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BOTSWANA

Selected Issues

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Approved by African Department

July 12, 2012

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EXECUTIVE SUMMARY

The analytical work associated with the 2012 Article IV discussions continues the staff's work on how best Botswana can address its longer-standing development and structural challenges and move to a sustained growth path. Despite registering sustained high growth over the past five decades, poverty and inequality remain high in Botswana as in the other countries in the Southern Africa Customs Union (SACU) and the shortcomings of labor market policies are evident with a high level of unemployment. This selected issues paper provides the analytic underpinnings of staff's policy advice to enhance inclusive growth and reduce the high level of structural unemployment in Botswana.[1]

The paper's main findings are:

On inclusive growth:

- Reducing income inequalities has the potential to lead to significant gains in terms of increasing the duration of growth spells. In particular, SACU countries could almost double the duration of growth periods.
- The expansion of the number of welfare programs and their beneficiaries in Botswana, despite reducing poverty, have been relatively less effective in terms of targeting the very poor when compared with other high middle-income countries.
- Policies targeting income inequalities at the source (for example, through early investments in human capital of the poor) are more effective in terms of reducing inequalities. However, fiscal redistributive policies, if carefully crafted, can also be very effective in reducing inequalities while limiting its potentially negative impact on growth.

With regards to unemployment:

- The high unemployment rate in Botswana, as in other countries in SACU, reflects the confluence of government employment policies, its impact on reservation wages, and their interplay with skill mismatch in the labor market.
- Thus, reducing unemployment in Botswana and other SACU countries would require adopting prudent public employment policies. Aligning the curricula for university and tertiary education, and vocational training to meet the demand for skilled labor in the economy should reduce the skill mismatch. There is also a need to address the low effective cost of capital that tends to encourage activity toward capital intensive sectors at the expense of labor intensive sectors.

[1] Initial results for the two chapters were presented to the Botswana authorities in Gaborone in January and May 2012.

I. INEQUALITY AND GROWTH IN THE SOUTHERN AFRICAN CUSTOMS UNION REGION[2]

A. Background

1. **Botswana has been able to sustain high economic growth for the past five decades and is considered to be one the best performers in sub-Saharan Africa.** In effect, real GDP per capita (adjusted using purchasing power parity) grew from around $3,500 in 1980 to close to $12,500 in 2010 (in constant 2005 international dollars), which implies an average annual growth rate of 4.3 percent.

2. **However, not all of Botswana's policies promoted inclusive growth and human development in a broad-based manner.** Poverty and inequality remain high, and the shortcomings of labor market policies are evident with an unemployment rate of about 18 percent. Botswana's income inequality, with a Gini Index in excess of 0.5, is one of the highest in the world especially when compared with other high middle-income countries.

3. **Preliminary estimates based on the Botswana Core Welfare Indicators Survey (BCWIS) 2009/10 show a sharp decline in the poverty headcount rate from 30.6 percent in 2002/03 to 20.7 percent in 2009/10.** In addition, the absolute number of persons living with income below the poverty line declined from around 500 thousand in 2002/03 to about 373 thousand in 2009/10.

4. **In terms of the distribution of poverty between rural and urban areas, the decline in the national poverty rate is fully accounted for by a reduction of the headcount poverty rate in rural areas, where it declined from 44.8 percent in 2002/03 to 25.5 percent in 2009/10.** In contrast, the headcount poverty rate increased in urban areas from 10.6 percent in 2002/03 to 14.0 percent in 2009/10.

5. **Given that the unemployment rate in Botswana remained nearly constant over the two surveys, at approximately 18 percent of the labor force, the decline in the poverty rate is remarkable.** This is because labor income (either in the form of wages or earnings for the self-employed) continues to be the main source of income for most households. Cash earnings (that is, income excluding business profits, unearned cash income, own produce, wages in kind, aid and school meals) account for approximately 73.5 percent of total income, according to the BCWIS 2009/10.

6. **This suggests that part of the decrease in the headcount poverty rate could be due to the expansion of social welfare programs,** including the feeding programs (the

[2] This paper is largely based on the forthcoming IMF Working Paper "Inequalities and Growth in the Southern African Customs Union (SACU) Region" by Olivier Basdevant, Dalmacio Benicio, and Yorbol Yakhshilikov.

School Feeding Program and the Vulnerable Group Feeding Program), the Old Age Pension program, the Orphan Care program, and the Program for Destitute Persons, among others.

7. **Despite a sharp decline in poverty, income inequality remains high in Botswana.** According to the two latest Household Income and Expenditure Surveys (HIES), the Gini coefficient was 0.54 in 1985/86 and 0.61 in 1993/94, placing it among the highest levels of inequality in sub-Saharan Africa and in the world, along with a few countries in Latin America.

8. **The issue of the inequality-growth relationship is particularly relevant for SACU countries, which face high income inequalities.** These inequalities, partly rooted in historical factors, also explain relatively weak growth performances, at least compared to the fast-growing emerging Asian countries. The debate on the relationship between inequalities and growth has led to a vast stream of literature, since the work of Kuznets (1955). Recent studies (Berg and Ostry, 2011, Berg, Ostry and Zettelmeyer, 2012) have renewed the approach, by investigating how income inequalities[3] affect not growth itself, but its duration. Their findings underscore how countries with lower income inequalities experience on average longer periods of continuous growth (also called "growth spells").

9. **This chapter applies the work of Berg and Ostry (2011) to the SACU region, to identify how inequalities have played a role on the length of the growth spells in each of these countries, and to elaborate on policy options to reduce inequalities and foster growth.** The main findings are as follows:

- Reducing income inequalities has the potential to lead to significant gains in terms of increasing the duration of growth spells. In particular, SACU countries could almost double the duration of growth periods if they each had the same level of inequality as those selected countries with similar level of development.
- While reducing inequalities may be desirable, the design of policies to achieve such objective is complex. Policies targeting income inequalities at the sources (for example, through early investments in human capital of the poor) are expected to be most effective to reduce inequalities and promote growth. However, direct redistribution, if carefully crafted, can also be very effective in reducing inequalities while limiting its potentially negative impact on growth.

[3] Measured by the Gini coefficient, which can vary from 0 (perfect equality: all agents have the same income) to 100 (the extreme case of perfect inequality, where only one agent receives all the income generated by the nation, and all the others receive nothing).

B. Empirical Analysis

Comparative analysis of inclusive growth for middle-income countries

10. **Preliminary estimates based on the Botswana Core Welfare Indicators Survey (BCWIS) 2009/10 show a significant decline in the poverty headcount rate, from 30.6 percent in 2002/03 to 20.7 percent in 2009/10.** The expansion of social programs, including the feeding programs (the School Feeding Program and the Vulnerable Group Feeding Program), the Old Age Pension program, the Orphan Care program, and the Program for Destitute Persons, could be responsible for this marked reduction in the poverty rate. Nevertheless, part of the significant decline in the preliminary poverty estimates by Statistics Botswana may be due to the fact that the increase over the period 2002/03-2009/10 in the cost of the consumption basket on which the poverty line data in based (around 43 percent) is smaller than the accumulated consumer price index inflation (around 58 percent).

11. **Estimates of the growth incidence curve, based on preliminary data from the 2009/10 BCWIS compared with data from the 2002/03 Household Income and Expenditure Survey (HIES),** which depicts the growth rate of real consumption per capita for each percentile of the distribution, suggests that households in the middle of the distribution (between percentiles 15 and 75) experienced more rapid growth than those in the lowest 15 percent or in the highest 25 percent. The results suggest that despite the expansion of the welfare programs in Botswana, they have been relatively less effective in terms of targeting the very poor when compared with other middle-income countries like Brazil, Chile and Indonesia (see Box 1). It is important to underscore that these estimates are provisional, and will be updated once the final official data are made available.

Challenges with Sustained Growth Periods

12. **One critical challenge for many emerging or developing economies relates to the capacity to sustain a "growth spell"[4] over a prolonged period of time (Berg, Ostry, and Zettelmeyer, 2012).** Indeed, based on panel data analysis, the authors find that sub-Saharan African countries would typically encounter growth periods that tend to end with prolonged periods of negative growth (about between -3 and -6 percent, on average). It has resulted in overall weaker growth performances. Against this background, they also point out that most countries in that situation have nonetheless demonstrated, episodically, a capacity to generate a growth spell. Thus, the question at stake is to identify what forces would allow some countries to sustain high growth rates over a prolonged period of time.

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[4] Berg, Ostry and Zettelmeyer (2012) define growth spells as periods of real GDP per capita growth of at least 5 years, identified as beginning with an upbreak of per capita growth in excess of a minimum of 2 percent and ending wither with a downbreak followed by a period of an average growth of less than 2 percent, or simply the end of the sample.

Box I 1. Lessons for Botswana from Brazil, Chile, and Indonesia for achieving more inclusive growth

While almost no country has been able to sustain high growth without experiencing some increases in inequality at some point during of its development path, Botswana can draw useful lessons from countries that have been able to sustain high growth while maintaining low income inequality or have been able to reduce inequality during the process.

Brazil and Chile have been able to sustain high growth and decrease inequality simultaneously with a significantly lower share of resources allocated to social safety net spending as a percent of GDP than Botswana, as shown in the World Bank's 2010 Public Expenditure Review for Botswana (see Figure 3, Chapter 5). This suggests that there are potentially large efficiency gains from better targeting of existing welfare programs. According to the World Bank's 2010 Public Expenditure Review, the poor represented only about one third of the beneficiaries of the various social safety net programs in Botswana, with programs differing significantly in terms of their targeting efficiency. Despite the fact that Botswana spends more on social safety nets as a share of GDP (about 3.2 percent) than many other high-middle income countries, it is covering only about 20 percent of all poor households.

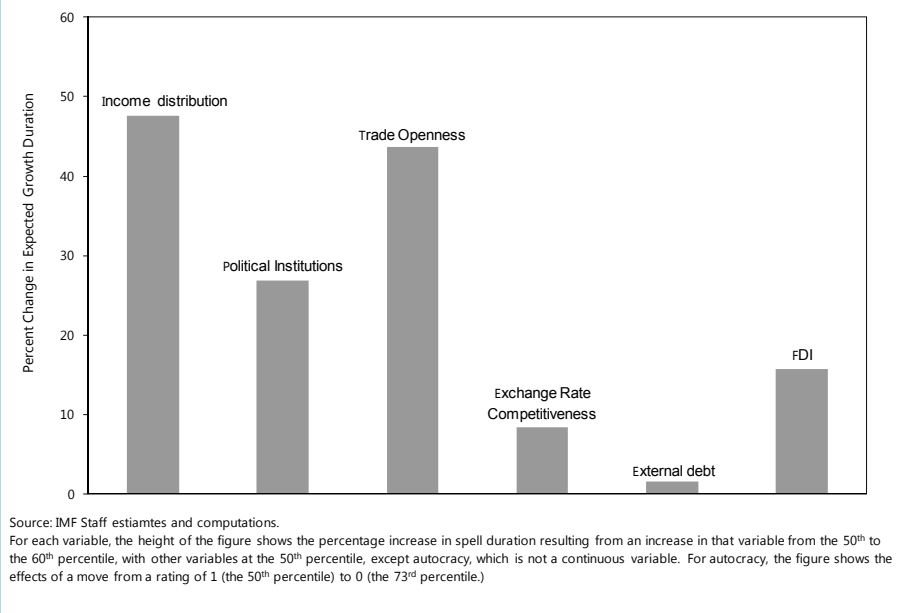
In the case of Brazil, the period of high GDP growth that began in the early 2000s has been accompanied by a remarkable decline in inequality. Brazil's experience is particularly relevant to Botswana since it started with a similar level of inequality, with the Gini coefficient decreasing from around 0.594 in 2001 to 0.539 in 2009. Part of the decline has been attributed to the expansion of the *Bolsa Familia* (formerly known as *Bolsa Escola*) conditional cash transfer program. Begun in the late 1990s, this program targets poor households who have school-age children and provides them with monthly cash transfers conditional on regular school attendance. The distribution of program beneficiaries according to their position in the distribution of per capita income shows that most of the beneficiaries are indeed poor households (see Paes de Barros, Mendonça, and Tsukada, 2012). *Bolsa Familia* and other government transfers, together with macroeconomic stability and the expansion of access to primary and secondary education, can largely account for the decrease in inequality (see Lopez-Calva and Rocha, 2011).

Chile, a country similar to Botswana since exports and government revenues are highly dependent on a single commodity (Diamonds in the case of Botswana and Copper in the case of Chile), has been able to sustain high growth while decreasing inequality over the 2000s. This has been attributed to a combination of prudent macroeconomic management (through the design and implementation of a fiscal policy rule) and progressive redistribution policies, achieved through a combination of universal and targeted social welfare programs (see Lopez-Calva and Lustig, 2012). While some of the groundwork for the improved targeting of social programs was laid in previous decades with the introduction of the information systems to target poor households (see Castañeda, 1992), new programs targeted to the extreme poor like *Chile Solidario* have helped to reduce inequality further. Chile has been able to sustain relatively low unemployment partly through developing export-oriented, highly competitive sectors besides mining, including in agriculture (e.g. wineries, fresh fruits, and salmon farming) and forestry. The development of these sectors has been partly supported by a system of selective grants by *Innova Chile* to promote innovation and credit to small and medium enterprises by the *Corporación de Fomento de la Producción*, both operating within a highly liberalized and non-discretionary international trade regime.

While the case of Indonesia is somewhat different from Brazil and Chile in the sense that its income inequality is relatively low and it also has a significantly lower level of GDP per capita than Botswana and a population more than 100 times larger, it is still relevant since its growth has been partly based on the extraction of non-renewable resources (oil in particular). Indonesia has been able to avoid the resource curse, successfully diversify its economy and develop a competitive manufacturing sector. More importantly, it has been able to grow while reducing poverty and maintaining a relatively low level of inequality. Indonesia's ability to diversify its economy and avoid the natural resource curse has been attributed to macroeconomic stability, fiscal discipline and trade liberalization. Part of Indonesia's success in facilitating structural transformation from agriculture into industry has been a series of predictable agricultural policies, including moderate input subsidies (e.g. fertilizers) and stable farm-gate price for export commodities and rice prices for consumers. In addition, investments in labor-intensive infrastructure and rural development helped boost labor demand in rural areas (see Maehle 2012).

