per capita incomes have been falling behind those of the rest of the world, thus supporting the view that Africa is the world's destitute region. African countries are at different stages of development, some are deemed "more developed" than others (Nzimande & Ngalawa, 2019). For example, South Africa is far "developed" compared to other countries in the region. For example, South Africa's GDP per capita is 17 times greater than that of Malawi and Zimbabwe. Additionally, the existing African literature relied on the cross-sectional approach of assessing convergence. For example, this approach only tested the hypothesis that all countries under scrutiny are converging (global convergence), against the null hypothesis of no overall convergence (Bernard & Durlauf, 1996). This ignores the possibility that certain countries in the group may be converging while others are not (local convergence). Our main contribution to the literature is the allowance of multiple equilibria; countries are allowed to converge in different (in clusters) steady-states. This research is the first attempt embark on this research in the SADC region. Consequently, a set of stylised facts concerning the real income convergence would be established for SADC. Another contribution of the present study is that, contrast to existing studies in Africa (for example, Tipoy, 2019), the used methodology does not require 'prior information' about the possible income convergence clusters. In our technique, the determination of convergence clubs is data-driven (endegenous). Finally, previous studies in Africa have relied on methods that impose restrictions regarding trend stationarity or stochastic non-stationarity. Therefore, the findings from these studies are subject to the assumptions and problems associated with stationarity tests (Mishra & Mishra, 2018). This study, therefore, also contributes by relying on a model that imposes no assumptions concerning stationary/or non-stationary of the data (Sichera & Pizzuto, 2019). As a consequence, this study is immune to all issues associated with such tests.

To preview the findings of the study, no evidence of overall economic convergence was found in the SADC and different groups converging to dissimilar steady-state equilibriums are found. The failure of convergence within the SADC implies little or no relationship between convergence and SADC membership, as SADC area countries do not comprise a single convergence club. In addition, the study found that while there was evidence for within-club, there existed no evidence for between-club convergence. This implied that the dispar-

ities between clubs do not vanish over time and could widen.

2 Review of the Literature

To assess 'convergence', the literature has followed certain trajectories namely, β-convergence and σ-convergence. The former is based on the neoclassical assumption of diminishing marginal product of capital. Countries with lower initial-capital tend to have higher marginal productivity of capital relative to the capital-rich economies (Solow, 1956). With similar savings rates, capital-poorer countries have a tendency of growing faster than capital-rich economies. To this view, there should be an adverse relationship between the initial level of income and subsequent growth rate (Islam, 2003). For this proposition to hold, the coefficient β on the initial income should be negative. The latter, σ-convergence, refers to a reduction in the cross-sectional dispersion.

The convergence hypothesis has been tested in various areas and different parts of the world. For example, Churchill, Inekwe, and Ivanovski (2018), Montanes, Olmos, and Reyes (2018), Holmes, Otero, and Panagiotidis (2019), Montagnoli and Nagayasu (2015), Apergis, Simo-Kengne, and Gupta (2015) and Meng, Xie, and Zhou (2015) evaluated convergence in house prices. Bilgili (2016), Eleftheriou and Muller-Plantenberg (2018), Halka and Leszczynska-Paczesna (2019) and Phillips and Sul (2009) examined convergence in the cost of living. As predicted by standard international trade textbooks, globalisation/or international trade ought to eventually result to the equalisation of factor prices and cost of living across different countries. And it is generally accepted that the cost of living should be equal within a country and, if not, then differences would eventually disappear. In energy and environmental economics, the convergence hypothesis has been applied to examine convergence in carbon dioxide emissions, CO_2, (see, for example Burnett, 2016; Acar, Soderholm, & Brannlund, 2018; Sun, Su, & Shao, 2016; Apergis & Payne, 2017; Apergis, Payne, & Topcu, 2017; Acaravci & Erdogan, 2016).

While there has been a burgeoning interest on the subject of convergence, an abundance of these studies were localised in Western and Asian economies (Barrios et al., 2019; Chiquiar, 2005; Duran-Fernandez & Santos, 2014; Pritchett, 1997). Few studies have focused on Africa. For example, Ganong and Shoag (2017) studied convergence in the United States of America. They found that across the states, the rate of income convergence has dwindled over time. In the case of China, Tian, Zhang, Zhou, and Yu (2016) found evidence of two convergence clubs: the high-income clubs, which comprised seven east-coastal regions and Inner Mongolia and low-income clubs. Interestingly, they found that, while within-club income inequality has declined, it has escalated between-clubs. Consistent with this, Kant (2019) found that, between Sub-Saharan Africa and South Asia, there has been neither convergence nor catching-up since 1951. In addition, Kant found that the richer countries within-group tended towards convergence, while the poorer countries were diverging completely. It can be accepted that wealthier countries will have access to better and similar technolo-

gies, which will foster convergence among them. Less wealthy countries do not have access to advanced technologies, and between them there is a possibility that they may have access to different technologies, which hinders convergence within them and between them as well as the richer economies (Chiquiar, 2005; Duran-Fernandez & Santos, 2014).

