

CYCLICALITY OF FISCAL POLICY IN SUB-SAHARAN AFRICA: MAGNITUDE AND EVOLUTION

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Abstract

This paper studies the cyclical aspects of fiscal policy in Sub-Saharan Africa countries during 1970-2014. It compares the cyclical properties of real government consumption in the region with those in other developing regions and high-income countries and examines whether there has been a change in the cyclical nature of fiscal policy in recent years. It finds that government consumption is procyclical in Sub-Saharan African countries, more so than in other regions, and that accounting for endogeneity increases the degree of cyclicity. Cyclical properties of government spending vary along the business cycle, with the level of cyclicity larger when the level of real economic activity is above the trend relative to when it is below the trend. Mirroring the pattern in other developing regions, the degree of cyclicity has changed since 2000 in Sub-Saharan Africa, with incipient signs of a shift toward acyclical or more countercyclical policies. The evidence does not suggest that resource wealth increases the procyclicality of government consumption in Sub-Saharan Africa. On the other hand, official development assistance is found to exacerbate the procyclical stance of fiscal policy in the region.

Key words: Fiscal Policy; Cyclicity; Sub-Saharan Africa; Developing Countries
JEL classification: E62; C13

1. Introduction

Fiscal policies in the short run are typically geared toward the stabilization of economic activity. In general, a countercyclical fiscal policy is a desirable feature to counterbalance economic cycles. For example, countercyclical government spending is needed to stimulate real economic activity given shortfalls in aggregate demand or to transfer resources to less favored individuals.¹ In other words, during “bad times” (contractions) an above-the-trend increase in the government consumption expenditure might be a useful tool to boost the economy. However, the other side of the countercyclical behavior is often forgotten, that is, during the “good times” (expansion) government consumption expenditure should increase below the trend, not only as a mechanism to avoid overheating the economy, but also to gain room by saving the extra income for future smoothing of adverse demand-side shocks.

There is vast evidence that advanced countries have the ability to conduct countercyclical fiscal policies (Mélitz 2000, Galí and Perotti 2003). Countercyclical fiscal policies in advanced countries are triggered by automatic increases in social security and welfare spending as the economy moves into a recession. Darby and Mélitz (2008) find that, on average, a reduction of one percentage point in the rate of growth is compensated by a 0.36 percentage point increase in social expenditures among OECD economies. Furthermore, well-targeted transfers (which do not distort incentives to work) help stabilize US output fluctuations (McKay and Reis 2013).

The cyclical behavior of fiscal policy among developing countries is a much more disputed issue. Earlier research suggests that fiscal policy in developing countries—and especially in Latin America—is procyclical (Gavin and Perotti 1997, Talvi and Végh 2005, Kaminsky, Reinhart and Végh 2004, Ilzetzki and Végh 2008). Historically, developing country governments have cut taxes and increased spending during booms and they have retrenched outlays and raised taxes during busts. This destabilizing behavior of fiscal policy is attributed, according to the literature, to either: (a) limited access to (external) funding (of policy actions) or (b) political economy distortions.

The procyclical bias of fiscal policy among developing countries is attributed to the failure of governments to support aggregate demand in the event of adverse shocks as these countries are unable to tap either global or domestic financial markets (Gavin, Hausman, Perotti, and Talvi 1996). During booms, on the other hand, governments find it easier to finance rising public expenditure (Gavin and Perotti, 1997; Catao and Sutton, 2002). Overall, the procyclical access to external borrowing among developing countries drives the procyclical fiscal responses and it leads to greater macroeconomic volatility (Kaminsky, Reinhart and Végh 2004).

Others have pointed out that a country’s institutional framework plays a crucial role in the design of countercyclical policy responses. Destabilizing fiscal policies are executed in countries with weak institutions; say, widespread corruption, repudiation of contracts, lack of property rights enforcement and, more generally, the predominance of political institutions that fail to constrain their officials (Acemoglu, Johnson, Robinson and Thaicharoen, 2003). In this strand of the literature, institutional theories that focus on political economy distortions such as common pool problems, fragmentation, and agency problems explain the inability of governments to run surpluses or rein in spending in good times. For instance, windfall revenues may not be saved by governments and are spent instead in favor of

¹ Countercyclical social spending and timely stimulus packages are important to protect individuals during periods of hardship and stimulate employment.