13. **In order to determine the impact of inequality on growth, Berg et al (2012) employ a proportional hazard model specification in which the dependent variable is the duration of growth spells,** and estimate the impact of several economic and political variables on the probability that a growth spell will end. Higher income inequalities are not only associated with shorter growth durations but also appear to be a major contributing factor (Figure I.1). Improvements in income distribution, namely a reduction in the Gini coefficient from the 50th to the 60th percentile, would typically be associated with 50 percent longer growth period. In other words, controlling for other factors such as terms of trade, FDI

Figure I.1: Effect of Increase of Different Factors on Growth Spell Duration



Source: IMF Staff estiamtes and computations.
For each variable, the height of the figure shows the percentage increase in spell duration resulting from an increase in that variable from the 50th to the 60th percentile, with other variables at the 50th percentile, except autocracy, which is not a continuous variable. For autocracy, the figure shows the effects of a move from a rating of 1 (the 50th percentile) to 0 (the 73rd percentile.)

received, price competitiveness, it appears that income inequalities, as measures by the Gini coefficient, do play a very significant impact on growth spells duration. Other factors are also found statistically significant in explaining the duration of growth spells, but to a lower degree, such as (i) investment in infrastructure, (ii) external shocks (for instance, changes in terms of trade or nominal US interest rate), (iii) quality of public institutions, notably as measures by the autocratic degree of political regimes, and (iv) financial sector development. In contrast ethnic, linguistic and religious heterogeneity do not seem do have significant association with length of growth spells. Similarly, human capital measures (education,[5] health[6]) are associated with improved predicted duration of growth spells.

[5] Improvement in primary education enrolment rate.

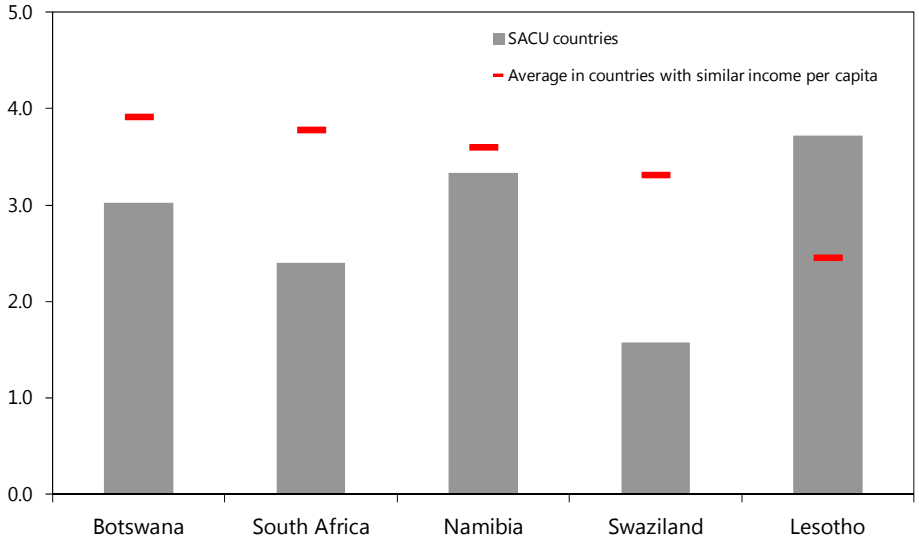
[6] Child mortality rate level and change.

Analyzing Growth and Inequalities within SACU

14. **The overall growth performances in the SACU region over the past decade have been mixed, when comparing each country to an average of countries with similar level of income per capita (Figure I.2).** With the exception of Lesotho, the poorest country in the region, all exhibit weaker growth performance, in terms of GDP per capita growth. Despite the proximity to a large emerging economy (South Africa), as well as significant natural resources (Botswana, Namibia, South Africa), translating growth potential into improved GDP per capita growth remains difficult. The finding highlights the need for additional investigation of growth sources, with a specific focus on the interaction between growth and inequalities.

Figure I.2. Average GDP per Capita Growth Rate, 2000–10

(percent, data based on GDP per capita in US$)[1]



Source: WEO; and IMF Staff computations.

[1] Comparisons are based on GDP per capita, in constant US$, averaged over the period 2008–10. Each of the SACU country is then compared to the countries having the next three higher income, and the next three lower income.

15. **Cross-country comparisons underscore growth spells vulnerabilities for most SACU countries, except Botswana, and to some extent, South Africa (see Appendix I and Table 1).** In the case of Lesotho and Swaziland, the finding is particularly acute, as the past few years also indicate a low growth, particularly compared to the other countries. South Africa's growth path is contrasted, with a continued growth spell that started in 1998, i.e. after the democratic reforms of 1994 (Table 1). Similarly, Namibia, since its independence in 1990, has also shown a capacity to generate high growth rates of income per capita, with a growth spell that started in 1995. However, even if both countries have experienced a growth spell, performances during that spell have been relatively weak, with the average growth of

GDP per capita of 2¼ percent (Namibia) and 3 percent (South Africa). [7] Thus, the hazard ratios reported are specific to each growth spell, and are computed at the end of each available spell. A ratio above 1 indicates a higher, and country-specific, risk of growth spells ending, compared to the sample average. All countries have a hazard ratio significantly above 1, except Botswana, with a hazard ratio of 0.7. It indicates Botswana's stronger resilience during the spell ending in 1988, compared to the average growth spell in the sample.

Table 1. Contributing Factors to the End of Growth Spells in the SACU Region[1]

	Spell Dates		GDP per capita growth		Hazard Ratio	Contributing factors (Percent of total hazard)					
	Start	End	During Spell	Next decade		Inequality	Low FDI Inflow	Increased External Debt	More Autocracy	Over-valuation	Trad openess
Botswana	1968	1988	8.3	1.9	0.7	67.5	0.0	0.0	0.0	5.8	14.
Lesotho [2]	1972	1978	4.9	2.6	7.5	48.0	0.0	0.0	24.5	0.0	20.
Lesotho	1992	1998	5.6	1.4	3.5	71.5	0.0	0.0	0.0	0.0	28.
Namibia [3]	1995	...	2.2	...	2.6	72.5	0.0	0.0	0.0	0.0	24.
South Africa [3]	1998	...	3.0	...	2.6	73.0	9.9	0.0	0.0	0.0	0.
Swaziland [2]	1971	1979	7.2	-0.2	7.4	45.2	3.2	0.0	26.4	0.0	17.
Swaziland	1985	1990	4.6	2.2	6.3	42.8	0.0	0.0	35.6	0.0	18.

Source: IMF Staff estimates and computions.

[1] Growth spells, hazard ratios, and contributing factors, are based on a minimum duration of 5 years, with a p-value of 25 (see Berg, Ostry, and Zettelmeyer, 2012). The contributions are rescaled so that they would sum to 1 if all factors were included. Shown here are only the main factors for these particular observations.

[2] In the case of Lesotho and Swaziland, two separate growth spells have been identified.

[3] In the case of Namibia and South Africa, the growth spell periods are ongoing, while statistical procedure was able to detect the upbreak. In these two cases the hazard of spell ending was estimated as hypothetical in the end of the sample, i.e. 2006.

[4] Trade openness is measured 0 when high trade barriers exist, and 1 when economy is fully integrated to the world trade and has no restrictions. The results suggest the contribution of trade restrictiveness on the probability of spell ending. For example, South Africa, which has trade fully liberalized, had seen no impact from trade restrictiveness.

16. **While inequalities clearly play a crucial role, other factors are also at play, and may have strong impact on policy options.** As shown in Table 1, deteriorating trade openness and increasing degree of autocracy have also played a significant role in some countries. As such, improving growth spell duration should not be viewed as a simple question of the growth/inequalities nexus, but a broader challenge of institutional set-ups.

- For smaller SACU members, insufficient trade liberalization contributed from 14 percent up to 28 percent to the end of growth spells. A relatively low degree of trade liberalization in smaller SACU members is also shown as contributing to the hazard ratio of growth spells. However, the indicator[8] developed by Wacziarg and Welch (2008) considers these countries relatively closed, until the revision of the SACU agreement of 2002, largely because external tariffs, common to each member, were

[7] Additionally, all countries, with the exception of South Africa, exhibit higher growth spell vulnerability compared to the sample average. This relative vulnerability is measures by the hazard ratio, reported in (Table 1). The hazard ratio predicts probability that a spell would end during the five years prior to its actual end, as a ratio to the predicted probability of a spell ending for the average observation in the entire sample.

[8] This indicator equals 1 if current year is greater than the year of trade liberalization and no reversal of the trade policy reforms have occurred and 0 otherwise.

set by South Africa (WTO, 2003). SACU countries are currently highly integrated with the world economy, with various trade agreements, including non-reciprocal preferential treatment with the EU and the US that benefit smaller SACU members.

- Similarly, the status of political institutions matters greatly.[9] According to the measure of the degree of autocracy of political regimes given by Polity IV, two countries stand out: Lesotho during the pre-democracy period (which started in the 1990s), and Swaziland which is an absolute monarchy. During Lesotho's first growth spell period, autocracy was responsible for 24 percent of the end of the growth period, whereas in Swaziland autocracy contributed 26 percent and 36 percent to the end of the two spells, respectively. These findings can also be understood in the context of the general literature on inequalities, growth and political systems. A key risk for growth and its sustainability is the concentration of political powers, which cannot only increase inequalities, but also increase the risks of political crises (Saint Paul et Verdier, 1996, Engerman and Sokoloff, 2000, Bénabou, 2002). Even if an actual political crisis does not occur, the risk of social unrest can be sufficient to lower investment and growth. However, it should also be stressed that democracies are not exempt from risks, where, for example, pressures for redistribution can also lead to higher taxation and lower growth (Alesina and Rodrik, 1994, Person and Tabellini, 1994). More generally crises can be generated when the poorer segments of the population compensate income disparities with access to financing (Kumhof and Rancière, 2010). An overabundance of such financing can precipitate financial and/or political crises.

17. **While high income inequalities are associated with the growth spell vulnerabilities, the causal relation remains complex.** For almost all countries, income inequalities have remained high throughout the sample.[10] Thus, changing the level of income inequalities cannot systematically be associated with a prolonged growth spell. Crafting an active policy to jointly reduce inequalities and foster growth is further discussed in the next section. Additionally, other factors not included in the model, and specific to SACU countries, can affect both income inequalities and growth performances. For example, Botswana's economy is heavily dependent on mineral extraction (mostly diamonds). Mining activities are not labor intensive, and are thus less prone to reduce income inequalities.

[9] In the estimated model political institutions were measured by Polity IV variable on autocracy (http://www.systemicpeace.org/polity/polity4.htm), scaled from 0 to 10 (most autocratic society).

[10] Income inequality, measured by Gini coefficient here, has low variation across time.

Reducing Inequalities to Strengthen Growth Performances

18. **Reducing income inequality could potentially lead to significantly improved growth performances (Table 1).** SACU countries exhibit higher income inequalities than countries with similar level of GDP per capita (Figure I.3). In particular, Botswana, Lesotho, Namibia, and Swaziland (BLNS) all exhibit much higher Gini coefficients than their respective peers.[11] In contrast, South Africa has a Gini coefficient only slightly higher than the average country at the similar income level. However, even in the post-apartheid period (i.e. since 1994), South Africa Gini has shown signs of slight worsening (+1 percent). While redistribution among ethnic groups took place, the overall impact on income inequalities has remained, at best, marginal.[12] Applying the methodology of Berg and Ostry (2011)[13] to SACU countries help quantify the potential gains of lower income inequalities. Two experiments are then considered: one where, for each SACU country, income inequalities are set to their lowest historical level, and another, where inequalities are set to the average level encountered in countries of similar level of developments. Table 2 summarizes the results: for all countries, the gains from this hypothetical improvement in inequality could be quite significant. For most spells, the average duration could have been increased from about 5–8 years, up to 15 years and above (Namibia, Botswana). The result for Namibia is largely driven by the high degree of income inequalities encountered during its growth spell. In Botswana, the unusual potential gain is largely driven by the length of the estimated growth spell. Thus, even marginal improvements in income distribution could result in a much prolonged growth spell.

Table 2. Comparative Impact of Income Inequalities on Growth Spell Duration

	Gini coefficents			Average duration (years)	Increased duration resulting from a lower Gini	
	Average [1]	Historical [2]	Cross-country [3]		Historical [4]	Cross-country [5]
Botswana	52.2	48.5	42.7	23	+5 years	+32 years
South Africa	52.7	41.7	43.2	8	+6 years	+7 years
Namibia	73.9	42.1	43.3	5	+17 years	+3 years
Swaziland	61.7	43.6	47.0	4	+6 years	+3 years
Lesotho	61.0	50.3	41.2	5	+4 years	+10 years

Source: IMF Staff estimates and computations.

[1] Average during growth spell periods.

[2] Minimum value observed over the past twenty years.

[3] Average Gini level over the past twenty years among the group of countries of similar GDP per capita, as defined in Figure 2.

[4] Additional growth period resulting from the Gini coefficient being at its lowest historical value.

[5] Additional growth period resulting from the Gini coefficient being at the average of countries.