In SADC, Dunne and Masiyandima (2017) found evidence of divergence. In addition, they find that FDIs from South Africa could occupy a significant role to fostering economic convergence in the region. Ssozi and Asongu (2016) found no evidence of σ and β convergence for the Sub-Saharan African countries. Tipoy (2019) divided SADC member countries into three detachments: high-income, middle and low-income. He found no evidence of global convergence, but he found convergence amongst the high-income countries. However, they found evidence of club convergence with "low-income countries" converging to their own steady-state and upper-middle income nations converging to separate steady-state equilibria. In the case of West Africa, Bah (2015) uncovered evidence for β convergence in the economies of three countries, Burkina Faso, Mali and Togo. In addition, they found Niger and Senegal to be divergent economies.

Overall, although there the subject of income convergence has been extensively investigated, studies of convergence in Africa are limited and, thus far, there are very few that are specific to regional intergration initiatives (also see, Hammouda, Karingi, Njuguna, & Jallab, 2009), particularly the SADC bloc.

3 Data & Methodology

3.1 Phillips and Sul Technique

To examine income convergence in the SADC, a procedure developed by Phillips and Sul (2007b, 2009) was applied. The method has numerous advantages relative to the techniques that are generally applied in convergence literature (for a review, see Islam, 2003). Firstly, in contrast with other techniques, the approach used in this study did not impose any restrictions about the trend stationarity and random nonstationarity of the variables of interest (GDP per capita in our case) (Acaravci & Erdogan, 2016; Kant, 2019; McCoskey, 2002). Secondly, the nonlinear form of the factor model allows for a wide-range of possibilities; convergent and divergent behaviors (Apergis et al., 2015; Phillips & Sul, 2009). Following the work of Phillips and Sul (2007b), we considered the following time-varying common factor representation of log $y_{it}$for country i = 1,2, . . . , N at time t = 1,2, . . . , T :

$$log\ y_{it} = \quad \delta_{it}\mu_t \tag{1}$$

where μ_t represents common growth component and δ_{it} is the time-varying idiosyncratic element which captures the transition behavior of country i to a common steady-state trajectory determined by μ_t. In this approach, all economies will eventually convergence to the steady-state if lim $\delta_{it+k} = \quad \delta \forall i$ = 1,2, . . . , N , regardless of whether economies are closer to the steady-state

or in transition (Apergis & Payne, 2012; Apergis, Christou, & Miller, 2012). Apergis and Payne (2012) argue that this is fundamental given that the trajectory to the state(s) across countries can significantly differ. Since δ_{it} cannot be estimable directly from (2) as the number of unknowns is exceeds the number of observations, Phillips and Sul (2007b, 2009) eliminate μ_t through rescalling by the panel average:

$$h_{it} = \frac{\log\ y_{it}}{N^{-1}\sum_{i=1}^{N} \log\ y_{it}} = \frac{\delta_{it}}{N^{-1}\sum_{i=1}^{N} \delta_{it}} \tag{2}$$

The relative transition path, h_{it} traced an individual path relative to the panel average. (Phillips & Sul, 2009) argued that h_{it}also measures individual's de- parture from the common steady-state path. Consequently, any deviations from μ_t are reflected in h_{it}. Following Phillips and Sul (2009), in order to design an econometric test for convergence as well as an empirical algorithm for defining cluster convergence, a semiparametric form for the loading coefficients $\delta_{it}$was assumed:

$$\delta it = \delta i + \frac{\sigma i}{L(t)t^{\alpha}}\varepsilon_{it} \tag{3}$$

where δ_i is time-invariant, ε_{it} is iid(0,1) across i but weakly dependent over t. The function $L(t)$ is varying slowly, increasing and diverging at infinity (Phillips & Sul, 2007a). Under this representation for δ_{it}, the null hypothesis of overall convergence takes the form: $H_0 : \delta_i = \quad \delta, \alpha \geq 0$; whereas the null hypothesis of no-convergence for some i is: H_A: $\delta_i / = \quad \delta$ or $\alpha < 0$. Phillips and Sul (2007b) demonstrate that the null hypothesis of convergence can be tested using the following regression:

