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South Africa in the African Economy: Growth Spillovers

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South Africa in the African Economy: Growth Spillovers

Vivek Arora and Athanasios Vamvakidis[1]

I. Introduction

A key feature of the world economy in recent decades has been growing economic integration among groups of countries. This pattern is also evident in Africa, and, since 1994, in the integration between South Africa and the rest of the continent across many economic dimensions. A question that naturally arises as countries grow more closely integrated is what influence they might have on each other. In particular, does a country's economic growth have "spillover effects" on its partner countries? Are these spillovers generally beneficial, and what is their size? And what might be some of the future implications of regional integration? This paper discusses what was, to our knowledge, one of the first empirical assessments of the spillover from South African growth to other African countries.[2] It also discusses some implications of the results in the context of more recent research on African regional integration.

South Africa is often described as an "engine of growth" in Africa because its economic growth is believed to have a significant influence on growth in other African countries. In view of South Africa's large economic size, and its growing linkages with other African countries, such a view is certainly plausible. However, few estimates have been attempted that provide quantitative assessments of just how large the influence might be. Because of offsetting considerations, the answer is not obvious beforehand. Is the effect relatively large, because of South Africa's large size? Or is it small because of South Africa's isolation during the pre-1994 apartheid period and because South Africa does not dominate the trade share of most African countries, which trade mainly with Europe and the United States?

South African economic growth could be expected to influence growth in other African countries through a variety of channels. The most obvious channel is the direct impact on other countries' exports, with higher South African growth contributing to a rise in its imports that directly raises the exports of other countries. But this is only one channel, and arguably not always the main one. Given the relatively advanced state of South African technology, trade with South Africa could also have spillover effects on other countries by its positive influence on technology transfer and investment.[3] Countries could thus benefit from trade with South Africa even if they run bilateral deficits. In addition, the effects of South African growth could be transmitted to other countries through financial linkages as South African investment plays a large role in the banking systems and capital flows of several African countries. The large flow of people, both workers and tourists, between South Africa and several other countries could also play a role as growth in South Africa affects their remittances and spending. Moreover, South African developments could influence business and consumer confidence in other countries, particularly given South Africa's size and its role in several multi-country African initiatives.[4]

In short, South African economic growth could affect growth in other African countries through a variety of channels, some of them very complex. Measuring all of these effects one by one would be very hard to do, both because of data constraints and because it is difficult to identify all the possible channels. Alternatively, instead of trying to identify and estimate each possible channel of transmission (trade, finance, and so on) one can pose the more aggregate question of what happens to growth in the rest of Africa if South African growth changes by a given amount. That is the approach that we have taken.

The overall impact of South African growth on growth in the rest of Africa was quantified in the context of a standard growth model.[5] The analysis focused on long-run growth effects

1 International Monetary Fund. (Vivek Arora: IMF senior resident representative in China, varora@imf.org; Athanasios Vamvakidis: deputy division chief, IMF Strategy Policy and Review Department, Washington DC, avamvakidis@imf.org.) This paper draws on an analysis that was first published in 2005 (Arora and Vamvakidis 2005a). We are grateful to several colleagues and to Professors Phillip Black and Ben Smit for comments on earlier versions of the paper, to Jack Boorman, Benedicte Christensen, Harinder Kohli, and P.R. Narvekar for additional suggestions, and to Zhang Shi Ting for assistance with the data. The authors are solely responsible for the contents of the paper, which does not reflect the views of the IMF, its Executive Board or its Management.

2 This assessment was published as Arora and Vamvakidis (2005a). Although the formal analysis was conducted for the period 1960-1999, its use of long-run averages as well as subsequent developments, as explained below, suggest that the broad conclusions remains durable.

3 These effects have been extensively discussed in a global context in the broader literature on trade and growth. See, for example, Grossman and Helpman (1991) and Rivera-Batiz and Romer (1991)

4 These include continent-wide initiatives, such as the New Partnership for Africa's Development (NEPAD), and regional agreements like the Southern African Customs Union (SACU) and Common Monetary Area (CMA).

5 The approach is based on the conventional methodology for empirical growth analysis explained by Barro and Sala-i-Martin (1995) and applied by Arora and Vamvakidis (2004) to study the impact of U.S. growth spillovers on the rest of the world.

rather than shorter-run macroeconomic fluctuations that may be associated with transitory shocks and business cycles. The analysis took into account the impact on other countries of both South African growth and the generally accepted determinants of long-run growth. The results indicated that South African growth has a significant positive impact on growth in other African countries, with a 1-percentage point increase in South African growth being associated with a ½–¾ percentage point increase in the rest of Africa's growth. The results held even after controlling for global and regional factors that could simultaneously influence growth in both South Africa and other African countries, and they were robust to changes in the sample and period considered.