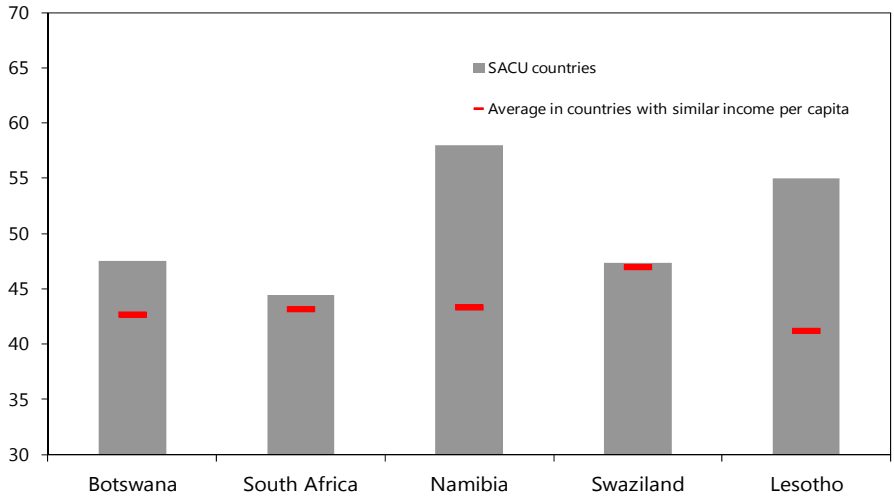
[11] The result for Namibia has to be taken with cautious, as there are only two data points for its Gini coefficient.

[12] The Gini coefficient, as most measures of inequalities, complies with the "anonymity axiom" (see Cowell, 2000) that is, the measure does not depend on who has which income level.

[13] See Appendix for a short description.

Figure I.3: Comparing Gini Coefficients Between SACU countries

(percent; higher Gini = higher income inequalities)[1]



Source: UN-WIDER (http://www.wider.unu.edu); UTIP (http://utip.gov.utexas.edu/); and IMF Staff computations.
[1] Comparisons are based on GDP per capita, in constant US$, averaged over the period 2008–10. Each of the SACU country is then compared to the countries having the next three higher income, and the next three lower income.

19. **Despite the potential positive impact on growth from reducing inequalities, redistributive policies need to be carefully crafted in order to avoid a negative impact on work and investment incentives.** There are two main considerations to bear in mind when implementing redistributive policies.

- Reducing inequalities in human capital should be at the core of policy intervention aimed at reducing future income inequalities and promoting growth.
- In parallel to promoting human capital investment, policies could also help private sector development, so that eventually new skills available are matched with corresponding vacancies. Otherwise the economy could well be trapped in structural imbalances between labor supply and demand.
- Carefully crafted direct redistribution of income is also desirable, especially to alleviate extreme poverty.

Promoting Human Capital Investment for All

20. **Income inequalities are primarily related to disparities in human capital (health, education).** On the health side, the HIV/AIDS epidemic is a major contributor, as SACU countries share the highest prevalence rates in the world (Table 3). Groups relatively more affected by HIV/AIDS complete fewer years of education (Fortson, 2011). Eventually it contributes to increasing inequalities, as the less educated and therefore less-paid individuals are also more vulnerable to the disease (Chicoine, 2012). This inequality is also passed-on to future generations, as affected people are more likely to leave behind orphans, who, in turn, are less likely to attend school (Case and Ardington, 2006, Evans and Miguel 2007). On the

education side, the individual return of education is negatively affected by health issues (HIV/AIDS).

Table 3. Highest HIV/AIDS Prevalence Rates[1] in the World, 2009

	Rank	Rate	Pop. Growth [2]
Swaziland	1	25.9	1.5
Botswana	2	24.8	1.3
Lesotho	3	23.6	1.0
South Africa	4	17.8	0.8
Zimbabwe	5	14.3	0.8
Zambia	6	13.5	2.9
Namibia	7	13.1	1.8
Mozambique	8	11.5	2.3
Malawi	9	11.0	3.2
Uganda	10	6.5	3.3
World average	...	1.9	...
World median	...	0.4	...
World st. dev.	...	4.4	...

Source: UNAIDS; IMF staff computations. Data available on the internet: http://www.aidsinfoonline.org/

[1] Prevalence rates computed among the 15-49 age group.

[2] Annual growth rate of the population, latest data available.

21. **Policies geared towards the provision of health and education services can be effective to reduce inequalities (Bourguignon, Ferreira, and Menéndez, 2007) and increase growth.** Market failures can explain why a sub-optimal investment in human capital can occur and be detrimental to both inequalities and growth. The poor face typically two constraints for their personal investment: their resources are so limited that they simply can't invest (Galor and Zeira, 1993, Piketty, 1997), or the return of human capital investment is too low, largely because of externalities[14] (e.g., Glomm and Ravikumar, 1992, Bénabou, 1993, 1996, 2002). Facilitating the investment in human capital by the poor, would typically involved the public provision of education and health services, which in turn would imply taxing relatively richer individuals to finance it. Thus, an arbitrage takes place between disincentives created by higher taxation, versus higher income generated by the provision of those services. However, by fostering human capital investment for all, the economy can generate more benefits for all, primarily because it can correct market failures and externalities, thus achieving – at the level of the economy as a whole – a higher level of investment, and higher growth, despite the negative impact of the added fiscal pressure.

22. **The cost of public intervention would nonetheless need to be carefully assessed.** Public systems can be very costly (e.g., programs of education for all), in terms of buildings,

[14] Externalities are generated because the individual profitability of human investment is actually dependent on decisions made by other individuals. It would typically result in richer people congregating to generate–and benefit from–higher level of externalities for themselves, but leaving lower opportunities for the vast majority of the population.

teachers trainings, and overall cost for the budget. Donors assistance, including financial, could be desirable to mitigate fiscal risks and facilitate quality goals. Additionally, the quality of the education system is not a simple function of funding allocated to it. For instance, the pupils-to-teachers ratio plays an important factor, and so do the skills of teachers. It could thus be very well the case where growth and inequality reduction gains would be maximized with targeted improvements in the quality of the education system.

23. **SACU countries have made significant efforts to improve the access to education.** For example, Lloyd and Hewett (2009) show, using data from Demographic and Health Surveys (DHS),[15] as well as UNICEF's Multiple Indicator Cluster Surveys (MICS)[16] how SACU countries as a whole have among the best scores in primary school completion rates in sub-Saharan Africa. Although active policies have helped improve the access to education and therefore reduced inequalities in terms of "quantitative parameters" (years of education), qualitative differences in education contribute to explain income disparities (van der Berg, 2009, Keswel, 2009). These qualitative differentials also contribute to explain why overall income inequalities have not been reduced yet in South Africa.

Increasing Employment Opportunities

24. **The very large unemployment rate in SACU, ranging from about 20 to 50 percent (Leigh and Flores, 2011), underscores the need to increase employment opportunities in parallel to human capital development.** Overall, there is a need for broad development policies where human capital investment would be coupled with strategies to develop the private sector.

25. **Promoting employment opportunities in rural areas would be essential to provide long-term answers to inequalities and poverty.** A vast fraction of the populations (about ¾ of the population in Namibia and Swaziland, ½ in Botswana) depend on subsistence agriculture. Their productivity is low and low investment in turns limit the individual profitability of human capital investment (World Bank, 2006). The poor in rural areas are also typically affected by two self-reinforcing factors: lack of access to financial services, and land ownership.[17] The persistence of inequalities underscores the need for continued improvements in access to land asset inequalities inherited from the apartheid area. Successful land reforms would notably provide fair, transparent, and long-lasting rights, so as to foster the use of land for collateral (World Bank, 2006).

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[15] http://www.measuredhs.com/.

[16] http://www.unicef.org/statistics/index_24302.html.

[17] Unequal access to land ownership can lead to lower education investment, as a result of pressures for preserving a low-skilled labor force in the agricultural sector. On the contrary, economies with a more equal access to land ownership have led to more incentives for higher investment in education, eventually leading to the emergence of skilled-labor intensive industrial activities (Galor and others, 2009, Rajan, 2009).

26. **Private sector development would be essential to strengthen existing – or develop new – comparative advantages.** Not surprisingly, human capital alone is rarely found as having a significant impact on growth (Mankiw, Romer, Weil, 1992, Pritchett, 2001, 2006). It's positive impact on growth comes when it complements technological efforts, notably by favoring technological transfers to emerging and developing economies. From this perspective human capital investment complement private sector development to generate, jointly, a positive impact on growth (Benhabib and Spiegel, 1994, del Barrio, Lopez, and Serrano, 2002, Engelbrecht, 2002, Frantzen, 2002).[18] Similarly, without demand for educated labor, the marginal return on education would also decrease rapidly (Pritchett, 2001).

Fighting Poverty

27. **Redistributive policies (cash and in-kind transfers, progressive taxation) have potential benefits in terms of addressing poverty – and thus inequalities.** Cash and in-kind transfers have been increasingly used by SACU countries, as by other sub-Saharan African countries (Garcia and Moore, 2012). They are also a part of social protection for vulnerable groups, including elderly people and orphans who are trapped in poverty. They can also mitigate market failures, by bringing resources to the poor to undertake investments, which otherwise could not be financed. Cash transfers can also be conditioned to reduce child labor and promote schooling (e.g. Bolsa Família program in Brazil,[19] see also World Bank, 2006). It is also noteworthy that the South African Child Support Grant, introduced in 1998 as an unconditional cash transfer to eligible caregivers of children has had some positive impact on overall health and education attainment by children (Coetzee 2011).

28. **Thus, measures could also be considered such as improving labor market flexibility and developing in-work tax credits, so as to preserve work incentive and an effective labor matching process.** Such measures would typically imply a trade-off between reducing inequalities and increasing employment.

C. Conclusions

29. **Estimates based on preliminary data from the 2009/10 BCWIS, compared with data from the 2002/03 Household Income and Expenditure Survey (HIES), suggest that there was a decrease in inequality in the intervening period, as measured by a decline in the Gini coefficient.** This said, staff's analysis suggest that despite the expansion of the welfare programs in Botswana, they have been relatively less effective in terms of targeting the very poor when compared with other middle-income countries like Chile, Brazil,, and Indonesia.

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[18] The findings should nonetheless be taken with caution, as De la Fuente, and Domenech, (2006) show that the results are sensitive to the quality of measurement of human capital.

[19] Details can be found on the World Bank website, http://go.worldbank.org/M4EQDZNQX0.

30. **Botswana and the SACU region as a whole exhibit a high degree of income and non-income inequality.** Reducing these inequalities is a major challenge, but evidence suggests that lowering income inequality has the potential to extend the length of growth spells and offer durable solutions to poverty and long run growth. As shown in this chapter, the design of policies to achieve these goals is complex. Policies have to carefully balance the effects of added fiscal pressures on businesses and individuals, with benefits stemming from greater investment in human capital and reduced poverty. While there is a clear role for public intervention, the overall fiscal impact would have to preserve the soundness of public finances. Timing would therefore be of essence: gains expected from step up investment in human capital would typically imply trade-off between short-term fiscal costs, with more long-term benefits. While desirable, these benefits would need to be carefully assessed and complemented by policies geared towards private sector development, so that fiscal sustainability remains preserved.

References

Alesina, A., and A., Rodrik, 1994, "Distributive Politics and Economic Growth," *The Quarterly Journal of Economics*, 109(2), pp. 465–490.

Bénabou, R., 1993, "Working of a City: Location, Education, and Production," *The Quarterly Journal of Economics*, 108, pp. 619–652.

Bénabou, R., 2002, "Tax and Education Policy in a Heterogeneous-Agent Economy: What Levels of Redistribution Maximize Growth and Efficiency?" *Econometrica*, 70(2), pp. 481–517.

Berg, A., and J., Ostry, 2011, "Inequality and Unsustainable Growth: Two Sides of the Same Coin?", IMF Staff Discussion Note SDN/11/08. Available via the internet: www.imf.org/external/pubs/ft/sdn/2011/sdn1108.pdf

Berg, A., Ostry, J., and J. Zettelmeyer, 2012, "What makes growth sustained?" *Journal of Development Economics*, . Available via the internet: http://www.sciencedirect.com/science/article/pii/S0304387811000836

Bourguignon, F., Ferreira, F., and M., Menéndez, 2007, "Inequality Of Opportunity In Brazil," Review of Income and Wealth, International Association for Research in Income and Wealth, 53(4), pp. 585–618.

Coetzee, M., 2011, "Finding the Benefits: Estimating the impact of South African Child Support Grant" Stellenbosch University, Department of Economics, Working Paper # 16/2011.

Cowell, F., 2000, "Measurement of Inequality" in Atkinson, A., and F., Bourguignon (eds.), Handbook of Income Distribution, (Amsterdam: North Holland).

Del Barrio Castro, T., Lopez Bazo, E., and G., Serrano Domingo, 2002, "New evidence on international R&D spillovers, human capital and productivity in the OECD," *Economics Letters*, 77: pp. 41–45.

De la Fuente, A., and R., Doménech, 2006, "Human capital in growth regressions: How much difference does data quality make?" *Journal of European Economic Association*, 4, pp. 1-36. Available via the internet: http://www.iae.csic.es/investigatorsMaterial/a9167121855archivoPdf2774.pdf

Engerman, S., and K., Sokoloff, 2000, "History Lessons: Institutions, Factors Endowments, and Paths for Development in the New World," *Journal of Economic Perspectives*, 14(3), pp. 217–232.

Engelbrecht, H., 2002, "Human capital and international knowledge spillovers in TFP growth of a sample of developing countries: an exploration of alternative approaches," *Applied Economics*, 34, pp. 831–841. Available via the internet: http://www.tandfonline.com/doi/pdf/10.1080/00036840110061947

Frantzen, D., 2002, "Intersectoral and international R&D knowledge spillovers and total factor productivity," *Scottish Journal of Political Economy*, 49, pp.280–303. Available via the internet: http://www.blackwell-synergy.com/links/doi/10.1111%2F1467-9485.00232

Garcia, M., and C., Moore, 2012, The Cash Dividend, The World Bank, Washington DC. Available via the internet:

https://openknowledge.worldbank.org/bitstream/handle/10986/2246/672080PUB0EPI0020Box367844B09953137.pdf?sequence=1

Galor, O., and J., Zeira, 1993, "Income Distribution and Macroeconomics," *Review of Economic Studies*, 60, pp. 35–52.

Galor, O., Moav, O., and D., Vollrath, 2009, "Inequalities in Land Ownership, the Emergence of Human-Capital Promoting Institutions, and the Great Divergence," *Review of Economic Studies*, 76(1), pp. 143–179.