powerful groups (Velasco 1998, Tornell and Lane 1999, Perotti and Kontopoulos 2002). Procyclical policy responses may also result from rent-extractive governments that appropriate revenues to serve special interests rather than the public welfare (Alesina, Campante and Tabellini, 2008; Ilzetzki, 2011).²

Historically, the evidence shows that fiscal policy has been pro-cyclical for most developing countries; including countries in Sub-Saharan Africa. Frankel, Végh and Vuletin (2013) found that more than 90 percent of developing countries show procyclical government spending during the period 1960-2009 while 80 percent of industrial countries exhibit countercyclical government spending. Zooming in on Sub-Saharan Africa shows, on average, that: (a) government consumption is pro-cyclical, (b) the degree of procyclicality in the region is higher than that of other developing countries, and (c) the procyclical bias is greater among countries in the region that are highly dependent on foreign aid inflows (Thornton 2008, Lledó, Yackovlev and Gadenne, 2011).

The evidence on Sub-Saharan Africa also shows that structural and policy factors may have an influence on the cyclical behavior of government expenditure across countries and over time. Lledó and coauthors (2011) find that foreign aid inflows and fiscal space (as measured by the public debt burden and the achievement of decision point among HIPC countries) played a significant role in reducing the extent of procyclicality among African nations. However, they fail to find a robust effect of political institutions on the cyclical stance of fiscal policy. Calderón and Nguyen (2016), however, find that the cyclical behavior of government expenditure depends strongly on structural features of African economies (e.g. institutional quality) and policy factors (e.g. the margins of monetary and fiscal space). They find that the impact of institutions is not only attributed to deep roots about the formation of institutions but also to the improvement of institutions supporting macroeconomic policy frameworks.³ Having an ample margin of maneuver for the government is crucial. In line with Lledó et al. (2011) and World Bank (2015), fiscal space (as proxied by the public debt burden) helps reduce the procyclicality of government expenditure. Financial openness, on the other hand, exacerbates the degree of procyclicality of government expenditure. The latter result is correlated to that of Thornton (2008) where fiscal policy is more procyclical in countries that rely heavily on foreign aid inflows. Overall, Calderón and Nguyen (2016) shows that fiscal policies can play a stabilizing role during times of crisis. However, much of the work has to be undertaken in good times. Withdrawing policy stimulus and replenishing fiscal buffers in good times has proven to be a challenge for most governments.

Finally, Konuki and Villafuerte (2016) investigates the extent and the drivers of fiscal policy pro-cyclicity among countries in Sub-Saharan Africa from 2000 to 2014. The paper finds not only that fiscal policy is more procyclical among oil exporters (2010-14) but also it has become more procyclical after the global financial crisis. Next, the authors find a causal relationship from deeper financial markets and greater reserve coverage to lower fiscal policy procyclicality. This finding implies that having space (by either having access to external borrowing or built-up buffers) will help reduce the procyclical bias.

²These papers empirically find that less corrupt governments are able to implement counter-cyclical policies.

³ Recent evidence shows that the strengthening of the institutional framework has enabled some developing countries to escape the pro-cyclicity trap (Frankel, Végh and Vuletin 2013). Some aspects of this institutional progress include: (a) sound fiscal rules that deliver countercyclical, credible and sustainable fiscal plans, (b) transparency in the formulation of medium-term expenditure frameworks, and (c) the ability of the government to carry out announced programs and being held accountable.

This paper revisits the issue of cyclical policy of fiscal policy in large sub-set of Sub-Saharan African countries. It measures the cyclical behavior of real government consumption over a long time period (1970-2014), employing an identification strategy to correct for possible endogeneity in the cyclical components of spending and GDP. It also directly tests whether the cyclical stance of government consumption has changed over time. The paper extends the empirical literature in two important ways. First, it examines asymmetries in the cyclical policy of government spending during different phases of the economic cycle. Specifically, it assesses how cyclical properties vary with fluctuations in the level of real economic activity—that is, when the level of real economic activity is below the trend relative to when it is above the trend. Second, it explores whether natural resource wealth (extractive resources) affects the extent of cyclical policy of government spending in African countries. When applicable, the cyclical properties of government consumption expenditure in the region are compared with those in other developing regions and in high-income countries.