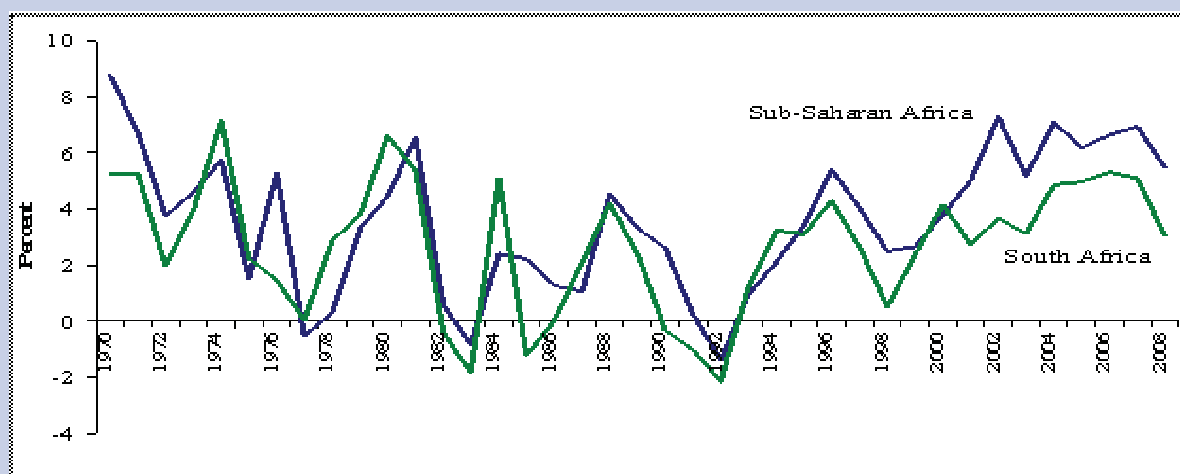
II. South Africa in the African Economy

South Africa's relatively large economic size and its growing linkages with other African countries would lead one to expect that developments in South Africa could have significant implications for the rest of Africa. During 2001–2008, on average South Africa accounted for nearly one-third of African GDP on a purchasing power parity basis and for just over one-third at market exchange rates (Table 1). South Africa has accounted for around one-quarter of the expansion in African GDP (PPP basis) during the current decade and for 28 percent of the expansion during 1980-2008. And South African and African GDP growth have moved closely together over time, with a correlation coefficient of over 80 percent during 1980-2008. Their trends moved apart temporarily in the early part of this decade, but have again followed each other closely since 2003 (figure below).

South Africa's integration with the rest of the continent spans several dimensions, including common economic and political initiatives, financial and currency linkages, labor and tourism, and trade flows. These linkages are growing rapidly, but, in several areas, they are still relatively small in comparison with those elsewhere in the world.

- **Financial linkages** encompass growing South African investment, especially direct investment, in the rest of Africa as well as a wide reach of South African financial institutions, which account for a significant proportion of the banking systems in several African countries particularly in southern Africa. [6]
  - » Foreign investment in other African countries comes mainly from the industrial world (and, more recently, China). South Africa's investment in

Figure 1: GDP Growth in Sub-Saharan Africa, 1970-2008



Source: IMF World Economic Outlook database.

6 Akinboade and Lalthapersad-Pillay (2005) discuss the scope and nature of South African investment in a variety of sectors in other African countries.

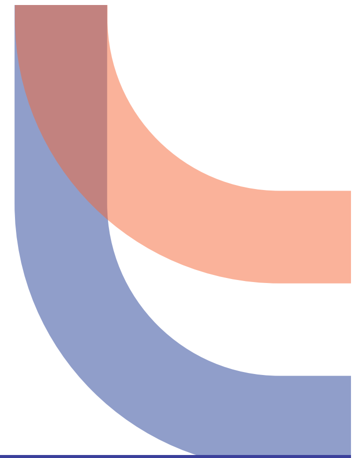


Table 1. South Africa in the African Economy, 1970-2008 (In percent)

	1970	1980	1990	2000	2008	Average 2001-2008
Proportion of sub-Saharan Africa's GDP accounted for by South Africa:						
At market exchange rates	34.3	28.8	38.5	39.9	28.0	35.1
At purchasing-power parity	35.5	36.5	34.4	33.3	29.2	30.7
Share of merchandise trade with South Africa in other African countries' merchandise trade						
	0.8	0.4	0.7	2.0	2.6	2.3

Sources: IMF Direction of Trade Statistics and World Economic Outlook.

Africa has nonetheless grown substantially since the early 2000s. As of 2007, the stock of South African direct and portfolio investment in other African countries was equivalent to 3 percent of African GDP, up from 1 percent a decade earlier (Table 2). And it averaged 8 percent of GDP (simple average) among the 20 or so countries that are the largest recipients of South African investment. The share was particularly large in neighboring countries such as Lesotho, Malawi, Mozambique, and Swaziland and in Mauritius.

» Direct investment, which accounts for two-thirds of South African investment in the rest of Africa, has risen particularly rapidly in recent years. After remaining at around $1½ billion through 2002, the stock of direct investment rose to $12 billion by 2007 (2 percent of African GDP)). Data for 2008 are not yet available, but there are anecdotal reports that outward investment may have declined amid the recession.

» South African banks and other financial institutions are active across the continent, and they play a large role the financial systems of neighboring countries, through both their direct operations and their equity participation in local institutions. In Lesotho, Namibia, and Swaziland, the market share of South African banks is estimated to range from 66 percent to 82 percent.[7] Their share is, however, much lower than this in other countries.

- **Revenue-sharing** under the Southern African Customs Union (SACU) means that fluctuations in South African imports can have a sizable impact on the customs revenue distributed to smaller SACU countries (Botswana, Lesotho, Namibia, Swaziland), which tends to be a large part of their budgets. This is more of a regional than a continent-wide impact, but it is nonetheless a significant feature of public finances in the region.
- The **South African rand** circulates formally and informally in a number of African countries. A currency union, the Common Monetary Area (CMA), provides a formal framework for the use of the South African rand (alongside national currencies) in Lesotho, Namibia, and Swaziland.[8] Capital flows relatively freely among CMA countries, although there are controls on capital flows between CMA and non-CMA members. The CMA arrangements have facilitated regional integration, particularly in the goods and financial markets, and there is evidence that they have helped to promote growth in member countries and to facilitate economic development in less developed members.[9]

7 Wang et al. (2007).
8 Van Den Heever (2007) provides a discussion.
9 Wang et al. (2007) present a comprehensive analysis of experience under the CMA.