Glomm, G., and B., Ravikumar, 1992, "Public versus Private Investment in Human Capital: Endogenous Growth and Income Inequality" *Journal of Political Economy*, 4, 818–834.

Kumhof, M., and R., Rancière, 2010, "Inequalities , Levelrage and Crises", IMF Working Paper 10/268, (Washington: International Monetary Fund). Available via the Internet: http://www.imf.org/external/pubs/ft/wp/2010/wp10268.pdf

Kuznets, S., 1955, "Economic Growth and Income Inequality" *The American Economic Review*, 45(1), pp. 1–28.

Leigh, L., and I., Flores, 2011, "Closing the Jobs Gap in the Southern Africa Customs Union (SACU)", in Mongardini, J., (ed.) Building a Common Future in Southern Africa: Challenges and Opportunities, forthcoming, IMF, Washington DC.

Lloyd, C., and P., Hewett, 2009, "Educational Inequalities in the Midst of Persistent Poverty: Diversity across Africa in Educational Outcomes," *Journal of International Development*, 21(8), pp. 1137–1151.

Lopez-Calva, Luis Felipe and Sonia Rocha (2012), "Declining Income Inequality in Brazil: Learning and Looking Forward," Policy Note, Poverty Reduction and Economic Management Unit, Latin America and the Caribbean region, Washington DC: The World Bank.

Maehle, Nils (2012), "Boosting Employment: Lessons from Natural Resource Abundant Countries" presentation delivered at the IMF conference on Natural Resource Management in Lusaka, Zambia, May 2012.

Mankiw, N., Romer, D., and D., Weil, 1992, "A Contribution to the Empirics of Economic Growth", *The Quarterly Journal of Economics*, 107(2), pp. 407-437.

Paes de Barros, Ricardo, Rosane Mendonça, Raquel Tsukada (2012), "The determinants of the sharp improvement in income distribution in Brazil," Presentation, Secretaria de Assuntos Estratégicos, Brasília, 27 March 2012.

Person, T., and G., Tabellini, 1994, "Is Inequality Harmful for Growth?," *The American Economic Review*, 84(3), pp. 600–621.

Piketty, T., 1997, "The Dynamics of the Wealth Distribution and the Interest Rate with Credit Rationing," *The Review of Economics Studies*, 64, 173–189.

Pritchett, L., 2001, "Where Has All the Education Gone?" *The World Bank Economic Review*, 15(3), pp. 367–391. Available via the internet: http://wber.oxfordjournals.org/content/15/3/367.full.pdf

Pritchett, L., 2006, "Does Learning to Add Up Add Up? The Return to Schooling in Aggregate Data", in Hanushek, E., and F., Welch, (eds.), Handbook of the Economics

of Education, (Amsterdam: Elsevier), 1(06), pp. 635-695. Available via the internet: http://www.sciencedirect.com/science/article/B7P5H-4M4SRV4-H/2/569221167e0b685cf828ee86c1eaac7f

Rajan, R., 2009, "Rent Preservation and the Persistence of Underdevelopment," *American Economic Journal: Macroeconomics*, 1(1), pp. 178–218.

Saint-Paul, G., and T., Verdier, 1996, "Inequalities, Redistribution and Growth: A Challenge to the Conventional Political Economy Approach," *European Economic Review*, 40(3–5), pp. 719–728.

Van Der Berg, S., 2009, "The Persistence of Inequalities in Education", in South African Economic Policy under Democracy, Aron, J., Kahn, B., and G., Kingdon, (eds.) Oxford University Press, New York.

Wacziarg, R., and K., Welch, 2008 "Trade Liberalization and Growth: New Evidence." *World Bank Economic Review*, 22(2), pp. 187–231.

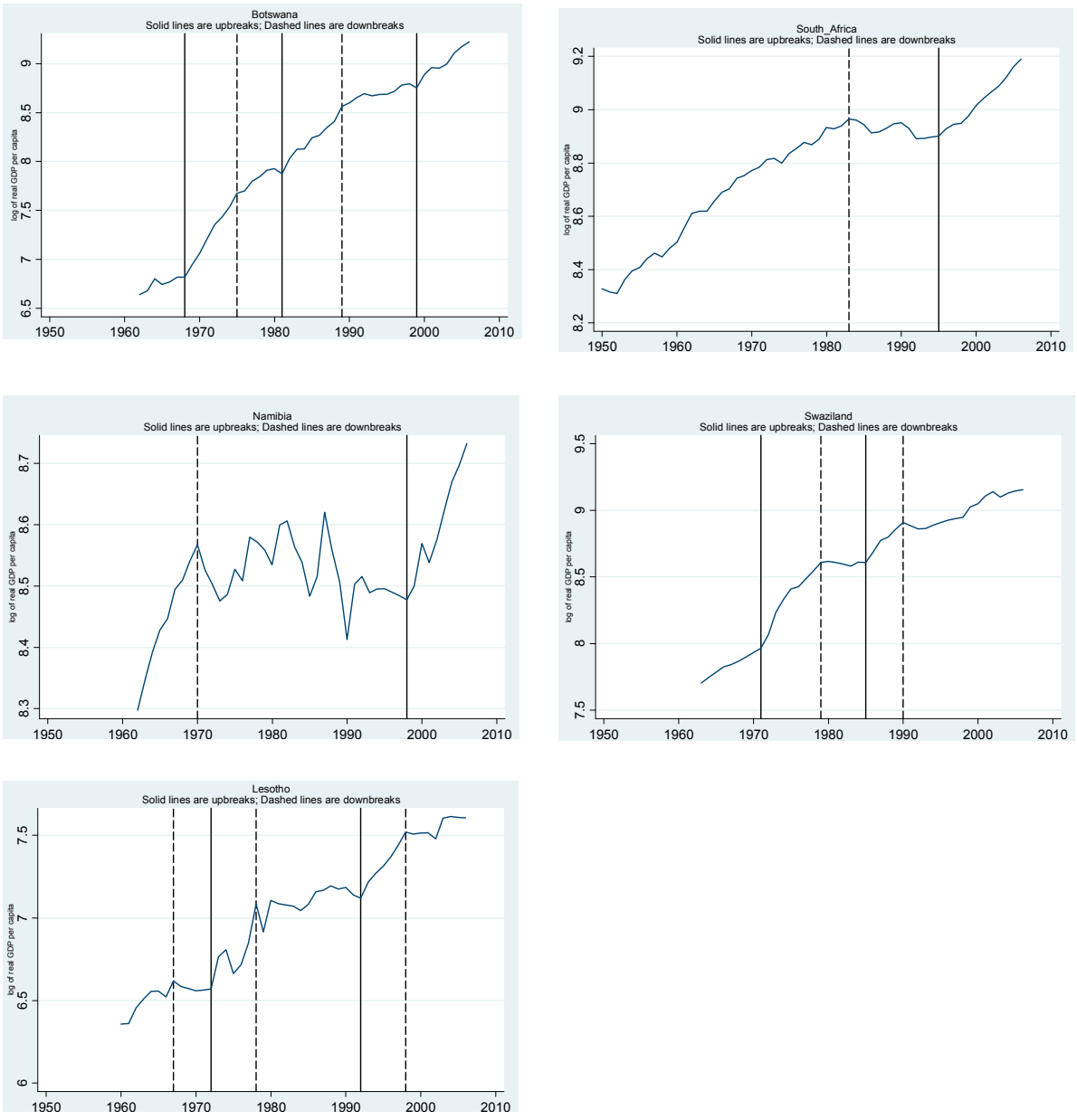
World Bank, 2006, World Development Report, The World Bank and Oxford University Press, Washington DC.

WTO, 2003, "Trade Policy Review – Southern African Customs Union", available on the internet: http://www.wto.org/english/tratop_e/tpr_e/tp213_e.htm

APPENDIX I.1

The following charts summarize the estimated growth spells in the SACU Region during the period.

Figure 1. Growth Spells in the SACU Region, 1950–2010[1]



Source: Penn World Tables 6.0; IMF Staff estimates.

1 Minimum spell period set at 5 years, with a p-value of 25 percent.

APPENDIX I.2

The duration of a growth spell is estimated with a duration model, where the time since growth accelerated, t, has a probability Γ_t of seeing the end of the growth period at the next period. Formally, Γ_t depends on a set of variables, some time-dependent, X_t, and some time-independent, z, according to the following functional form: $\Gamma_t = \lambda_t e^{\beta[X_t, z]}$, where β is a vector of coefficients to be estimated. Γ_t also depends on an autonomous factor, $\lambda_t = pt^{p-1}$, which quantifies a "natural" duration of the growth spell, i.e. the extent to which a growth spell is bound to end regardless of explanatory variables. The time-dependence of the growth spell duration is positive when $p > 1$, in which case spells would become more sustainable over time; or negative when $p < 1$, in which case spells would become less sustainable. The parameters p is also estimated.

Summary of Regressions Coefficients

Inequality (GINI)	-0.05
Income per capita at the begining of the growth spell	-0.11
Debt liabilities	0.00
FDI liabilities	0.02
Change of inflation within spell	-0.01
First lag of US interest rate change	-0.24
Overvaluation of exchange rate	0.00
Polity IV autocracy measure	-0.13
Trade liberalization	0.66
Terms of trade growth	0.01
Constant	5.20

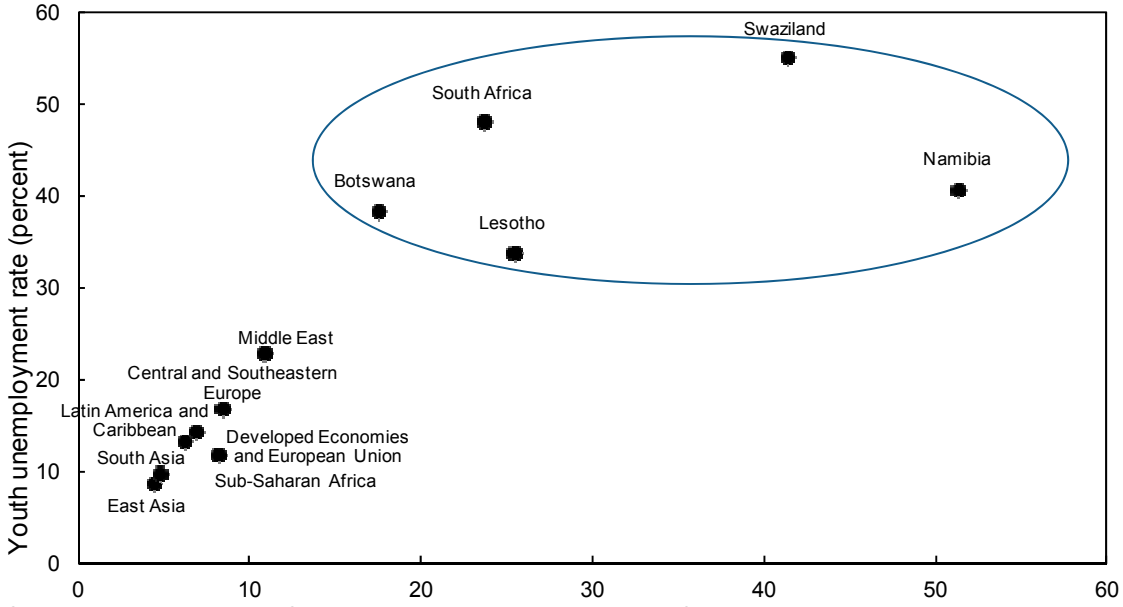
Source: Berg and Ostry (2011).

II. CLOSING THE JOBS GAP IN THE SOUTHERN AFRICA CUSTOMS UNION REGION[1]

A. Introduction

1. **Today the SACU region is facing an unemployment crisis of enormous proportion.** Available statistics indicate that the official unemployment rates in SACU ranges between 20–50 percent and is largely a youth phenomenon. Looking ahead, to provide jobs for those now jobless, as well as new entrants to the labor force, SACU members would have to increase employment by at least 10 million full-time positions over the next decade 2012–21. Even this would leave the ratio of employment to working age population below 50 percent—lower than that currently observed in many other regions.

Figure II.1. Unemployment Crisis in SACU Compared to Other Regions



Sources: International Labor Organization database; and country labor force surveys.

2. **How did such a dire unemployment situation arise given that, by and large, countries in SACU have registered reasonably strong GDP growth over the last decades?** What are the characteristics of labor markets in SACU and how do these characteristics affect job creation in the region? Has the education system in SACU delivered the skills that are in demand in the labor market? What has been the role of unions and the centralized wage bargaining system in SACU on labor market outcomes? Have demographic pressures played a role? What does the ongoing structural economic transformation in SACU bode for job creation? Using a combination of empirical techniques and country case studies,

[1] Prepared by Lamin Leigh (AFR) and Imelda Flores (former IMF summer intern).

this chapter tries to pull these various strands together to distill key messages for policy makers in that region on how best to close the huge jobs gaps.

3. **The diversity of the economies in SACU precludes a simple solution to the unemployment problem.** SACU's labor markets are fairly segmented and this duality takes the form of a combination of both formal and informal sectors, urban and rural labor markets, and a "good jobs sector" and a "bad jobs sector". The good jobs sector is usually rationed because wages are institutionally set above the competitive market clearing level as firms set "efficiency wages", while the unemployed or underemployed remain in the bad jobs sector. Factors such as minimum wages and the fact that unions in SACU tend to be strong and the so called insider-outsider phenomenon have thus contributed to further duality in the labor market.[2] The findings of this chapter suggest that there is no single measure available to address the unemployment problem in SACU, and only a combination of carefully designed initiatives as well as faster growth are likely to make significant inroads into unemployment.