The rest of the paper is organized as follows. Section 2 presents the model and empirical strategy for analyzing the cyclical behavior of fiscal policy. Section 3 reports the results of the quantitative analysis. Section 4 concludes.

2. Methodology and Empirical Strategy

2.1 Model and Empirical Strategy

To examine the cyclical stance of fiscal policy, we focus on the expenditure side—and, more specifically, real government consumption. We should note that expenditure rather than revenue indicators measure more accurately policy rather than outcomes or targets. On the other hand, public investment (or development expenditure) is not included in this analysis of the stance of fiscal policy—as is the case of Fatas (2005), Blanchard and Giavazzi (2004), and Buiter and Grafe (2004). Government investment is perceived as being quite different from consumption expenditures. First, investment decisions generally have a multi-year horizon (as there are often very few shovel ready projects), so the reaction to the business cycle might not be contemporaneous and might potentially affect the government budget in several periods. Second, the benefits resulting from public investment (for example, services) are spread over many years, with the possibility to increase private output and tax revenues. This paper also does not distinguish between discretionary and non-discretionary (automatic stabilizers) components of government expenditure, because what really matters for our analysis is the aggregate response of government consumption to the cycle as opposed to identifying the source.⁴

Unlike most papers in the literature, the government consumption expenditure is not expressed as percentage of GDP given that the ratio might be directly affected by the cyclical behavior of the GDP.⁵ Thus, in order to capture the cyclical behavior of fiscal policy, we specify the following general policy reaction function:

⁴ In addition, there is evidence that automatic stabilizers are in general weak among developing countries —and, especially, Sub-Saharan African countries (World Bank 2014).

⁵ See the discussion in Kaminsky, Reinhart and Vegh (2004), and Ilzetzki and Vegh (2008).

$$g_{it}^c = \alpha_{0G} + \alpha_{1G}y_{it}^c + \alpha_{2G}g_{it-1}^c + \alpha_{3G}D_{it-1} + \varepsilon_{it} \quad (1)$$

where g_{it}^c is the cyclical component of the log of government consumption expenditure (constant national currency) in country i at time t , y_{it}^c is the cyclical component of the log of real GDP (constant national currency) in country i at time t . Additionally, we control for the lagged stock of the general government gross debt as percentage of GDP (D_{it-1}) in each country and the lagged level of the cyclical component of the government consumption. Note that the regression coefficients of the policy reaction function are initially assumed to vary either across groups, country and over time--i.e. α_{iG} for $i=0,1,2,3$ and G being a group of countries to be specified. Equation (1) captures how government consumption expenditure responds to changes in contemporaneous output, where α_{1G} represents the cyclical coefficient. This coefficient can be positive (procyclical), negative (countercyclical), or not statistically different from zero (acyclical).

Baseline Specification (Case 1). We assume that $\alpha_{iG}=\alpha_i$ for $i=0,1,2,3$. This implies that the regression coefficients of equation (1) are homogeneous across groups of countries or over time.

Asymmetric behavior along the business cycle (Case 2). We consider that the behavior of government consumption expenditure might be different when the level of real economic activity is below the trend relative to when it is above the trend. In this context, the specification that we estimate using the instrumental variable (IV) approach assumes that $\alpha_{iG} = \alpha_i^+$ ($i=0,1,2,3$) when real economic activity is above trend ($y_{it}^c > 0$) and that $\alpha_{iG} = \alpha_i^-$ ($i=0,1,2,3$) when real economic activity is below trend ($y_{it}^c < 0$).⁶ Hence, in good times, we run the following specification:

$$g_{it}^c = \alpha_0^+ + \alpha_1^+y_{it}^c + \alpha_2^+g_{it-1}^c + \alpha_3^+D_{it-1} + \varepsilon_{it} ; \text{ if } y_{it}^c > 0 \quad (2)$$

while in bad times, we run the regression:

$$g_{it}^c = \alpha_0^- + \alpha_1^-y_{it}^c + \alpha_2^-g_{it-1}^c + \alpha_3^-D_{it-1} + \varepsilon_{it} ; \text{ if } y_{it}^c < 0 \quad (3)$$