Table 2. Selected Countries: Cumulative Stock of Investment from South Africa (in percent of GDP)

	1997	2000	2007
Angola	0.1	0.1	0.2
Botswana	2.5	3.1	5.1
Comoros	3.2	2.7	0.2
Congo, Dem. Rep. of	0.1	0.3	3.0
Ghana	0.1	0.1	3.2
Kenya	0.1	0.1	0.5
Lesotho	8.1	29.5	11.4
Madagascar	0.1	0.0	0.1
Malawi	2.5	2.4	8.5
Mauritius	3.8	22.6	72.1
Mozambique	0.7	15.5	15.0
Namibia	8.4	9.2	6.6
Nigeria	0.0	0.0	2.9
Seychelles	0.2	1.3	1.2
Swaziland	11.8	20.1	13.4
Tanzania	0.4	0.3	2.0
Uganda	0.0	0.3	1.4
Zambia	1.4	1.8	3.3
Zimbabwe	2.9	1.9	3.4
Simple average of selected countries	2.4	5.9	8.1
Total, Africa	1.0	1.7	2.9

Sources: South African Reserve Bank (for data in South African rand); World Economic Outlook (for exchange rate and GDP data); and authors' calculations (for conversion to percent of GDP).

- Large numbers of people travel between South Africa and the rest of the continent for **work and tourism**, influencing remittances as well as demand.
  - » South African mines were historically an important source of employment for neighboring countries. In the 1980s, at the height of the mining boom, 25 percent of the labor force of Lesotho, for example, was employed in South African mines. In subsequent years, foreign employment has declined in mining but it has picked up in other sectors as South Africa has opened up after 1994.[10] Immigrants' earnings are reflected in remittances to the rest of Africa, and, since earnings fluctuate as economic conditions change, remittances could contribute to spillover effects from South Africa to other countries.
  - » Remittances are large in size for several countries even if not for the continent as a whole. In Lesotho, for example, remittances amounted to three-quarters of GDP during the mining boom, while now they amount to around a quarter. For the continent as a whole, formal remittances from South Africa are anecdotally said to amount to nearly $1 billion annually (0.2 percent of GDP), although informal remittances could be just as large.[11]
  - » Another source of intra-continental linkages is tourism. Around three-quarters of the nearly 10 million tourists who visited South Africa in 2008 came from other African countries (see figure). In turn, South Africa is an important source of tourists for the rest of Africa.
- **Trade flows** between South Africa and the rest of Africa have grown rapidly in recent decades, but South Africa's trade share remains small both in absolute terms and compared with that of major trade partners in other regions. It is, however, relatively larger for neighboring countries than for more distant countries, but even then more as a source of imports than as a destination for exports.
  - » As of 2008, the average share of South Africa in the rest of Africa's external trade stood at 2½ percent. While this was nearly four times its 1990 level, it was small in comparison with, for example, the regional trade share of the United States in other Western Hemisphere countries (45 percent) and of China and Japan in the rest of Asia (19 percent and 10 percent, respectively).

10 The size is hard to quantify because reliable data are unavailable on migrant workers outside of mining and on informal employment.
11 Magubane (2008).

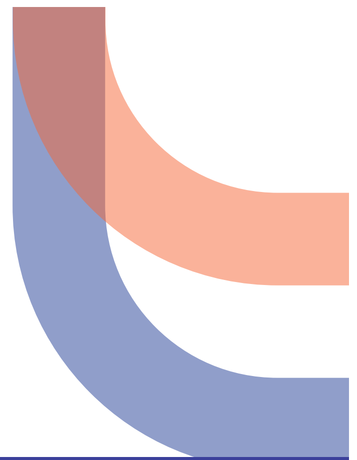
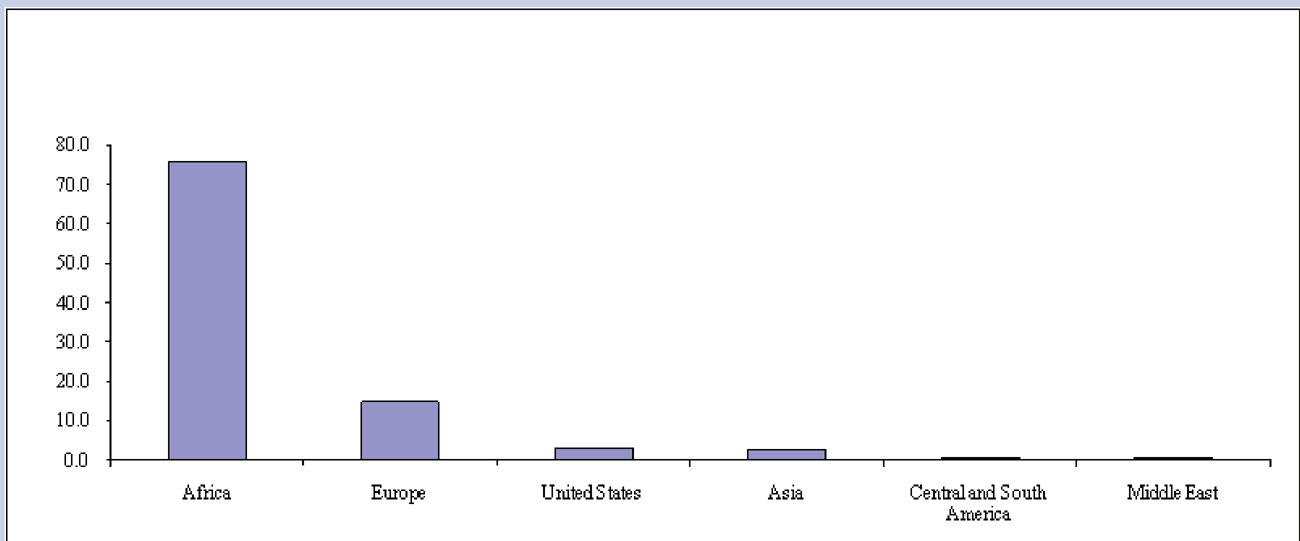