$$log\left(\frac{H_1}{H_t}\right) - 2log(log\ t) = \quad a + b\ log\ t\ + \quad u_t \tag{4}$$

for $t = [rT\ ],[rT\ ] + 1, \ .\ .\ .\ , T$ with $r > 0$[1]. In this regression, $H_t = \frac{1}{N}\sum_{i=1}^{N}(h_{it} - 1)^2$, where h_{it} is defined in (3), $b = 2\hat{\alpha}$ where α is an estimate of α. Under the null hypothesis H_0, the endogeneous variable diverges where $\alpha = 0$ or $\alpha > 0$. Hence, the null hypothesis of convergence can be tested in terms of a t-test of the inequality $\alpha \geq 0$. The t-test statistic follows the standard normal distribution asymptotically and can be developed using heteroscedasticity and autocorela- tion consistent (HAC) standard error. Phillips and Sul (2007b) refer to this one-sided t test based on $t_{\hat{b}}$ the log t test.

Phillips and Sul (2007a) contend that the absence of overall convergence does not suggest the absence of convergence in the subgroups of the panel. In fact, there are several possibilities that could prevail as one moves away from the 'strict' null hypothesis of overall convergence. One possibility being the existence of convergence clubs. Therefore, if there are local equilibria/or club convergence groups, it would be of interest to indentify these groups, and allocate individual countries into respective clusters (Phillips & Sul, 2007b). For

this purpose, Phillips and Sul (2007b) develop an algorithm, which is implemented and summarised as follows:

Step 1: Order the panel according to the time series average of the last fraction.

(ii) form the possible core groups, $G_k = 1,2, \ldots, N$, by selecting the first k highest states, where $k = 2,3, \ldots, N$. Conduct the convergence test within each subgroup of size k using the $log(t)$. Lastly, define the core group, $G^*$of size k^*as the group whose maximum computed $log(t_{k*})$ statistic occurs, given that the $log\ t_k$ statistics justifies the convergence hypothesis.

Step 3: From the remaining economies, add one country at a time to $G^*$and test for convergence using the $log(t)$ test. If the null hypothesis of convergence cannot be rejected, then include this countries to the core group. Find all countries that convergence to the same steady-state as the G^*; these countries together constitute the first convergence club.

Step 4: If there are remaining countries, the procedure (i.e. steps i-iii) is repeated to determine the next convergence club. And finally stop the procedure when the remaining countries fail to converge– it is concluded that the remaining countries diverge.

4 Data

Convergence was investigated between the 15 members of the Southern African Development Community (SADC). Countries included were Angola, Botswana, Congo Democratic Republic, Comoros, Lesotho, Kingdom of Eswatini, Malawi, Mauritius, Madagascar, Mozambique, Namibia, Seychelles, South Africa, Zambia, Tanzania, and Zimbabwe. The PPP based GDP per capita covering the period 1980-2017 was obtained from Penn World Tables.

5 Phillips and Sul estimation results

The findings of the log(t) regression for a convergence test are presented in Table 2. The log-t regression gives estimate $\hat{b}$ value at -0.719 with a t-statistic of -51.62. This unequivocally suggests a rejection of the null hypothesis (H0) of convergence among the 16-SADC economies, as the t-value fell below the critical value -1.65 (5% level of significance).

This indicated that SADC economies do not converge to a same steady-state equilibrium. This finding confirmed earlier studies by Tipoy (2019); Hammouda et al. (2009), that despite the common goal of deeper integration, African countries do not appear to be converging to the same steady-state equilibria.

One can use equation 3 to calculate the relative transition paths, h_{it}, for each member state in order to investigate the behaviour of country i relative to the panel average. According to Phillips and Sul (2007b, 2009), under the supposition of convergence, the relative transition path tends to a unity for all panels (i.e. $h_{it} \rightarrow 1$). However, in the case of cluster convergence, the relative

transition paths of the members of each club converge to different steady-states (Panopoulou & Pantelidis, 2009). Figure 2 shows the relative transition paths for all SADC member states included in the sample. Consistent with the log t regression (refer to Table 1), the transition curves do not tend towards a unity. Instead, the figure hints at a possibility of multiple steady-state equilibria in the SADC region. If this is correct, it could be a confirmation of earlier findings by Tipoy (2019), that SADC member countries have a tendency to converge to different steady-states.