Time-varying parameters (Case 3). This paper tests directly whether the cyclical stance of government consumption expenditure has changed over time. We specifically test whether the cyclical behavior in the period 2000-14 was different to that of the period 1970-99. Specifically, we assume that $\alpha_{iG} = \alpha_i^{P1}$ ($i=0,1,2,3$) for the period 1970-99 ($P1$) and that $\alpha_{iG} = \alpha_i^{P2}$ ($i=0,1,2,3$) for the period 2000-14 ($P2$). The specification of these two equation is similar to the description above in equations (2) and (3). For instance, the specification for the policy function in the period 2000-14 is:

$$g_{it}^c = \alpha_0^{P2} + \alpha_1^{P2}y_{it}^c + \alpha_2^{P2}g_{it-1}^c + \alpha_3^{P2}D_{it-1} + \varepsilon_{it} ; \text{ for the period 2000-14} \quad (4)$$

⁶ Note that our least squares and fixed effect estimation runs the following nested regression:

$$g_{it}^c = \alpha_0 + \alpha_1y_{it}^c + \alpha_2DC_{it}^+ \cdot y_{it}^c + \alpha_4g_{it-1}^c + \alpha_5D_{it-1} + \varepsilon_{it}$$

where DC_{it}^+ takes the value of 1 if $y_{it}^c > 0$ (good times) and 0 otherwise (bad times). We should note that the specification above assumes heterogeneity in the coefficient associated to the business cycles whereas the specifications in (2) and (3) assumes full heterogeneity of the fiscal policy reaction function parameters when distinguishing between periods when real GDP is above or below the trend.

Resource-rich vs. nonresource-rich countries (Case 4). Further analysis leads us to analyze whether the cyclical behavior of the government consumption expenditure differs between nonresource-rich and resource-rich countries among developing regions. We first need to define a threshold to split the countries. Following the classification in World Bank (2015), a country is considered resource-rich (RNR_{it}) if the rents from natural resources (*excluding forest*) represent at least 10 percent of the GDP.⁷ Although some industrial economies have important natural resources, the size of rents in these countries does not exceed the 10 percent of GDP cutoff, except for Norway. Hence, we assume that $\alpha_{iG} = \alpha_i^R$ ($i=0,1,2,3$) for countries where RNR_{it} exceeds 10 percent of GDP in the decade, and $\alpha_{iG} = \alpha_i^N$ ($i=0,1,2,3$) for countries that are not abundant in natural resources. Finally, to avoid exceptional observations, we average the rents coming from the natural resources (excluding forest) as a percentage of GDP by decade.⁸

Foreign aid (Case 5). Net official development assistance (net-ODA) is an important source of funds for many cash-strapped countries in Sub-Saharan Africa.⁹ The size of ODA flows to the region have increased from a median value of 6.8 percent of the GNI in the 1970s to 13.3 percent in the 1990s (Figure 4.a). After 2000, the median value of net ODA has declined to 9.3 percent of GNI, reflecting the faster pace of economic growth of the region's countries with respect to the nineties (see Figure 4.b).¹⁰

To study how the relative size of ODA inflows affect the cyclicity of fiscal behavior, we need a threshold to determine the impact of net ODA on a country's fiscal policy. Since the median of the net-ODA/GNI to Sub-Saharan Africa during the period 1970-2014 is 9.5 percent, it seems reasonable to study how the cyclical behavior of fiscal policy changes when the country receives (net of repayments of principal) at least 10 percent of its GNI in ODA.

All Sub-Saharan African countries in our sample have received some type of ODA during the last forty-five years, including South Africa. The question then is whether the relative magnitude of the assistance provided may or may not modify the cyclical properties of the fiscal policy. We assume that $\alpha_{iG} = \alpha_i^F$ ($i=0,1,2,3$) for countries where ODA_{it} exceeds 10 percent of GNI in the decade, and $\alpha_{iG} = \alpha_i^{NF}$ ($i=0,1,2,3$) for countries that have received less than 10 percent of GNI or that have not received foreign aid over several years.