Figure 2. South Africa: Tourist Arrivals by Source, 2008 (In percent of total)



Source: Statistics South Africa (www.statssa.gov.za)

» The relative importance of South Africa in the trade of individual African countries varies substantially across the continent. It is largest among immediate neighbors and generally smaller for countries that are more geographically distant. Trade with South Africa accounts for around three-quarters of the total trade of Lesotho and Swaziland, with which South Africa participates (along with Botswana and Namibia) in a customs union (SACU). Imports from South Africa account for 73–90 percent of the imports of these 4 countries. During 2004-2008, trade with South Africa accounted on average for 25–35 percent of external trade in Malawi, Mozambique, Zambia, and Zimbabwe, and for 5–16 percent of trade in Comoros, the Democratic Republic of Congo, Kenya, Mauritius, the Seychelles, and Tanzania (Table 3).

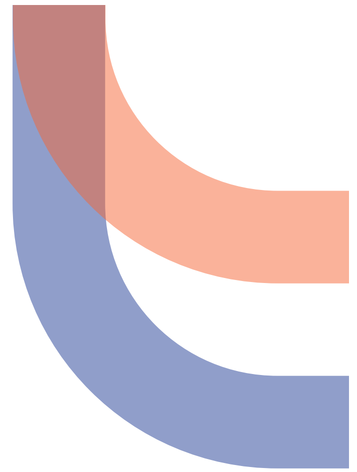
A simple measure that captures the direct effect of trade on a country's growth is the contribution to growth of its net exports. On this basis, overall net exports in selected countries (in Table 3) made on average a negative contribution of -1½ percentage points to GDP growth during 2004–2008 as trade deficits generally increased across Africa. The contribution of South Africa to this trend was, however, largely benign as larger South African net imports from some countries were offset by larger net exports to others.

In any event, calculations based on the direct impact of net exports tell us very little about the impact of growth spillovers. After all, even if they run bilateral trade deficits with South Africa, countries may benefit from trade with South Africa as a result of factors such as greater efficiency, technological gains associated with trade, and economies of scale as production is concentrated in a large market and exported from there. In addition, the effects of South African economic growth are likely to extend beyond just the trade effect, via additional channels such as financial linkages, labor flows, economic sentiment, and so on. An assessment of the impact of South African growth in fact requires a full empirical analysis.

Table 3. Selected Countries: Merchandise Trade with South Africa as a Percentage of Total Merchandise Trade, 1998-2008

	Avg. 1998-2003	2004	2006	2008	Avg. 2004-2008
Angola	2.8	4.0	2.7	4.8	3.2
Benin	2.0	1.4	2.7	2.6	2.0
Burkina Faso	0.4	0.6	0.9	1.1	0.6
Burundi	2.8	2.5	2.3	2.3	2.6
Cameroon	0.9	1.3	0.6	0.5	0.8
Cape Verde	0.7	0.3	0.3	0.2	0.5
Central African Republic	0.3	0.3	1.3	0.9	0.6
Chad	0.1	0.1	0.1	0.1	0.1
Comoros	21.4	12.0	7.5	3.9	15.2
Congo, Dem. Rep. of	8.1	6.0	6.4	8.5	7.3
Congo, Rep. of	1.1	1.3	0.8	0.6	1.0
Côte d'Ivoire	0.8	0.6	0.5	0.8	0.7
Djibouti	1.7	2.0	3.7	1.9	1.9
Ethiopia	0.8	1.3	0.7	0.6	0.8
Gabon	1.2	0.9	3.3	0.6	1.4
Gambia, The	1.5	2.8	3.2	1.5	1.9
Ghana	2.1	2.8	2.5	2.6	2.4
Guinea	1.1	3.1	2.0	1.4	1.6
Guinea-Bissau	0.2	0.4	1.2	0.7	0.5
Kenya	4.8	7.1	4.8	4.9	5.1
Madagascar	3.7	3.7	3.0	5.2	3.9
Malawi	28.6	24.6	20.4	25.4	25.9
Mali	1.8	2.9	1.6	1.6	2.1
Mauritania	0.6	0.5	1.3	1.1	0.7
Mauritius	8.9	6.6	6.2	7.1	7.9
Morocco	0.4	0.3	0.5	0.3	0.4
Mozambique	40.8	23.0	18.1	33.8	34.0
Niger	0.7	0.5	0.6	0.5	0.6
Nigeria	1.3	2.4	2.3	2.3	1.7
Rwanda	3.7	3.1	2.0	2.8	3.1
São Tomé and Príncipe	2.8	6.1	0.7	0.0	2.3
Senegal	0.7	0.8	1.0	1.0	0.8
Seychelles	6.4	5.1	6.6	4.2	6.4
Sierra Leone	2.7	4.5	3.7	2.1	3.1
Tanzania	9.3	10.7	8.6	7.3	9.1
Togo	0.9	0.5	0.5	1.8	0.8
Uganda	3.8	4.7	3.7	2.9	3.8
Zambia	28.6	24.3	22.4	24.0	26.2
Zimbabwe	26.9	37.9	49.0	n.a.	35.6

Sources: Authors' calculations based on IMF Direction of Trade Statistics and WEO. Data are shown only for countries whose trade flows are reported in the Direction of Trade Statistics.