B. The Unemployment Data

4. **This section examines the unemployment data in SACU and other selected regions in sub-Saharan Africa (SSA) and summarizes its key features.** The cross-country analysis includes SACU, other regions in SSA, and a selected group of countries outside SSA that provide some insight into structural unemployment issues. Given the weaknesses prevalent in labor market data in SSA, we first summarize a few observations from our cross-country unemployment data prior to conducting any empirical analysis. Our unemployment data are based on three different sources:

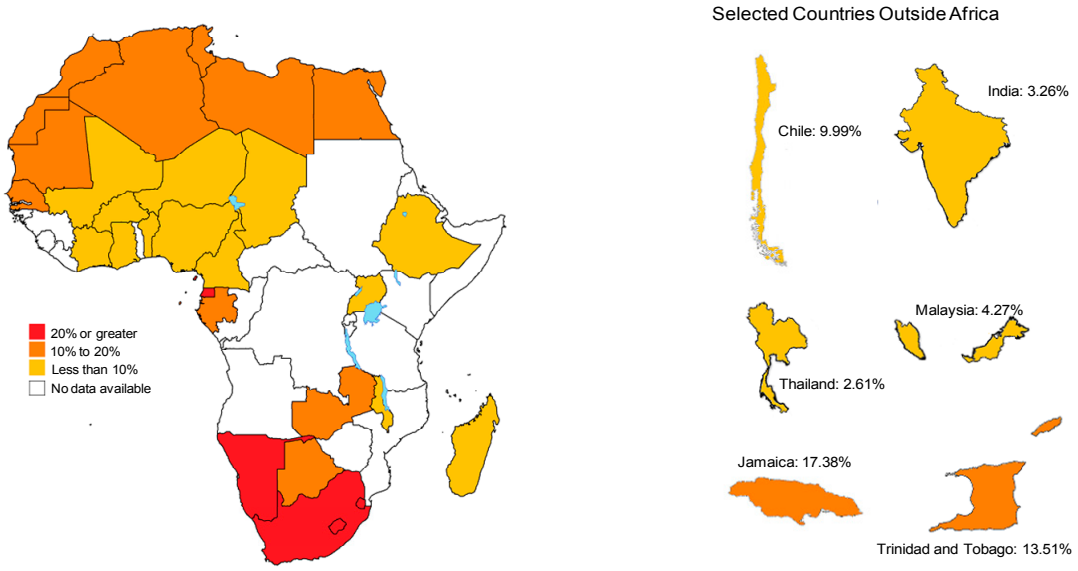
- The World Bank's database and data from IMF country desks;
- Labor force/household surveys of individual countries; and
- The out of employment/population ratios computed from the database of the International Labor Organization (ILO) (and calculated as the proportion of the population between 14-65 years old that is currently without a job).[3] This measure counts students, stay-home spouses, discouraged job seekers and all individuals not willing or able to work as out of employment. Although imprecise, this measure captures both the willingness to work from the part of individuals and willingness to hire by firms.

[2] The insider-outsider theory is related to the conflict of interest between insiders and outsiders in the labor market. "Insiders" are incumbent employees whose positions are protected by labor turnover costs. "Outsiders" enjoy no such protection; they could be unemployed or working in the informal, competitive sectors of the labor market.

[3] For ILO's database see http://laborsta.ilo.org/applv8/data/c2e.html .

5. **The unemployment data provides seven key observations (Figure II.2)**:

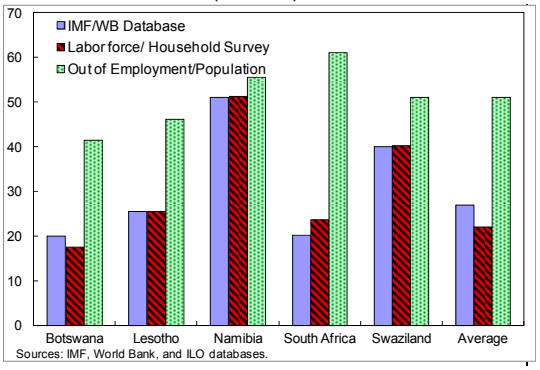
Figure II.2. Cross-Country Unemployment Rates



Source: World Bank and ILO database. Note: SACU data are for 2010; all other Sub-Saharan African countries are 2008 estimates. Data for countries outside Sub-Saharan Africa are 2009 estimates.

- There are significant variations between the official unemployment rates and the implied unemployment rates for both SACU and other regions in SSA thus highlighting the weaknesses of the unemployment statistics across the region.
- Almost all data sources show that the unemployment rates in SACU are the highest in SSA, followed by those of natural resource rich economies in SSA.[4] The non-natural resource rich economies in the region have on average lower unemployment rates. Our analysis of labor force surveys and their quality suggests that unemployment is better measured in SACU and

Figure II.3. SACU Unemployment Rate Estimates
(Percent)

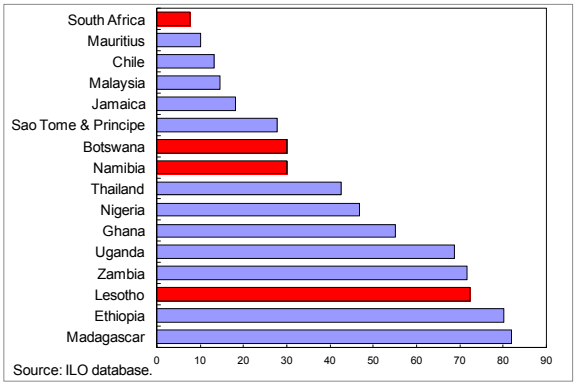


[4] The IMF/WB data base for national unemployment rates is based on the latest available unemployment series from the World Bank's World Development Report -WDR database and in a few cases from IMF country desks. In some cases, this data point may not be the most up to date and the latest estimate of unemployment from the labor force/household survey may be more representative of the actual unemployment rate. The reason the authors used the three indicators of the level of unemployment is precisely due to the weaknesses in unemployment data series in SSA including SACU countries. Put in another way, the three respective series (Figure 3) could be considered as a lower bound, a possible mean and an upper bound of unemployment rates in these economies. The high unemployment rate in SACU could reflect its better quality unemployment statistics.

this could partly explain why the unemployment rates are higher in SACU than in other regions of SSA.

- Youth unemployment rates in SACU are about twice the average official unemployment rates. Labor force surveys also show that on average about 40 percent of the unemployed in SACU are long-term unemployment (unemployed for 6 months or longer).
- The structure of labor markets in SACU tends to be somewhat different from labor markets in other parts of the SSA region. With the exception of Lesotho, the average portion of the labor force in the agricultural sector in SACU is about 20 percent reflecting the prevalence of large scale commercial farming in SACU while the rest of SSA is largely dominated by small-scale/subsistence farming. By way of comparison, the Labor Force Surveys of Ethiopia and Ghana report that 80 and 50 percent of employed workers respectively are in the agriculture sector. This could suggest that SACU has higher quality jobs than the rest of the region despite having higher unemployment rates and that higher labor productivity can coexist with higher unemployment in line with the efficiency wage theory.[5]

Figure II.4. Employment in Agricultural Sector
(Percent)



- The share of people outside the labor force is a more reliable indicator of unemployment than the official unemployment rate. Thus, we computed the out of employment rates as another indicator of unemployment levels which turned out to be significantly higher than the official unemployment rates for all regions in SSA including SACU.[6] Like the overall unemployment rate, SACU countries have the highest out of employment rates largely reflecting a larger proportion of discouraged job seekers in the region or those who have not embarked upon a job search, as they do not consider prospects to be promising. In South Africa, about 15 percent of the labor force are discouraged job seekers and in Botswana the proportion of discouraged job seekers is about 25 percent. In Botswana, the number of discouraged job seekers is even higher than the number of individuals actively seeking work which is the official unemployment rate. By contrast, only about 2 percent of people out of the labor force in Chile are discouraged workers. This suggests that the out of employment rates in SACU countries are driven largely by the number of discouraged job seekers compared with other regions.

[5] The idea of the efficiency wage theory is that it may benefit firms to pay workers a higher wage than their marginal revenue product as paying workers a higher wage may lead to increased productivity from the worker.

[6] This is the percentage of people at working age without a job whether they are out of the labor force, discouraged unemployed individuals or unemployed actively looking for a job.

- Comparing the labor force composition in SACU and other regions, we find that female labor force participation rates (LFP) tend to be lower in SACU countries. Female LFP rate in South Africa is estimated at 46 percent while it is estimated at 71 percent in Ethiopia. We interpret this to reflect the fact that reservation wages for females are higher in SACU countries than other regions in SSA. This could also reflect better employment conditions in SACU countries than other regions in SSA. High unemployment in SACU, together with low labor force participation rates, has resulted in very low ratios of employment to working-age population.
- Overall, one key message from the data analysis is that governments in SACU and more generally SSA need to invest more in improving the quality of the region's unemployment data. Implementing policies to enhance job creation and monitoring the effectiveness of those policies would require better quality statistics.

C. The Empirical Analysis of the Data

Unemployment and Growth—Employment-Output Elasticity

6. **Any meaningful discussion of unemployment needs to look at the role of economic growth in reducing unemployment.** A commonly held view is that, in order for unemployment to be reduced substantially, investment needs to be increased significantly and in the case of SACU economic growth needs to be in the range of 6-10 percent.[7] Below we provide estimates of the employment-output elasticities for all the 33 countries in our cross-country sample including the SACU region. The results show that the employment-output elasticity β averaged around 0.4 while the constant term in the panel regression α was consistently negative in all the estimated regressions. The latter result, which was found to be robust based on additional experiments which dropped countries from the baseline sample, is significant as it perhaps signals the role of other factors in employment creation beyond GDP growth.[8]

$$dlog(employment)_{it} = \alpha + \beta dlog(real\ GDP)_{it} + \varepsilon_{it}$$

Estimated Employment-Output Elasticity Using Panel Data

	α	β
Overall sample	-3.221 (t=-3.04)	0.473 (t=2.57)
Excluding CEMAC	-1.923 (t=-2.07)	0.419 (t=2.33)
Excluding WAEMU	-2.078 (t=-2.83)	0.454 (t=2.41)
Excluding CEMAC and WAEMU	-1.518 (t=-2.01)	0.401 (t=2.04)

Source: IMF Staff calculations.

[7] This is based on staff's macroeconomic simulations which are reported in the forthcoming working paper version this paper due to be published in late 2012.

[8] The explanatory powers of the estimated panel regressions are reasonably high with adjusted R^2 for the 4 respective regressions in the table above being 0.61, 0.58, 0.57 and 0.54.

7. **The other question is to what extent does the low cost of capital influence labor market outcomes in SACU?** Specifically, whether the roles of capital and labor in SACU have been distorted over the years as large sections of the population have been excluded from economic activity and production has become more capital intensive given the low cost of capital. Figure II.5 shows that the lower the cost of capital the higher the unemployment rate.

8. **Overall, both the highly significant intercepts in the estimated panel regressions and the low effective cost of capital in SACU suggest that structural distortions in the SACU labor market may be contributing to the persistently high unemployment.** It could also explain why the labor market is not clearing. The next section will report the results of a series of experiments aimed at exploring the likely role of such structural distortions in SACU's labor market through empirical techniques using both correlation and panel regression analysis.

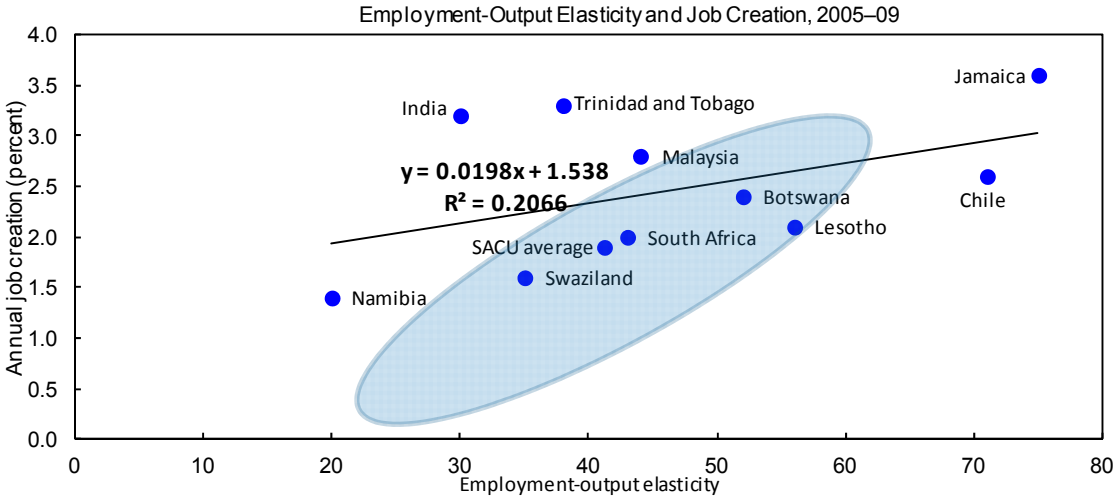
Wage Policy and Labor Market Outcomes

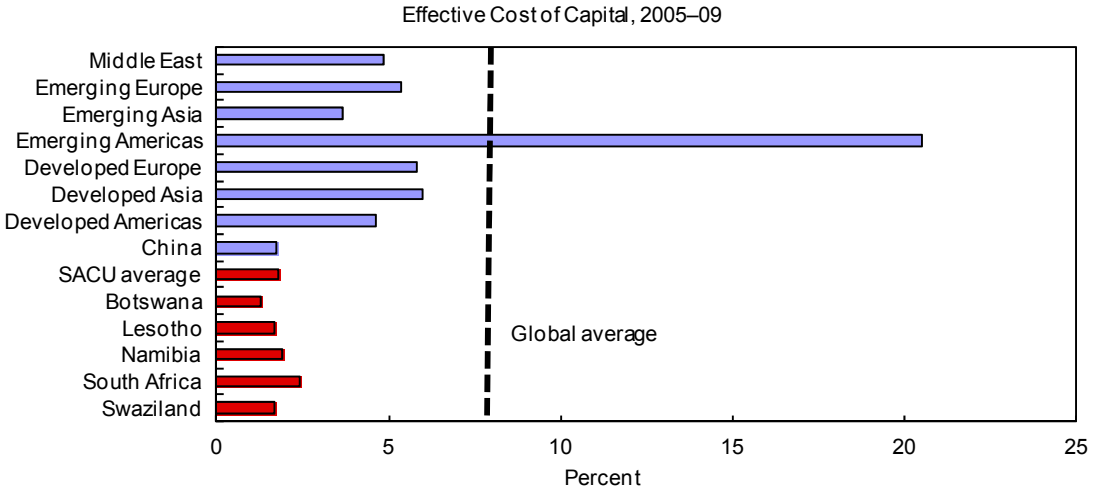
9. **Our analysis shows that public sector real wage growth in excess of productivity is closely correlated with the unemployment rate in SACU (Figure II.6).**[9] In fact, SACU's real wages in excess of productivity gains is significantly higher than other countries in our sample. The size of the public sector and higher public sector wage awards do influence labor market outcomes in an economy including the private sector's ability to create jobs. A bloated public sector, which lures job seekers with greater job security and higher wages, tends to distort labor market outcomes. Historically, government hiring practices in SACU have typically inflated wage expectations and placed a premium on graduates in liberal arts and social sciences over skills in demand in the private sector, influencing education choices and contributing to skills mismatch in the labor market (see further below for a more detailed discussion of the role of skills mismatch in SACU's labor market). Other benefits of a public sector job include stability, reputation, and long-term security among others. It is however difficult to infer causality from real wages to unemployment outcomes in SACU based on bivariate correlations. Thus, our panel regression analysis analyzes the causal relationships between unemployment and its macroeconomic determinants. The estimated panel regressions, which use various panel estimation techniques as described (Table1, Appendix II.1), show that high real wage growth above productivity in SACU tends to result in persistently high level of unemployment. This could reflect the fact that an excess real wage growth over productivity encourages firms to substitute capital for labor and more generally informality in the SACU economies.