Estimation procedure. We estimate Equation 1 through the Pooled OLS and Fixed-Effect regressions. Since we are using deviations from a potential trend, the means of the cyclical components, g_{it}^C and y_{it}^C , tend to zero. Therefore, the Pooled OLS and Fixed Effect techniques will give similar coefficients, because the "within" estimation uses deviations from the country means. Second, we extend the analysis to account for possible endogeneity between the fiscal policy and GDP by using an IV/2SLS method to estimate the cyclicity coefficient (α_1).¹¹ Following the approach used in Galí and Perotti (2003), Lane

⁷ Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. To avoid exceptional observations, we calculate 10-year averages of the natural resources rents (excluding forest) as percentage of GDP in each country

⁸ After 2000, we average the values for the 2000-2014 period.

⁹ ODA is concessional finance from bilateral and multilateral donors. It does not include nonconcessional development financing from these donors.

¹¹ See the discussion about the endogeneity problems in Rigobon (2004)

(2003), Jaimovich and Panizza (2007), and Calderón and Nguyen (2016), the cyclical component of real GDP (y_{it}^c) is instrumented using its own lags and the weighted average of the GDP growth of each country's export partners. The idea is that external trade shocks do not affect government spending except through the business cycle channel. Similarly, there is no reason to think that government spending in small economies directly affects the growth rates of their trading partners. In the case of large economies, however, fiscal policy might affect the growth rates of trading partners.

2.2 Data

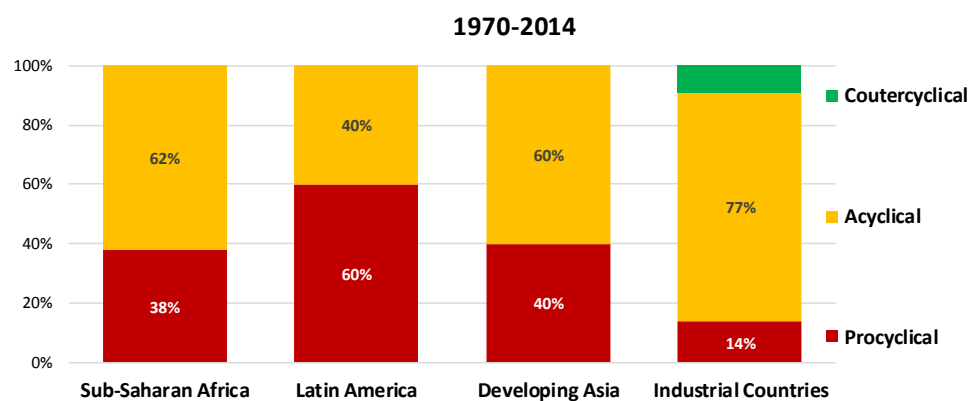
The sample includes 37 Sub-Saharan African countries (SSA), 20 countries from Latin America (LAC), 20 from developing Asia, and 22 industrial economies. Appendix 1 contains the complete list of countries and the classification of resource-rich and nonresource-rich countries for SSA. Annual data from 1970 to 2014 is used in the analysis. The government consumption expenditure and real GDP in constant national currency are from the United Nations' National Accounts Database. In general, most papers on fiscal cyclicity use the IMF's databases, however, the UN statistics provide a more complete and consistent national accounts data for the time period covered. The Hodrick-Prescott filter (HP) is applied with a λ value of 6.25 to derive the cyclical components of the government consumption expenditure and real GDP (both in logs). General government gross debt as a percentage of GDP is from Abbas et al. (2010) and updated with the IMF's World Economic Outlook. Natural resources rents (% of GDP) and net ODA received (% of GNI) are from the World Bank's World Development Indicators (WDI). The instrumental variable is calculated with bilateral export values from the IMF's Direction of Trade Statistics and UN COMTRADE, while the growth rates of trading partners are from the United Nations' National Accounts Database updated with the WDI.

3. Results

3.1 Cyclical behavior of government consumption in 1970-2014

We first analyze the long-term correlation coefficient between the cyclical components of real government consumption and real GDP from 1970 to 2014 (Figure 1). The cyclical behavior of government consumption is defined according to the following rule: countercyclical (procyclical) if the correlation coefficient is negative (positive) and statistically significant at 5 percent and acyclical when the coefficient is not statistically different from zero. In nearly 40 percent of Sub-Saharan African countries in our sample, government consumption expenditure is procyclical and in no countries is it countercyclical in 1970-2014, similar to the pattern observed in developing Asia. The proportion of countries with procyclical stance of government consumption is even larger (60 percent) in Latin America. By contrast, only 14 percent of industrial countries in the sample have registered acyclical policy and 9 percent countercyclical. Appendix 2 presents the correlation coefficients by region and country for the whole sample period.