III. Implications of South African Growth for the Rest of Africa

Empirical Approach

The impact of South African growth on growth in the rest of Africa can be quantified by estimating a panel regression, which allows one to control for other explanatory variables in the estimation and to test the robustness of the results. The empirical framework is a standard growth regression with, on the one side, average per capita real GDP growth rate as the variable to be explained and, on the other side, a host of variables to capture forces that are commonly invoked in accounting for growth across countries.[12] Such forces include:

- "convergence"—as countries with relatively lower incomes could be expected to grow faster as they "converge" to income levels in richer countries. This is captured by per capita real GDP at the start of the period under consideration;
- demographics, captured by the age dependency ratio;
- investment in physical capital (gross domestic investment as a percent of GDP);
- human capital (primary and secondary school enrolment);
- macroeconomic stability (inflation); and
- trade openness (the share of external trade in GDP).

In addition, several variables are included that have been found to play a significant role in explaining growth in Africa in particular, such as:[13]

- foreign aid as a percent of GDP;
- infant mortality;
- geography, and particularly whether a country is landlocked.

Then, in order to estimate the impact of growth in South Africa on the rest of Africa:

- the growth rate of real per capita GDP in South Africa; and
- real per capita GDP growth in each of the other African countries to test whether any other country also acts as an engine of African growth.

Finally, a pitfall in this kind of analysis is that there might be common forces that simultaneously influence the growth of both South Africa and other African countries. For example, common factors could influence growth across the whole world, or growth across African countries, or growth in both a country and in its trading partners. No matter the specific case, an analysis that fails to take these factors into account and that finds a high correlation of growth between South Africa and other countries would mistakenly attribute the correlation to the influence of South Africa while in reality the correlation represents the influence of common shocks on both South Africa and other countries. In order to account for such factors, the analysis included:

- world real per capita GDP growth;
- real per capita GDP growth in trading partners;
- regional growth.

The analysis covered all 47 countries in sub-Saharan Africa with available data. The data were taken from the World Bank's Global Development Network database and were converted to 5-year averages in order to focus on long-run effects.

Empirical Results

A General Note

The analysis examined variations in growth across African countries, rather than variations between Africa and the rest of the world. An implication of this was that not all of the variables that are significant in studies of growth across countries worldwide turned out to be significant here. The reason is that variables that play a large role in explaining differences in growth between Africa and other parts of the world do not always help to explain growth differences within Africa.

This is particularly true for features that are markedly different between Africa and the rest of the world but that are not so different among African countries. An example is trade barriers, which are often correctly emphasized as contributing to Africa's weak growth relative to other regions. However, if trade barriers are generally high across Africa, then while they could

12 Technical details are omitted here. They are discussed in Arora and Vamvakidis (2005a).
13 See Bloom and Sachs (1998).

account in part for Africa's growth being low relative to other regions, they would not explain much of the growth variation within Africa. This indeed turns out to be the case.

Nonetheless, variables that did turn out to be important in explaining growth variations across African countries included investment, aid, health, and low inflation. We will not discuss them here because there is already a large separate literature on these issues, and because our focus here is on trying to isolate the impact of South African growth. But it is worth noting that there appears to be sufficient variation across African countries in these dimensions that helps to explain at least part of the variation in growth across the continent.

South Africa

The results for the pooled panel are presented in Table 4 for the 4 decades through 2000 and in Table 5 for just the post-1980 years. The columns progressively add variables that could explain growth in African countries, starting with only South African growth and then adding in variables that have been found to explain cross-country growth difference across the world as well as variables that are more specific to Africa, and finally variables that control for common trends. The final column shows only the variables that turned out to be statistically significant.

The results suggest that South African growth has a statistically significant influence on growth in the rest of Africa, even after controlling for other growth determinants. The estimates suggest that a 1 percentage point rise in South African growth is correlated with a rise in growth in the rest of Africa by 0.4 to 0.7 percentage points during the whole sample period, and by 0.4 to 0.9 percentage points during the more recent period.

How Robust is the Conclusion?

The results bear out more formally the close correlation between growth in South Africa and the rest of Africa. They are robust to changes in the sample period and to several changes in the specification.[14] They are also not driven by common global trends or shocks: specifications that control for world growth and growth in trading partners do not alter the basic result.

Similarly, the results are not driven by regional trends. Including in the analysis for each country the average growth rate in all other African countries does not change the positive and significant estimated impact of South African growth, which is in addition more substantial than that of the rest of the region.

The results do not seem to depend significantly on the size of countries' bilateral trade with South Africa or their distance from South Africa. And while the analysis did not examine the implications of South African growth for individual countries or subsets of countries, mainly because doing so would exhaust data constraints,[15] simple correlations would appear to support this conclusion. Specifically, during 1980-2008, the correlation of GDP growth (PPP basis) was around 60 percent between South Africa and other SADC countries, and around 40 percent between South Africa and other SACU countries. Part of the reason may be that in southern Africa, South Africa is much more important as a source of imports than as a destination for exports, which go mainly to Europe and the United States.