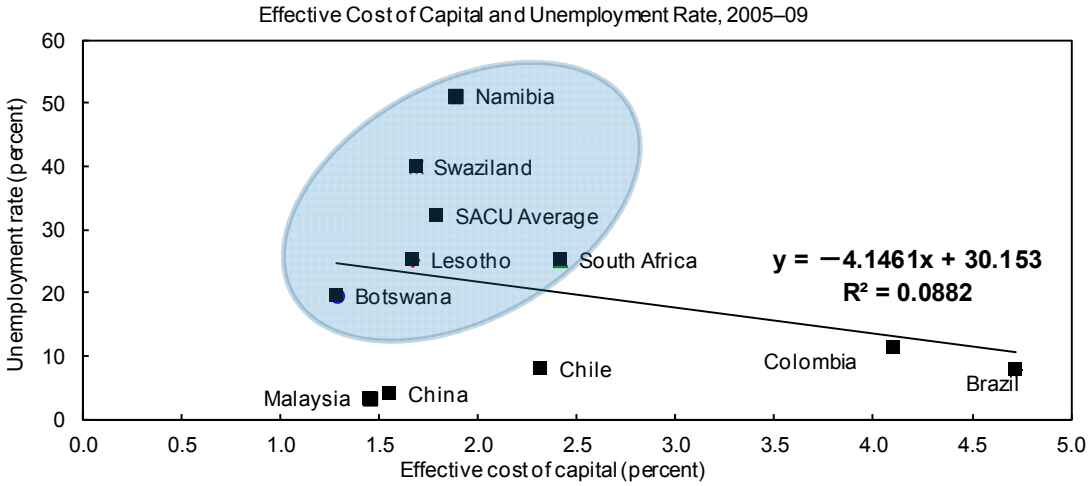
[9] This paper uses the CPI-based real wage measure instead of the GDP deflator-based real wage, while productivity growth is proxied by an adjusted output per capita for the manufacturing and construction sectors.

Figure II.5. Employment-Output Elasticity, Job Creation, and the Effective Cost of Capital

SACU members have lower estimated employment-output elasticity and employment growth compared with other middle-income countries. SACU countries also have generally lower effective costs of capital which seems to be associated with high unemployment rates across the region.







Sources: ILO database; and IMF staff calculations.

10. **The high real wage growth, which outpaced the growth of labor productivity in SACU, partly reflects the outcomes of its centralized collective bargaining framework.**[10] This wage bargaining system not only contributes to the weak link between pay and productivity, but also reduces the response of the real wage to the business cycle fluctuation. Additionally, higher real wage put upward pressure on labor costs and cause firms to substitute capital for labor, thereby increasing the marginal productivity of labor.

Union density and Unemployment

11. **Over the years, unions have played a pivotal role in SACU.** Their emphasis on workers' rights is well placed and bodes well with enhancing more inclusive growth. SACU's union density is also relatively high compared to other countries in our sample. This said, if the job market is mainly dominated by a highly unionized government sector, sometimes this tends to give rise to voluntary unemployment in the non-unionized sectors. The high degree of correlation between unionization and unemployment (Figure II.6) suggests that high union density in SACU may be contributing to unemployment outcomes. Our panel regression also supports this negative impact of union density on SACU's overall unemployment rate.

Skill Mismatch in the Labor Market and Unemployment

12. **Our analysis shows that skill mismatch in SACU is highly correlated with the region's unemployment rate.** Our skills mismatch index (SMI) is calculated by taking the difference between the skill demand and supply for each country in our sample. Following Peters (2000) and Estevao and Tsounta (2011), the Skills Mismatch Index (SMI) for each country i at time t is constructed using the following formula:

$$\mathrm{SMI}_{it} = \sum_{j=1}^{3} \left(\mathrm{S}_{ijt} - \mathrm{M}_{ijt}\right)^2$$

where: j is the skill level; S_{ijt} is the percent of population with skill level j at time t in state i (skill level supply), M_{ijt} is the percent of employees with skill level j at time t in country i (skill level demand).

- *Skill level supply*. We use the World Bank educational attainment data to construct skill level supply using primary education (as low skilled), secondary education (as semi-skilled) and college and tertiary education (as high skilled).
- *Skill level demand.* We approximate skill level demand by the percent of employees in three key sectors: construction (to proxy low-skilled workers), manufacturing (for semi-skilled workers) and government and financial services (for high skilled workers).

13. **The results support the basic conclusion from our analysis of labor force surveys for SACU countries which shows that skill mismatch is an important factor that explains**

[10] See supporting econometric evidence in Klein (2012) using micro/industry-level data.

unemployment outcomes (Figure II.6). Reflecting large spending on education, SACU countries generally have a high rate of schooling for primary and secondary education compared to other regions in SSA. However, this high rate of schooling has not yet translated into greater private sector type skills as it has produced graduates whose skills are not in demand in the private sector.[11] A high level of tertiary education for a prolonged period would generally enable a country to meet the demands of the private sector and thereby gradually reduce the skill mismatch in the labor market. This type of tertiary education closely mimics specialized advanced education which supplies firms with the necessary high skilled workers to create more employment.

14. **The estimated panel regressions (Table 1 appendix) also suggest that the mismatch between the skills the labor force possesses and those skills that firms seek to have explains part of the persistently high level of unemployment in SACU.** While many governments in the region have spent a lot in educating their youth, firms regularly cite the lack of suitable skills among job applicants as a constraint to hiring. For Botswana unemployment rates are highest among college graduates, although for South Africa it is highest among unskilled workers. The former suggests that the education systems have not been very successful in producing graduates with marketable job skills. Reducing the skill mismatch in SACU by improving the quality of education spending to support: public-private partnerships for skills development, vocational and technical training and building information and communications technology skills, and graduates' internship program as in Botswana, will gradually reduce the skill mismatch and thus the overall unemployment rate.

Welfare Benefits, Labor Market Regulations, and Unemployment

15. **Our analysis suggests that welfare benefits are not closely correlated with unemployment in SACU (Figure II.6).** While other regions in SSA have on average higher welfare spending comparable to that in SACU countries, they have significantly lower unemployment rates. In fact, our data shows that welfare benefits in SACU are not only on average lower than other regions in SSA, they are not associated with increased level of voluntary unemployment through their impact on the reservation wage of workers and thus the replacement ratio. Our results are consistent with the findings of Knight and Kingdon (2004) ("*Unemployment in South Africa: the nature of the beast"*) who also rejected the voluntary unemployment hypothesis through the impact of the replacement ratio (benefit-

[11] The current structure of the educational system in many countries in SACU and in SSA is in part a legacy from the colonial period during which senior civil servants encouraged students to study liberal arts and social sciences so that they can help them run the public sector. Public servants' salaries and benefits were made very attractive to attract the best which exacerbated during the post-independence era and gave rise to unsustainable public wage bills. The distorted public sector wages yielded an educational system which produced graduates for the civil service but who did not have modern skills that firms demand in the current labor market.

wage ratio) on the unemployment rate. Our panel regressions also support this broad finding. We view this as an important result that has implications for public policy in SACU: if unemployment is not affected by welfare spending, then welfare programs can be used to help the unemployed and discouraged workers, without fear of the policy leading to an increased unemployment rate.

16. **Labor market regulations typically tend to hamper job creation.** Specifically, high level of hiring and firing costs can negatively influence employer's decision to hire new employees. However, Figure II.6 suggests a low degree of correlation between hiring and firing costs[12] and unemployment rates in SACU. In fact, overall, SACU countries have lower hiring and firing costs despite having the highest unemployment rates in SSA. The countries in our non-natural resource rich group have relatively high hiring and firing costs yet their unemployment rates are on average lower than that of SACU's. Thus, despite relatively low hiring and firing costs, the unemployment rates for SACU remain high; while in other regions in SSA, a high level of hiring and firing costs co-exist with a low unemployment rate (Figure II.6).

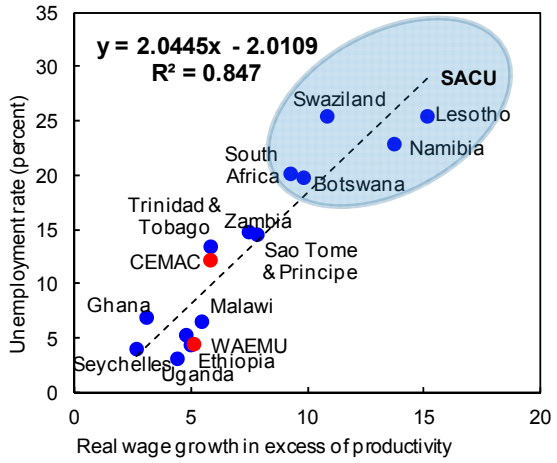
17. **Our estimated panel regressions (Appendix II.1) also show that hiring and firing costs is not a significant determinant of the overall level of unemployment in SACU.** The result suggests that the high unemployment rate in SACU is not closely associated with labor market rigidities. In fact, minimum wages (as a share of average wages in the economy) in SACU are relatively on the low side compared with some other countries (Figure II.6). Beyond this, our estimated panel regressions suggest that the high unemployment has little to do with the restrictiveness of the labor laws.[13]

[12] Hiring and firing costs are based on the World Bank's data.

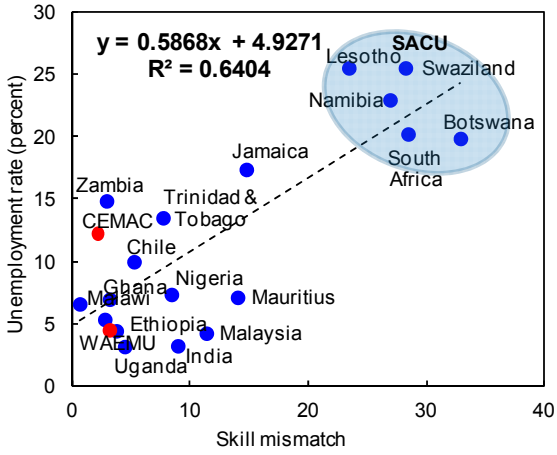
[13] Both the welfare benefits variable and the HIV/AIDs dummy were not significant in our estimated panel regressions. While HIV/AIDs did put a dent on labor force growth in the SACU region during the early 1990s, efforts by the governments to address the pandemic attracted donor support including the Clinton and Gates Foundation, and yielded significant progress on the rate of new infections especially among pregnant women.

Figure II.6. Unemployment Rates and Labor Market Indicators-Correlation Analysis

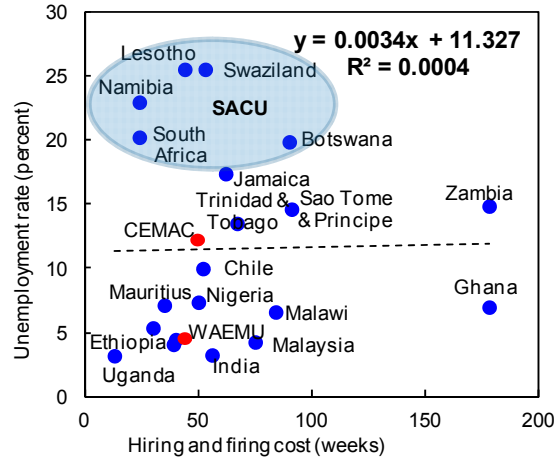
The unemployment rate seems to be positively correlated with wage-productivity gap…



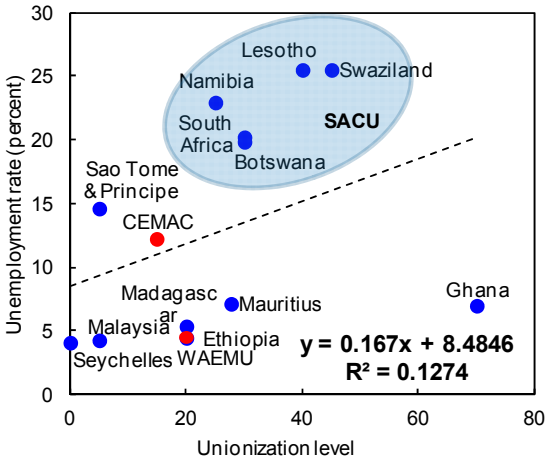
as well as skill mismatch in the labor market.