Figure 1. Cyclical properties of Government Consumption Expenditure: proportion of countries by groups.



Note: Government Final Consumption Expenditures and GDP in real local currencies (source: UN-Statistics database) filtered using the Hodrick-Prescott Filter. Countercyclical means that the correlation coefficient is negative and statistically significant at 5%, procyclical when it is positive and significant, and acyclical when the coefficient is not statistically different from zero.

Next, the policy reaction function defined in Equation (1) is estimated through least squares. We find that the relationship between the cyclical components of the government consumption expenditure and real GDP is positive and statistically significant in all developing regions, with the coefficient of cyclicity being larger in Sub-Saharan Africa (Table 1). This result is seen in the literature, as well.

Similar results are found with the instrumental variables estimates, except for developing Asia which now registers a positive but not statistically significant coefficient of cyclicity. The evidence also shows that accounting for endogeneity increases the degree of procyclicality of government consumption in Sub-Saharan Africa. The downward bias of least squares estimates in the region, but not elsewhere, suggests that fiscal spending is ineffective in boosting aggregate demand in the short run in the region.

The lagged debt-to-GDP indicator has a negative coefficient across all regions, implying that higher debt levels tend to constrain fiscal policy, but the coefficient is only significant for Latin American and industrial countries. The coefficient on the lagged cyclical component of government consumption has a positive sign for all country groups, except Sub-Saharan Africa. But after correcting for the potential endogeneity problem, this coefficient is only significant in the group of industrial countries. In Sub-Saharan Africa, this coefficient on the lagged dependent variable is negative and not significant. Note that we are working with deviation of government consumption expenditure with respect to its trend, thus a negative coefficient for its lagged variable would suggest an oscillating behavior of fiscal policy. That is, when the cyclical component of government consumption is below its trend in the previous period, it is more likely to be above the trend in the current period, suggesting variability in government spending.

3.2 Cyclical properties during good times and bad times

Does the cyclicity of fiscal policy vary during good times and bad times? In order to capture possible asymmetries during the economic cycle, we split the sample based on the sign of the cyclical component of real GDP, positive (above the trend) and negative (below the trend). Table 2 shows the behavior of the cyclical component of government consumption during fluctuations in GDP around the trend. The least squares estimates show that in developing countries, government consumption tends to be procyclical in both good times and bad times, while industrial countries are slightly procyclical only in good times. However, Sub-Saharan Africa is the only region where the coefficient of cyclicity during bad times is larger than the coefficient during good times.

When accounting for possible endogeneity, fiscal policy tends to be procyclical during the expansion periods across all groups of developing countries. Among these groups, Sub-Saharan Africa accounts for the largest (and greater than one) coefficient of procyclicality, suggesting that fiscal policy in the region's countries overreacts in good times. During downturns, Sub-Saharan Africa is the only region with a positive (but not statistically significant) coefficient of cyclicity. In other regions, during bad times the coefficients are consistent with countercyclical fiscal policies, but only statistically significant for industrial countries.¹²

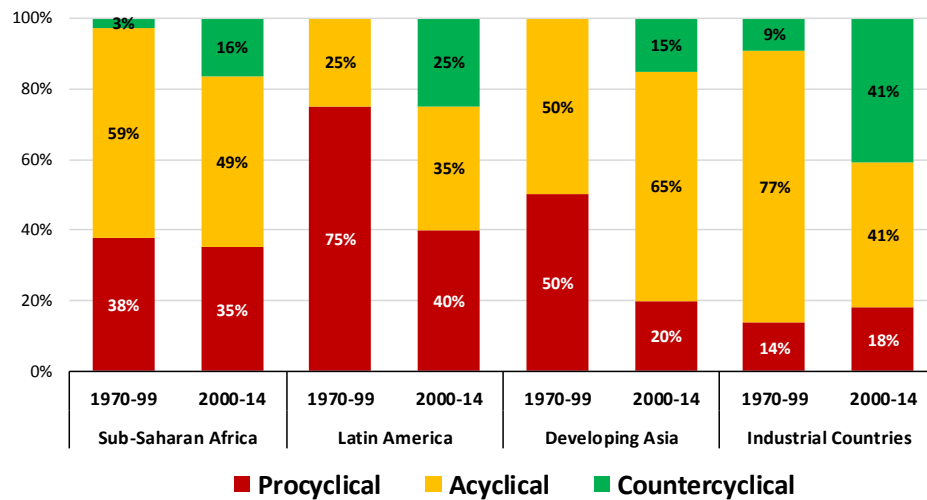
It is likely that different factors shape a procyclical fiscal policy response during good times and bad times. In an expansion, political pressures and social needs boost government expenditures, particularly in countries with low levels of development. In a downswing, the government needs some kind of financial support, either from its own savings or from financial markets, in order to conduct countercyclical fiscal policies in a context of declining revenues. Industrial countries, emerging market economies, and some developing countries have access to international financial markets, which means that these countries can borrow to partially offset the economic consequences during the contraction periods. The pattern of fiscal policy cyclicity observed in Sub-Saharan Africa might respond to the higher demands during the expansion periods and non-negligible borrowing constraints in downturns.