That trade flows appear to play only a small role in the growth spillovers from South Africa to other African countries is perhaps unsurprising given their relatively small size. This suggests that the bulk of the growth spillovers from South Africa to the rest of the continent could be taking place via channels not directly related to trade. The study did not examine formally what such channels might be but there are several possibilities. Spillover effects related to investment and technology transfers could play a role, even if trade flows are relatively small. Moreover, financial and corporate linkages between South Africa and other African countries may contribute to growth spillovers, including via banking system integration and direct and portfolio investment. Finally, developments in South Africa may influence overall business and consumer sentiment in Africa due to the country's size and its role in multi-country initiatives.

Do other African countries also act as engines of growth for the continent? The results suggest not, or at least not on the same scale as South Africa. A test of the growth impact of each other African country on the rest of the continent revealed that only 4 of them had a significant impact, but none of these results was robust to alternative specifications. Furthermore, the

14 Details on the robustness tests are not reported here but are available upon request.

15 A panel analysis depends for its force on a large number of countries and a long time period. Focusing on a subset of the data would reduce the "degrees of freedom" and limit the accuracy of the conclusions.

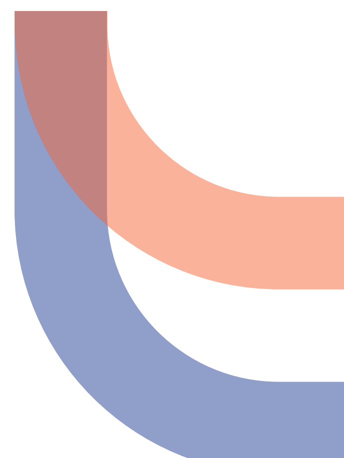


Table 4. Impact of Growth in South Africa on Growth in Rest of Sub-Saharan Africa: Pooled Panel, 1960–99

Independent Variables	(1)	(2)	(3)	(4)	(5)
Constant	0.47 (2.16)	-3.60 (-1.40)	-4.15 (-0.73)	5.12 (0.81)	-0.70 (-0.70)
Per capita GDP growth in South Africa	0.42 (4.13)	0.67 (5.59)	0.71 (4.92)	0.76 (3.31)	0.72 (5.76)
In (initial GDP per capita)		0.06 (0.14)	0.47 (0.68)	-0.29 (-0.38)	
Investment/GDP		0.20 (4.91)	0.20 (4.65)	0.32 (5.91)	0.15 (5.36)
Age dependency ratio			-0.68 (-0.23)	-3.49 (-1.18)	
Trade/GDP			-0.01 (-0.68)	-0.03 (-2.06)	
Primary school enrollment			-0.01 (-0.62)	-0.02 (-1.25)	
Secondary school enrollment			-0.00 (-0.07)	0.00 (0.10)	
Inflation rate			-0.001 (-8.32)	-0.001 (-8.83)	-0.001 (-8.50)
Aid/GDP				0.04 (1.28)	
Infant mortality rate				-0.02 (-2.60)	-0.01 (-1.90)
Landlock dummy				0.24 (0.46)	
Ethnic fractionalization				-0.00 (-0.45)	
Growth in trading partners' GDP per capita				0.42 (1.07)	
World GDP per capita growth				-0.01 (-0.02)	
Adjusted R-squared	0.04	0.33	0.36	0.45	0.31

Source: Arora and Vamvakidis (2005a).
Notes: Sample data are 5-year averages for 1960-1999. Dependent variable: real GDP per capita growth (1985 constant US$). Heteroskedasticity-consistent t-statistics in parentheses.

estimates for their growth impacts were considerably smaller than those for South Africa.

There is the question of the sample period. The analysis was conducted for the period 1960-1999 and while it would be desirable to update it with more recent data when they become available, developments in the current decade are unlikely to change the results substantially. First, the data are 5-year averages, so extending them to 2004 add only one observation to each series. Second, and perhaps more substantively, the simple correlation between growth in South Africa and the rest of Africa has not weakened in recent years; if anything it has strengthened. The growth correlation was around 80 percent during 1980-1999. After dipping during 2000-2002, at a time when world financial market shocks buffeted South Africa, the correlation has been close to 90 percent in the period since 2003. Of course, the growth correlation is not everything, or

Table 5. Impact of Growth in South Africa on Growth in Rest of Sub-Saharan Africa: Pooled Panel, 1980–99

Independent Variables	(1)	(2)	(3)	(4)	(5)
Constant	0.31 (1.01)	-4.91 (-1.69)	-5.87 (-0.79)	5.95 (0.78)	0.48 (0.46)
Per capita GDP growth in South Africa	0.59 (2.38)	0.44 (2.15)	0.64 (3.02)	0.90 (3.12)	0.58 (2.97)
In (initial GDP per capita)		0.24 (0.50)	0.52 (0.55)	-0.56 (-0.60)	
Investment/GDP		0.19 (3.68)	0.17 (3.76)	0.27 (3.34)	0.11 (3.36)
Age dependency ratio			0.74 (0.21)	-4.81 (-1.33)	
Trade/GDP			-0.01 (-0.85)	-0.03 (-1.75)	
Primary school enrollment			-0.00 (-0.30)	0.00 (0.07)	
Secondary school enrollment			0.01 (0.24)	0.01 (0.12)	
Inflation rate			-0.001 (-7.47)	-0.001 (-7.53)	-0.001 (-8.71)
Aid/GDP				0.07 (1.69)	0.05 (2.62)
Infant mortality rate				-0.02 (-1.97)	-0.03 (-3.18)
Landlock dummy				0.60 (1.10)	
Ethnic fractionalization				0.00 (0.41)	
Growth in trading partners' GDP per capita				0.35 (0.77)	
World GDP per capita growth				0.13 (0.18)	
Adjusted R-squared	0.03	0.30	0.30	0.35	0.30