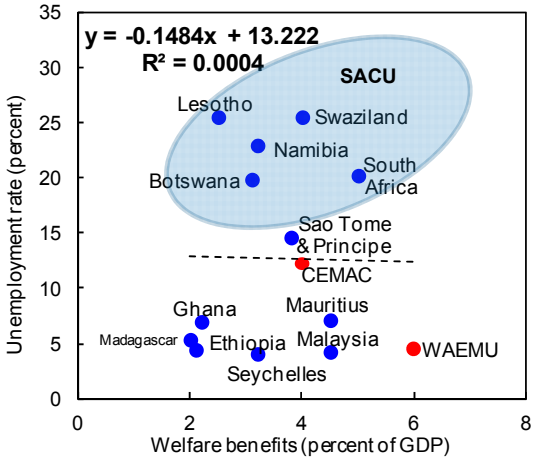
as well as restrictiveness of labor laws.



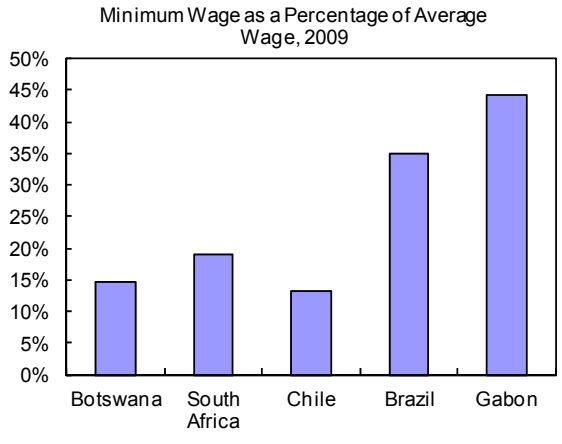
and positively correlated with union density



However, the unemployment rate seems have little association with welfare benefits….



Moreover, SACU countries have generally low minimum wages compared to peer countries..



Source: World Bank, ILO database and IMF Staff calcuations.

The Role of Demographic factors

18. **Our analysis shows that demographic pressures have not been a dominant factor for explaining unemployment outcomes in SACU.** Figure II.7 shows that the rate of population growth is trending downwards (below 1 percent) across SACU countries (this compares to an estimated 2½ percent annual population growth for the whole of SSA). While the size of the working population as a ratio of total population is projected to increase as the impact of HIV/AIDs dissipate in the region, these ratios would generally remain low by standards in other regions. Moreover, the demographic variable is not significant in our estimated panel regressions.

Summary of Results

19. **Pulling all the threads together, the balance of evidence suggests that SACU's high unemployment rate is largely driven by its wage policy which distorts labor market outcomes including though its impact on education choices and thus skill mismatch.** As noted above, historically government hiring practices have typically inflated wage expectations and placed a premium on graduates with liberal art or social science degrees over actual skills in demand in the private sector, influencing education choices and contributing to skills mismatch in the labor market. Thus, the wage structure of the civil service in SACU has distorted the overall labor market and creating voluntary unemployment as graduates line up to get a public sector job given their reservation wage. This has also exacerbated the misalignment between labor productivity and real wages established in this paper thus discouraging employment creation. A highly unionized government sector can also affect employment outcomes. We believe all these have important policy implications since it is the confluence of government hiring practices and the public sector wage policy, reinforced by less flexible wage bargaining process, which give rise to distortions in the labor market and need a fundamental change in SACU. SACU countries should change public sector wage policy not only to enhance fiscal sustainability, but also to reduce the associated distortions in the labor markets.

Figure II.7. SACU Countries: Demographic Projections, 2015-2050

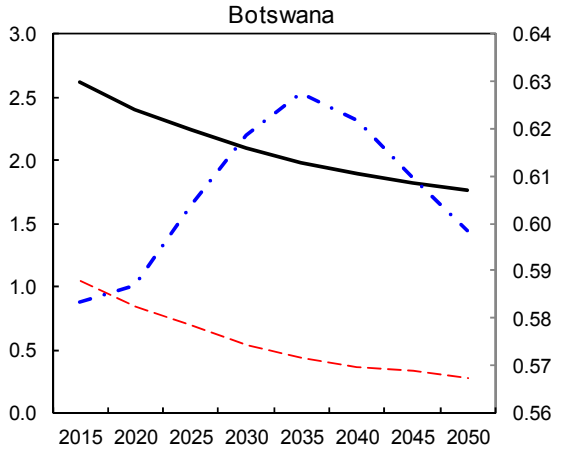
Based on projected population growth and size of the working population, demographic pressures are likely to be less severe in all SACU countries.

Population growth rate (average annual %)

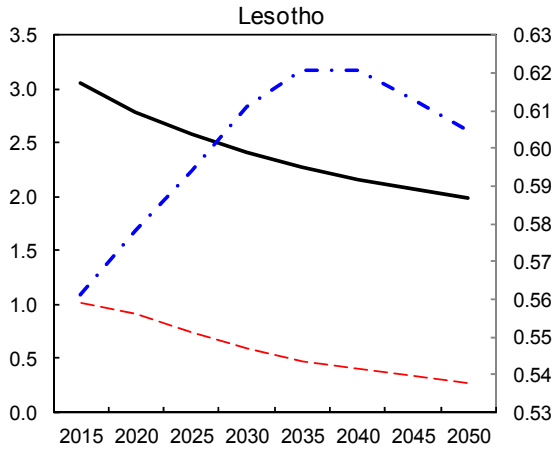
Total fertility rate (births per woman)

Working age population to total population (right scale)

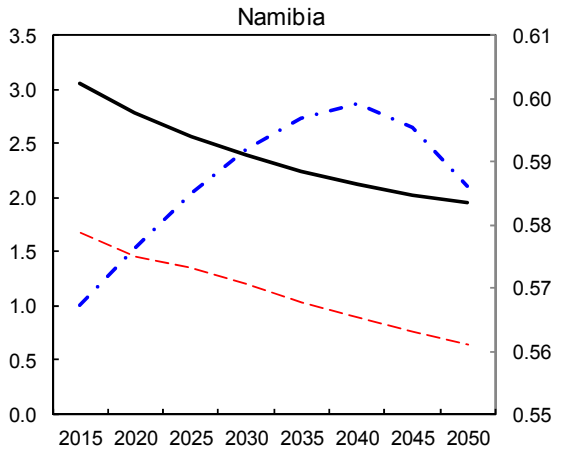
Botswana's population growth is projected to decline below 1 percent per annum with the ratio of working population to total population below 1 over the next decade.



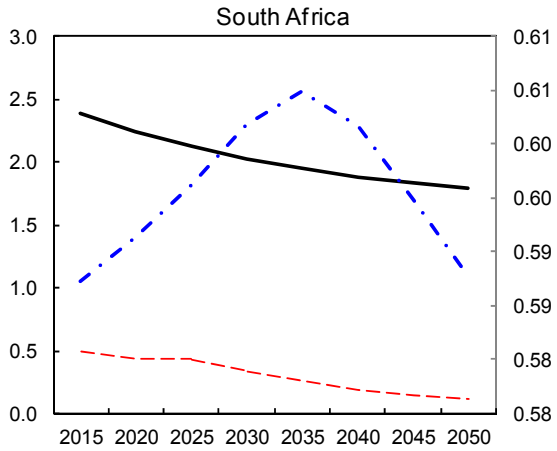
There are broadly similar trends for Lesotho….



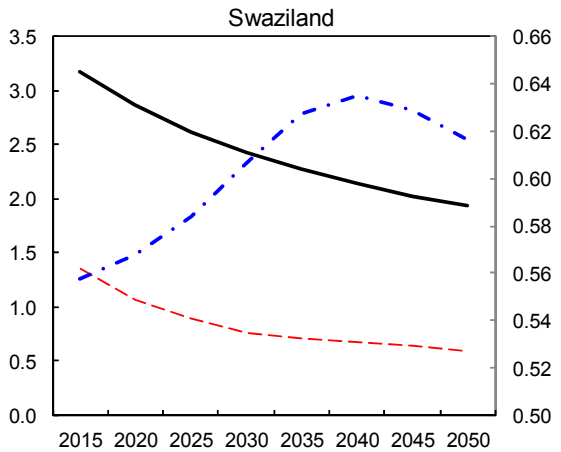
and Namibia….



as well as South Africa…



and Swaziland.

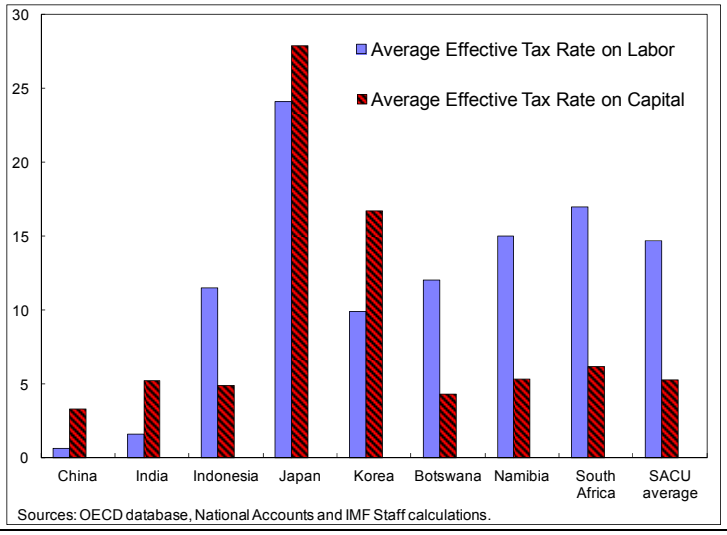


Source: World Bank Database.

20. **At prevailing wage rates in SACU there is an excess demand for skilled labor and in for some countries excess supply of unskilled labor.** Targeted interventions in key sectors, combined with a comprehensive reform of the education system, are needed to create conditions for rapid growth with job creation. Private sector-led approaches to improve the technical/vocational training, where governments play the role of standardizing the curricular and accrediting program, are the most promising route for educational system reform. The experience of South Korea in reducing the heavy emphasis placed on university education and promoting tertiary education and vocational training is relevant in this regard. Similarly, the Japanese experience of improving labor market outcomes of training through close links with industry, continuous curriculum development and the introduction of new programs focus on skills requirements of the job market can help meet the demand for skilled labor in both the tradable and non-tradable sectors (Treichel, 2010). It is encouraging to note that governments in SACU have already began to take some of these initiatives.

21. **The significance of our effective cost of capital variable in the estimated unemployment panel regressions supports the view that policies in SACU could be biased toward capital-intensive sectors at the expense of labor intensive sectors.** In particular, SACU's wide-ranging tax incentives have resulted in a low effective tax rate on capital relative to labor (Figure II.8).[14] Since the economic liberalization policies began in the early 1980s, countries in SACU have put in place a series of tax incentives aimed at supporting capital-intensive sectors. Over the years, tax incentives have proliferated and contributed to what is now a very complex incentive regime. The analysis presented here shows that the plethora of tax incentives in SACU has produced an effective tax rate on capital which is low and which favors capital-intensive activities. Streamlining tax incentives for capital will raise the effective cost of capital and reduce the distortionary impact on employment creation.

Figure II.8. Average Effective Tax Rates on Labor and Capital
(Percent)



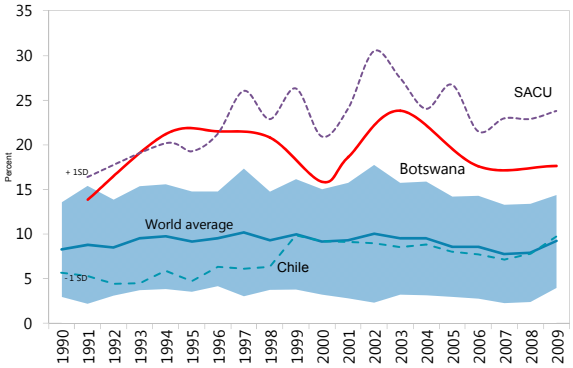
Sources: OECD database, National Accounts and IMF Staff calculations.

[14] The average effective tax rate is calculated following Mendoza *et al* (1994) which is a method of producing effective tax rates using data on actual tax payments and national accounts. The main advantage of this method is that it is less stringent on data requirements than other methods and easily applicable to cross country work.

BoxII 1. Botswana and Chile: Case Studies on Policies for Tackling Unemployment

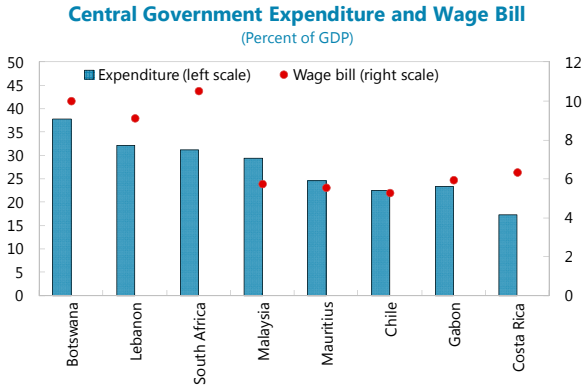
Botswana and Chile are two natural-resource rich economies that are deemed to be success stories for prudent economic management, but with different unemployment outcomes. Both economies are characterized by relatively low inflation, fiscal discipline, institutional strength, good infrastructure and high standards of governance. Despite these similarities in fundamentals, Botswana continues to have a double-digit unemployment rate, well above the world average, while Chile has generally kept its unemployment rate below 10 percent (Chart).

SACU's (including Botswana's) unemployment rate is well above the global average in contrast to Chile's.



Source: World Bank World Development Indicators.

Chile also has maintained a small size of government.



Source: IMF World Economic Outlook and Government Finance Statistics.

What explains this divergence between the two economies in terms of unemployment outcomes?

- Through sound fiscal policy, Chile has reduced the size of the government and has maintained a composition of government spending that favors growth. Public sector wage growth has been broadly in line with economy-wide productivity levels. The limited size of the government and pro-growth government expenditure, suggest that less public sector dominance in Chile might have contributed to private sector led job creation.
- In relative terms, Chile has delivered better education outcomes in terms of quality of its skilled employees compared to Botswana or SACU more generally. Chile has over the years made relatively more progress in implementing policies to address the skill mismatch problem than the SACU region. Workers in Chilean labor force are able to perform in a variety of occupations (not only governmental and agricultural sectors). Chile also has a 30 percent enrollment in tertiary education compared with only 12.6 percent in South Africa which is the highest in sub-Saharan Africa.
- Unlike Botswana, Chile has made a lot of progress in diversifying its economy away from copper and thereby making the economy more resilient to shocks and limiting the Ballassa-Samuelson effect from the tradable to non-tradable sector through wages. In particular, over the years, its service sector has expanded in terms of its share in value added and its share of total employment.