There are a number of reasons why the SADC may not necessarily converge to a same steady-state. First, Venables (2010) posited that, among others, the unevenness of resource endowments and fragmentation of the SADC member states occupy a significant role in driving the apparent income differences in the region. For example, export revenues per capita, according to Venables (2010), range from several thousand dollars in resource-blessed to zero in resource-scarce economies– and interior countries, such as Malawi.

First, the unequal distribution of resource rents will exacerbate cross-country income differentials. Second, not finding evidence of convergence in the SADC is not puzzling. Whilst the economies belong to the same trading bloc, SADC, there are numerous factors that could inhibit convergence amongst them. For example, the region comprises of interior and coastal economies, which implies that economies are more likely to experience significant differences in technology– meaning that firms and households do not have access to the same technologies across countries. Third, nearly all SADC member states belong to more than one trading bloc (overlapping membership) as a result institutional arrangements and legal systems could remarkably differ across the countries (Nzimande & Ngalawa, 2017a). This is consistent with the regulation theory, which postulates that the growth of individual economies will inextricably be intertwined with regulatory, institutional and social structures that support and regulate the economy. As a result, institutional heterogeneities will inevitably result in differences in output growth, and thereby inhibit the convergence process (Tebaldi & Mohan, 2009).

Given the rejection of the hull hypothesis (H_0), the possibility of club convergence was then investigated. In this context, the procedure described above was applied. The findings for the exercise are reported in Table 2. The findings initially indicated the existence of five convergence clubs, and no evidence of divergent countries. The first club convergence consists of three countries namely, Botswana, Mauritius and Seychelles. The $log(t)$ test with these countries did not reject the null hypothesis of convergence ($t = 8.383$). The transition paths for the convergence clubs are presented in Figure 2. In the first convergence club, Mauritius and Seychelles showed an increasing trend and Botswana also depicted an increasing trend albeit at a decreasing rate. This group did not appear to be formed on the basis on income as these countries belong to different income classifications. According to the World Bank, whilst both Mauritius and Botswana are ranked as upper-middle-income countries ($3996-$12375), Seychelles is considered a high-income country ($12376 or more). This indicated that the formation of convergence clubs goes beyond income-levels.

By using the procedure explained earlier to identify clubs, it was found that the next core group comprised Angola, Mozambique, Namibia and South Africa. The *log t* test with these states did not supports the null hypothesis of convergence ($t = 1.011$). For all the countries except for Mozambique, the transition paths were relatively flat. Mozambique appeared to be catching-up more rapidly with the countries in this group as shown by it's steep transition path (refer to Figure 2).

In addition, the third groups consists of two economies namely, the Kingdom of Eswatini, and Zambia. The *log t* test with these countries does not reject the null hypothesis of convergence either ($t = -0.831$) at the 5% level of confidence. Hence with this group, there is rather weak evidence for convergence. Similarly for the fourth and fifth clubs, the null hypothesis of convergence cannot be rejected. The fourth club consists of Comoros, Lesotho, Malawi and Zimbabwe; whereas the fifth club consists of Democratic Republic of Congo and Madagascar. The t statistic for these groups are -3.031 and -1.511, respectively. Again for the latter group (5), the evidence for convergence is rather weak.

For clubs 1, 2, and 4, although the point estimates of b are positive and significant they are significantly less than 2. Consequently, there was strong evidence of conditional convergence but scant evidence of level convergence within these clubs (Phillips & Sul, 2009), with the first club being the fastest catching-up. For clubs 3 and 4, the estimates of b were negative implying that the speed of convergence within these clusters was slow. This is also evident in the transition curves (see Figure 2). The Kingdom of Eswatini had a concave transition path; whereas Zambia had a U-shaped transition curve.

Similarly, in the fifth cluster, the DRC showed a deaccelerating path since the 1980s before reaching its turning (lowest) point around 2004, while, Madagascar showed a relatively stable path, following a decline until 1999. Lastly, the fourth club consisted of Comoros, Lesotho, Malawi, and Zimbabwe. In respect of the above countries, the $\log(t)$ failed to reject the null (Table 2). The transition paths for these countries showed different pattern. Lesotho showed a steep upward trending path, whereas Comoros exhibited a relatively stable path. On the one hand, Zimbabwe demonstrated a deaccelerating transition curve since the late 1990s, while, on the other hand, Malawi displayed an increasing path albeit at a slower rate (Figure 2).