Source: Arora and Vamvakidis (2005a).
Notes: Dependent variable: real GDP per capita growth (1985 constant US$). Heteroskedasticity-consistent t-statistics in parentheses.

one would not need to do an empirical analysis, but it is at least suggestive.

Finally, we should note that since the analysis focused on long-run growth and not on shorter-term fluctuations, it does not say anything about the spillover impact of the current downturn on other African countries. There is presumably a spillover even in the short run, based on all of the linkages spelt out in Section II, perhaps even a sizable spillover; but our methodology does not allow us to quantify it.

IV. Further Discussion: Spillovers and Regional Integration

The analysis does not establish the exact channel by which the growth spillover operates from South Africa to other countries, but it is hard to see how economic integration cannot play an important role. Conversely, integration is useful not as an end in itself but as a means of achieving the broader economic goal of promoting growth and development. It can

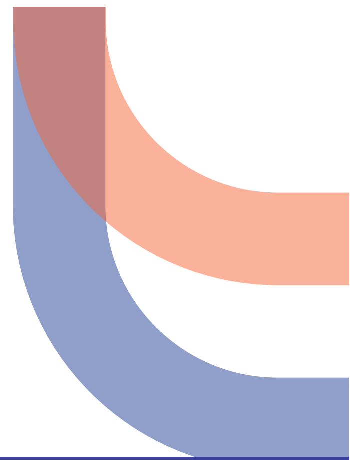
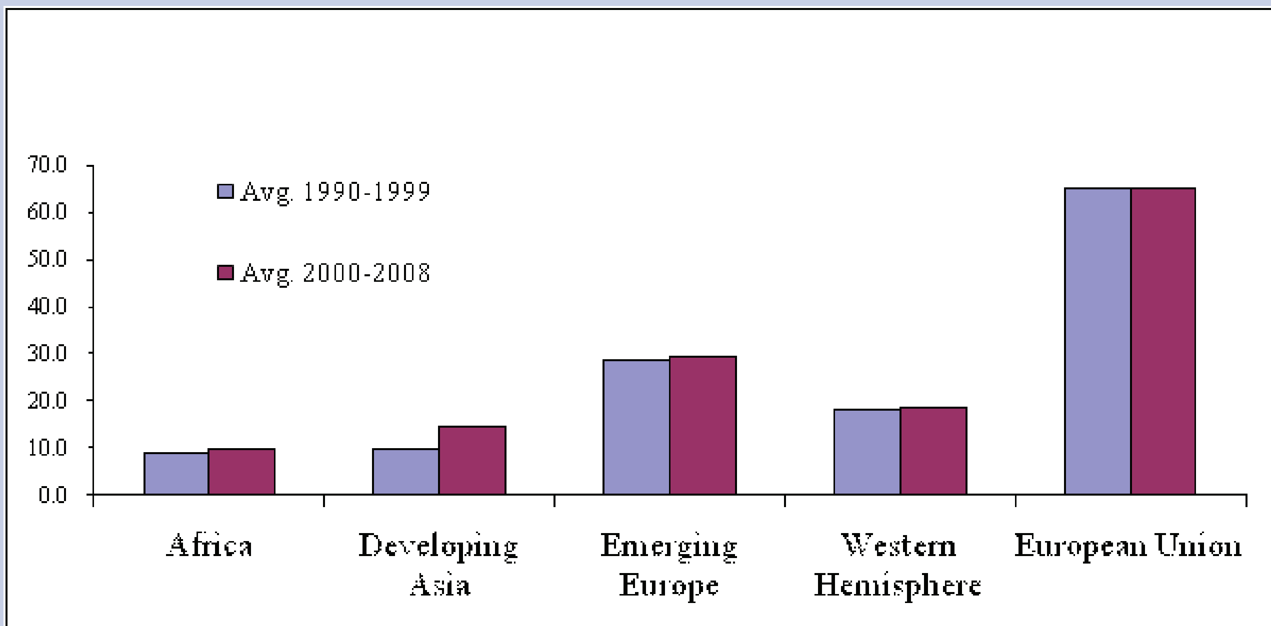


Figure 3: Intra-regional Trade Shares, 1990-2008 (in percent)



Source: IMF Direction of Trade Statistics.

contribute to this goal in a variety of ways, including by allowing all countries to realize mutual gains from trade, helping smaller countries overcome the limitations posed by the small size of national markets, and focusing attention on common economic challenges. Greater integration would allow South African firms to expand their markets and reduce production costs, and allow other African countries to better access South African skills, technology, and capital. Moreover, if spillovers could be realized in more than one direction and for several countries, then they could have a substantial impact on growth in Africa as a whole.