Unemployment and Income Inequality in the SACU Region

22. **High level of structural unemployment in many countries has hindered the ability for governments to achieve a more inclusive growth.** The literature suggests that countries with better Gini coefficients (greater income equality) are those with more diversified economies and lower rates of unemployment that provides a robust foundation for a more sustainable growth in the long run (Mocan, 1995). Those countries are generally able to improve the living standards of their population for longer periods of time, even if they don't have an impressive output growth. This begs the question what is the relationship between the unemployment rate and income inequality in SACU?

23. **Our analysis of the link between structural unemployment and income inequality suggest that a sustained GDP growth in SACU cannot by itself improve income inequality if it is not associated by a reduction in long-term structural unemployment.**[15] The results show that reductions in structural unemployment have a substantial improvement impact on income distribution (see Chapter 1 for a detailed analysis of income inequality in SACU). To the extent that better education outcomes in SACU contribute to a reduction in structural unemployment (as partly inferred from our unemployment-skill mismatch estimated function), they reduce income inequality which has the potential to make growth more inclusive.[16] The policy implication is that for SACU countries and countries with similar structural unemployment-income equality dynamics, policies that lead to more sustained reduction in structural unemployment would help to enhance more inclusive growth in these economies. Policies may include incentives to employers to hire less-skilled workers, to training programs for workers who face stagnant wages and longer spells of unemployment/hysteresis effects.

D. Conclusions

24. **Job creation is a key challenge for policymakers in the SACU region.** This paper has analyzed the factors that have contributed to SACU's high unemployment rate. While there is some diversity in labor market conditions within SACU, the broad conclusion from the empirical analysis and case studies suggest that there is no single measure available to address the unemployment problem in SACU, and only a combination of carefully designed initiatives as well as faster growth are likely to make significant inroads into unemployment.

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[15] See Appendix II.1 for more details on the estimation technique.

[16] These results are broadly consistent with the results of the growth incidence curves (GIC) in the AFR Regional Economic Outlook (October 2011) which found changes in the coefficients on the level of education are broadly consistent with changes in per capita consumption of the poorest quartile of the distribution for a selected group of economies in sub-Saharan Africa.

25. **Closing the huge jobs gap in SACU would require faster economic growth, a fundamental change in public sector wage policy, to not only enhance fiscal sustainability but also reduce the associated distortions in the labor markets.** Our analysis suggests that to put a significant dent in the unemployment rate in SACU would require economic growth to around 6-10 percent on average. The confluence of government hiring practices and the public sector wage policy, reinforced by less flexible wage bargaining process, have also given rise to distortions in the labor market. There is also an urgent need to align education policies in SACU to the skills need of the private sector. In SACU, this could be done by improving the quality of education spending to support public-private partnerships for skills development, focusing on vocational and technical training and building information and communications technology skills in line with some of the ongoing initiatives being pursued in the SACU region. The analysis also shows that reducing structural unemployment would substantially reduce income inequality in SACU and thus enhance more inclusive growth.

26. **Based on our case study, other policy initiatives that would generate faster job creation include:**

- Economic diversification: this would create sectors that are labor intensive and enhance the economy's potential to create more jobs including through limiting the traditional Ballassa-Samuelson effects on the non-tradable sectors. Thus, policies also need to focus on measures to improve the investment climate and reduce the costs of doing business in SACU to boost such new job creating sectors especially in the context of the ongoing structural economic transformation in the region.
- Targeted government intervention in key non-tradable sectors with high employment multipliers will also help. The segmentation of SACU's labor markets also argues for well targeted intervention in certain sectors to tackle the unemployment problem.

27. **Finally, there is an urgent need for governments in SACU to invest in strengthening its labor market/unemployment statistics.** This paper has established that there are significant variations between official unemployment rates in SACU and the implied unemployment rates highlighting severe weaknesses in the unemployment data. Monitoring the effectiveness of policies for job creation in SACU and in sub-Saharan Africa region more generally, would require better quality statistics.

References

Barro, R., and D. Gordon, 1983, "A Positive Theory of Monetary Policy in a Natural Rate Model," *Journal of Political Economy*, Vol. 91, pp. 589–610.

Bulow, J.I., and L.H Summers, 1986, "A Theory of Dual Labor Markets with Application to Industrial Policy, Discrimination and Keynesian Unemployment," *Journal of Labor Economics,* Vol. 4, No. 3, pp. 376–414.

Estevao, T., and E. Tsounta, 2011, "Has the Great Recession Raised Structural Unemployment in the United States?" IMF Working Paper 48/11(Washington: International Monetary Fund).

Kingdon, G., and M. Knight, 1998, "Unemployment and Wages in South Africa: A Spatial Approach," Centre for the Study of African Economies Working Paper 99/12, (Oxford, UK: Centre for the Study of African Economies).

Klein N., "Real Wage, Labor Productivity, and Employment Trends in South Africa: A Closer Look, " IMF Working Paper No. 12/92, Washington, D.C.

Mariya. M "Labor market regulations in low, middle and high income countries, a new database" IMF Working paper, WP/188/10).

Mendoza E., Razin A., Tesar L (1994). "Effective tax rates in macroeconomics: Cross-country estimates of taxrates on factor incomes and consumption", Journal of Monetary Economics. Volume 34, Issue 3, December 1994, Pages 297–323.

Mocan, H.N., 1995, "Structural Unemployment, Cyclical Unemployment and Income Inequality, *Review of Economic and Statistics,*" Vol. 81, pp, 122–34.

Treichel V. ed., 2010, Putting Nigeria to Work: A Strategy for Employment and Growth, The World Bank, Washington, D.C., https://openknowledge.worldbank.org/handle/10986/2463.

United Nations Development Programme (2010). "Job Creation in the Arab Economies: Navigating Through Difficult Waters" Arab Human Development Report Research Paper.

APPENDIX II.1

Table 1—Estimated Panel Regressions[1]

Explanatory variables	Pooled regression	Fixed effects regression	Dynamic estimation (Arellano and Bond)
ΔUnemployment(-2)			−.6.2***
			(−5.14)
Constant	0.019	0.013	0.016
	(0.85)	(0.63)	(0.49)
ΔWages in excess of productivity(-1)	0.84***	0.76***	0.72***
	(4.45)	(3.93)	(3.77)
ΔUnion density(-1)	0.22**	0.17**	0.15**
	(2.23)	(2.37)	(2.19)
ΔLabor law restrictiveness(-2)	0.023	0.015	0.008
	(1.25)	(0.86)	(0.62)
ΔSkills mismatch index(-1)	0.65***	0.59***	0.55***
	(4.22)	(4.36)	(4.11)
ΔDemographic(-2)	0.098	0.082	0.077
	(1.83)	(1.76)	(1.50)
ΔEffective cost of capital(-3)	−0.34**	−0.28**	−0.33**
	(−2.056)	(−2.340)	(−2.182)
Error-correction mechanism(-1)	−0.056***	−0.049***	−0.037***
	(−5.78)	(−4.77)	(−3.92)
Adj. R-squared	0.61	0.54	0.59
Number of observations	220	220	220

Note: Entries in parentheses are the calculated t-statistics.

* significant at 10%; ** significant at 5%; *** significant at 1 %.

[1] The baseline sample consists of 33 countries including the 5 SACU members and 5 countries outside sub-Saharan Africa. The sample period is from 1990-2009, and as noted in the table, 3 panel regression techniques were employed: namely pooled-regression, fixed effects estimator and Arellano-Bond's GMM panel regression estimation technique. As expected, the wage-productivity gap variable has the right estimated positive coefficient sign with a rising wage-productivity gap leading to an increase in the unemployment rate after a 1-year lag. Union density also raises the unemployment rate after a 1-year lag as well as increase in skill mismatch. In contrast, a lowering of the effective cost of capital raises the unemployment rate within a 3-year lag. As noted in the main text, the labor law restrictiveness variable has the right estimated coefficient sign but is insignificant in the all the estimated panel regressions.

Estimation of the Link between Structural Unemployment and Income Inequality

1. **To examine the link between structural unemployment and income inequality within the SACU context,** we take a panel which includes three SACU countries and selected middle-income countries and decompose the unemployment into its structural and cyclical components and investigate their impact on income distribution, controlling for the effect of inflation. If marginal workers with relatively low skills are the ones who are laid off first during an economic downturn, and if these workers are at the bottom part of the income distribution, temporary increases in unemployment are expected to worsen income inequality. On the other hand, the loss of income due to transitory unemployment of a family member may be offset by unemployment insurance and welfare benefits, especially given the growing incidence of dual earners within a family.

2. **In order to investigate whether long-term and short-term unemployment have differential impacts on income inequality in SACU, actual unemployment is decomposed into its trend and cyclical components.** Because the hypothesis of a unit root is rejected for the unemployment across SACU countries, the conventional way to determine structural (long-run) unemployment is to regress the unemployment rate on a constant, and linear and quadratic trend terms. The fitted values represent the long-term (structural) unemployment, whereas the trend deviations illustrate cyclical unemployment. As a robustness check, structural unemployment is also obtained in 2 alternative ways. First, we apply the Hodrick-Prescott filter to obtain the structural component of unemployment. Second, we apply the Kalman filter technique which allows an estimate of the trend at all points in the sample using all the observations. Structural unemployment obtained from the HP filter and the one obtained from fitting linear and quadratic trends are broadly similar to each other. We consider as our benchmark the structural unemployment data series obtained from the fitted values of linear and quadratic trends. However, as Table 2 (Appendix II.1) illustrates, the results obtained from models with other measures of structural unemployment are similar to the ones obtained from the model with standard decomposition.

3. **Table 2 below shows the estimation results of the models in which changes in income shares are regressed on inflation, and the levels of structural and cyclical unemployment.** The first panel presents the results when structural unemployment is obtained through fitting linear and quadratic trend terms to actual unemployment. The second panel is the model where structural unemployment is obtained through HP filter and the third panel is the case where structural unemployment is obtained through Kalman filter. In all specifications, an increase in structural unemployment is associated with an increase in the fourth highest and highest quintiles with a negative impact on the first three quintiles, but a change in cyclical unemployment has no impact on the income share of this group. Thus the results provide some evidence indicating that an increase in structural unemployment is associated with an increase in the income share of the richest forty percent of the population, and with a decrease in the share of the bottom sixty percent of the population.

Table 2: Structural Unemployment and Income Inequality for Selected Middle-Income Countries

Estimation Method: Dynamic Panel Data Modelling using the Arellano-Bond Estimator

Structural Unemployment from Fitted Trend

Explanatory Variables	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Quintile
Constant	−0.201	0.295*	0.393**	0.285	−1.165
	(−1.609)	−1.914	−2.277	−1.54	(−1.914)
Structural Unemployment	**−0.038 ****	**−0.058 ****	**−0.073 ****	**0.049****	**0.216****
	(−2.194)	**(−2.002)**	**(−2.180)**	**(2.476)**	**(2.216)**
Cyclical Unemployment	−0.026	0.041**	−0.014	0.002	0.068
	(−1.516)	−2.039	(−0.545)	(0.09)	−1.043
Inflation	0.051**	0.031**	0.030*	−0.007	−0.107**
	4.301	−2.234	−1.931	(−0.422)	(−2.372)
R-squared	0.55	0.48	0.60	0.41	0.58
Durbin-Watson	2.34	2.26	2.47	2.25	2.55

Structural Unemployment from Hodrick-Prescott Filter

Explanatory Variables	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Qunitile
Constant	0.218*	0.240	0.320*	0.227	−0.987
	(1.730)	(1.605)	−1.877	(1.254)	(−2.030)
Structural Unemployment	**−0.040***	**−0.049****	**−0.061 ***	**0.039**	**0.186****
	(−1.992)	**(−2.785)**	**(−1.991)**	**−2.226**	**(2.042)**
Cyclical Unemployment	−0.024	0.047**	−0.017	−0.0004	0.077
	(−1.288)	−2.138	(−0.692)	(−0.0009)	−1.077
Inflation	0.051**	0.029**	0.028*	−0.009	−0.102**
	−4.337	−2.089	−1.759	(−0.522)	−2.226
R-squared	0.43	0.35	0.37	0.41	0.37
Durbin-Watson	2.35	2.22	2.4	2.25	2.49

Structural Unemployment from Kalman Filter

Explanatory Variables	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Qunitile
Constant	0.156	0.170	0.193	0.126	−0.607
	(1.660)	(1.545)	−1.507	(0.925)	(−1.654)
Structural Unemployment	**−0.029 ****	**−0.037****	**−0.039****	**0.022**	**0.120***
	(−2.680)	**(−2.603)**	**(−2.703)**	**−2.226**	**(2.765)**
Cyclical Unemployment	−0.036	0.082	−0.027	−0.003	0.135
	(−1.214)	−2.367	(−0.667)	(−0.070)	−1.174
Inflation	0.049**	0.024*	0.024*	−0.011	−0.102**
	(4.012)	−1.669	−1.469	(−0.647)	(−1.838)
R-squared	0.45	0.34	0.18	0.46	0.39
Durbin-Watson	2.31	2.2	2.33	2.17	2.40

Source: IMF staff calculations.

Note: Entries in parentheses are the calculated t-statistics.

* significant at 10%; ** significant at 5%; *** significant at 1 %.

The sample consists of 11 middle-income countries including 3 SACU members (Botswana, Namibia and South Africa). The sample period is from 1990-2009 and Arellano-Bond's GMM panel regression estimation technique was used. Data for Lesotho and Swaziland were not available. The forthcoming working paper version will report the unit-roots tests results of our various variables based on three methodologies namely: the Augmented-Dickey Fuller statistics, the Phillips-Perone statistics and the Co-integrating Durbin-Watson Statistics (CDWS).