Table 3 reported the tests conducted to investigate whether any of the initial subgroups could be collapsed to form larger convergence clubs. We did not find any evidence to support the merging of the original groups. As a result, the five clubs formed distinct clubs. These findings suggested that although there was convergence within the clubs, there was no tendency for convergence between the clubs (as clubs cannot be merged). This finding was consistent with the view by Martin and Sunley (1998), that once clubs are formed, there need not be convergence between them and the disparities between groups may persist and widen over time. The economies of scale and agglomeration will lead to the continuous concentration of the factors of production and would amplify divergence between convergence clubs.

6 Discussion

A noteworthy feature of the findings obtained in this study was that the identified clubs indicated no particular pattern/or the features that result in the formation of each club were not obvious. This is what Martin and Sunley (2003) referred to as the "chaotic concept". It is known which countries belong to which club, but it is not known how they are clustered. This suggested that the use of priori information as was done by Tipoy (2019) where he grouped countries according to their mean income could yield misleading results and erroneously lead to the rejection of club convergence if the priori clustered countries do not belong to the same club.

An equally significant feature of this study results is that, as initially pointed by Martin and Sunley (1998), is the convergence is not a monotonic process, but is time-varying (see figure 2). These deviations have been ascribed to exogenous shocks such as the oil price shocks, which exerted unequal impacts on individual economies (Sala-i Martin & Barro, 1995; Martin & Sunley, 1998)

Furthermore, the findings of the study, 'explicitly' suggested the use of a common currency does not automatically deliver convergence. If this was the case, one

7 Conclusions

Countries are more integrated today than they were a decade ago. This, together with the growth of regional economic communities, has enabled and enhanced the diffusion of technology across country-boarders. Consequently, It could be expected of economies to converge over time. In this context, it can be equally expected of countries to diverge/or differ in their transition behaviour patterns due to various factors, such as institutional arrangements, the degree with which a country is integrated with the world economy and with its geographic location — coastal or inland.

In this paper, a procedure by Phillips and Sul (2007, 2009) was applied to assess convergence in the Southern African Development Community. The applied technique was compatible with the current state of affairs in that it allowed for heterogeneity in the transition trajectories of individual economies. With this technique, the focus was not on the behaviour of individual economies, instead, on the nation's economic behaviour relative to the average performance of the cross-section.

The main findings of the study are summarised as follows. Using the data reflecting the period 1980-2017, the study found no evidence of overall convergence in the SADC. Instead, we detected clusters that showed convergence to different steady-state equilibria. In addition, while in that context, the study detected evidence for convergence within clubs, there was no evidence of convergence between clubs. Given that the countries included at the time of the study belonged to the same regional economic community, the SADC, it was accepted that the formation of convergence clubs was not necessarily related to

SADC membership. In this regard, countries would have converged to a single, steady-state equilibrium. As a result, an in-depth analysis of the determinants of convergence clubs in SADC is required.

The findings of the study pointed to the need for growth-enhancing policies in SADC. Additionally, in pursuit of the proposed SADC monetary union, there was found a strong need for policies that would explicitly target less developed economies in the region. Simply put, the policy implication is that, one size fit all policies would may not work–they may prove to be counter-productive in SADC. Such policies may aggrevate/or sustain the current heterogeneities in steady-state incomes. As a consequence, we suggest that 'big push' policies for low steady-state income economies are necessary to allow them to escape low income-steady states. Furthermore, policymakers in SADC have placed more emphasis on nominal convergence as a condition for establishing/or joining the envisaged monetary union. And to this end, remarkable progress has been recorded– based on our findings, it is argued that more consideration should be given to real convergence as well to augment nominal convergence (Jones, 2002).

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Table 1: Overall Convergence

	$\hat{b}$	t-stat	std error
log(t)	-0.719	-51.62	0.014

Table 2: Club Classifications

Club	Countries	$\hat{b}$	t-Statistic	Countries
Club 1	3	0.225	8.382	Botswana,Mauritius, Seychelles
Club 2	4	0.026	1.0107	Angola, Mozambique, Namibia, South Africa
Club 3	2	-0.099	-0.831	Eswatini, Zambia
Club 4	4	0.067	3.031	Comoros, Lesotho, Malawi, Zimbabwe
Club 5	2	-1.378	-1.511	Congo, Dem. Rep., Madagascar

Table 3: Club Merging

log(t)	Club 1+2	Club 2+3	Club 3+4	Club 4+5
$\hat{b}$	-0.121	-0.003	-0.575	-0.586
t-Statistic	-4.537	-0.097	-39.413	-12.207