Given these seemingly large benefits, the level of economic integration in Africa appears to be relatively low. Regional integration is also low in comparison with other parts of the world. Foreign investment in Africa comes mainly from advanced economies outside Africa and is concentrated in the resources sector. The share of intra-regional trade is low in comparison with other parts of the world (figure below), and it would be lower still if it were not for South Africa. Some parts of the continent are more closely integrated than others, although the status of various regional integration initiatives is hard to summarize because the various regions are relatively disparate as is the degree of integration within them. In southern Africa, as noted, integration among the CMA countries is close, and it is reflected in similar macroeconomic outcomes. Overall, however, the degree of integration is relatively limited.[16]

Several factors are widely recognized by analysts and policymakers as accounting for the relatively limited economic integration in Africa. They are being addressed to varying degrees, and it is beyond the scope of the paper try and assess the success of individual initiatives. But it is worthwhile to summarize some of the main constraints that are being discussed, and generally addressed, in order to stimulate a discussion about their relevance and the state of play. Some of the key constraints that have been identified, and many of which are interrelated, include:[17]

- **High transportation costs**. These include both high fees and regulatory burdens as well as infrastructure constraints. [18]Experience in the rest of the world over

16 This could, however, change rapidly with the implementation of Free Trade Areas that have been announced recently, such as by SADC in 2008.

17 Some of these factors are discussed comprehensively in AfDB and OECD (2009) and Akinboade and Pillay (2005).

18 In 2006, the average cost of exporting a container from Africa

the last half-century suggests that falling transportation costs can have a profound impact on trade flows. Where such costs have fallen, they have often driven substantial expansions in trade by offering new opportunities to increase scale and specialization.[19] Intra-industry trade in parts and components, for example, tends to be more sensitive to transport costs than trade in primary and final products. This provides opportunities even for small economies that, while often unable to build advanced final products, can produce the inputs for such products.

- **Infrastructure constraints** are a part of high transportation costs, but are also an issue in their own right. Greater regional connectivity through improved infrastructure (road, rail, air, ports) would help to reduce trade costs, and it would also encourage more investment as well as other economic linkages such as travel. The financing and logistics of such projects are always an issue, particularly for developing countries, but there are many ways of doing so successfully. A striking example is China, which has developed its infrastructure at a stunning pace that was visible to all during the Beijing Olympics a year ago. It has good roads and ports, reliable power, and excellent cell-phone coverage. Most of this infrastructure has been developed through a policy of "cost recovery" by setting appropriate prices for power, roads, rail, and telecoms.[20]
- **Trade barriers**. African countries are making progress on regional trade integration via various agreements, notably the 8 regional economic communities (RECs). But there are still barriers to intra-REC trade, in terms of both tariffs and regulatory procedures.[21] Another challenge in this regard is the overlapping membership of some members in different trade arrangements. This would appear to require policy harmonization and coordination among the various groups in order to resolve.

Regional integration would allow even small countries to achieve a minimum scale of production and to access world markets. The East Asian growth experience, for example, has featured growing specialization and rising incomes as trade has expanded in the region with falling trade barriers and transport costs.[22] It would also foster "supply chain" development, with different components of a good being produced in different countries. This, too, has been part of the story of trade and growth in East Asia.[23] In China, policymakers describe their strategy as "reform and opening up." This has entailed "reform" of domestic ownership structures and incentives, particularly the climate for private investment; and "opening up" to foreign trade and capital. In addition, the strategy has emphasized the development of infrastructure and of agricultural and rural development.

Other factors that are also important for integration and growth in Africa include:

- **Financial systems**. South Africa has a very well developed financial system, with sound banks, deep and liquid capital markets, and sound regulation and supervision. However, a large part of the population remains "un-banked", and this is even more so in the rest of the continent, where in addition equity and debt markets are very small. With finance playing a potentially important role in development, there would appear to be scope to expand the reach and depth of the financial system, along the lines that South Africa and other countries have been doing in recent years.
- **Macroeconomic stability** is an important precondition for sustained strong growth performance. And it helps to foster regional integration, as misalignments of key macroeconomic variables could hamper regional integration and have negative spillovers on partner countries. This is largely recognized in the various regional initiatives underway across the continent.

was around $1,600—nearly 5 times the cost in China (Dollar (2008).)

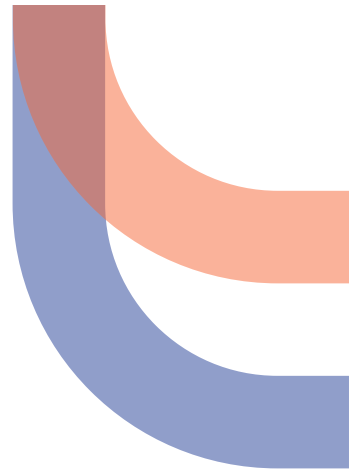
19 Krugman (2009) reviews the experience over recent decades, and Deichmann and Gill (2008) draw out the implications for developing countries, particularly in Africa.

20 See Dollar (2008).

21 AfDB/OECD (2009), Chapter 1.

22 See Deichmann and Gill (2008).

23 As Deichmann and Gill point out, "Cambodia may not be able to build computers or cars, but it can produce the cables or wires that will be used in assembly lines in China. Through this "vertical disaggregation"…growth and prosperity have spread…" (p. 3).



V. Issues for Discussion

The analysis and discussion above raises several questions for discussion:

- What are the key linkages between South Africa and the rest of the continent, how strong are they, and what are the benefits/costs of increasing them further?
- How could positive spillovers be maximized, and is regional integration a viable strategy going forward?
- What are the main constraints to regional integration? (Are the factors listed above relevant, how successfully are they being addressed, and what other factors should be highlighted?)

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