Figure 1: SADC Economies by Income Category (GNI per capita)

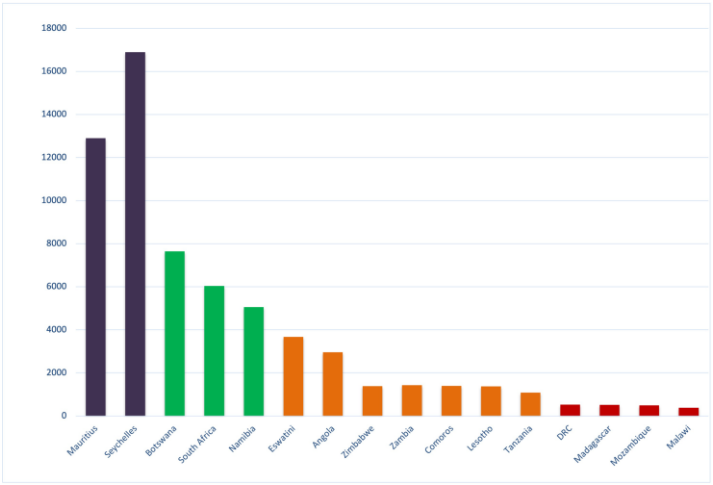


Figure 2: Transition Paths- Overall

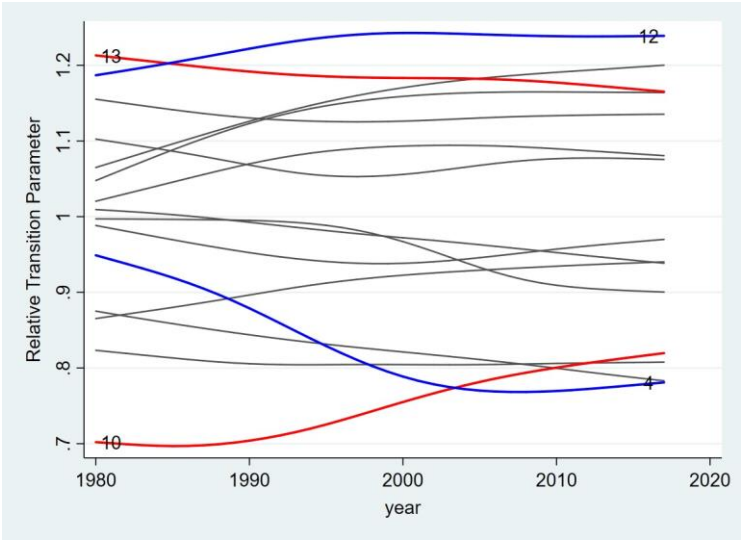
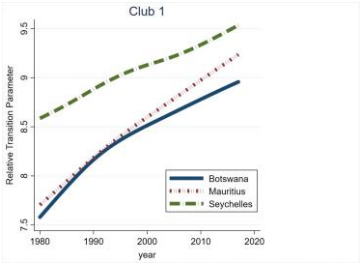
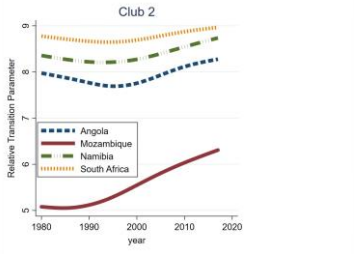


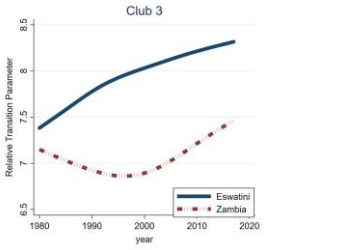
Figure 3: Club Transitions



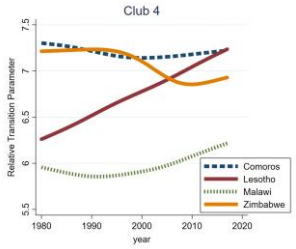
(a) Transition paths: Club 1



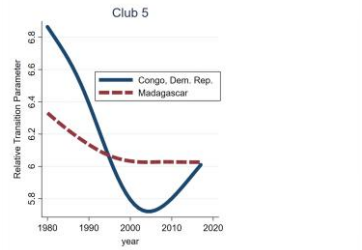
(b) Transition paths: Club 2



(c) Transition paths: Club 3



(d) Transition paths: Club 4



(e) Transition paths: Club 5