3.3 How has the cyclical stance of fiscal policy changed in recent years?

An issue of interest is whether the cyclical behavior of fiscal policy in Sub-Saharan Africa has changed in more recent periods. Results for the two sub-periods that are analyzed, 1970-1999 and 2000-2014, show that the region has made some progress toward more countercyclical fiscal policies (Figure 2). Nonetheless, this progress lags that in other developing regions and industrial countries. In fact, the proportion of countries with negative and statistically significant correlation coefficients in Sub-Saharan Africa has increased from 3 percent in the pre-2000 period to 16 percent after 2000. While Latin America and developing Asia did not have countries with countercyclical fiscal policies between 1970 and 1999, the number of countries with a negative and statistically significant correlation coefficient has increased after 2000 in these regions, accounting for 25 percent and 15 percent of countries, respectively. A similar pattern is observed in industrial countries, with 41 percent of countries exhibiting countercyclical policies after 2000 compared with only 9 percent in 1970-1999.

¹² These are preliminary results that may suffer from the weak instrument problem since *the Kleibergen-Paap-F statistic* is relatively low in some developing regions for certain periods.

Figure 2. Cyclical properties of Government Consumption Expenditure: 1970-1999 vs. 2000-2014.



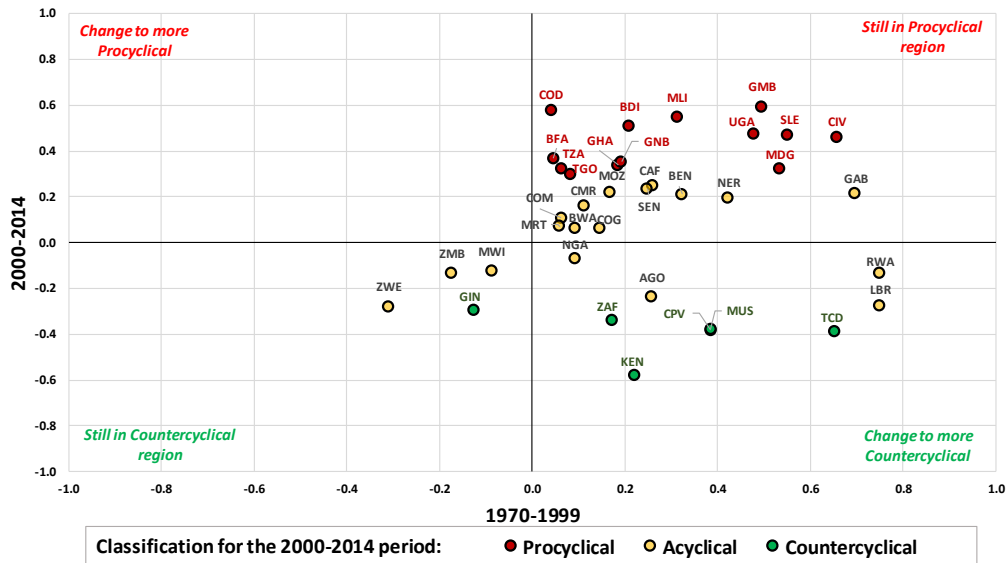
Note: Government Final Consumption Expenditures and GDP in real local currencies (source: UN-Statistics database) filtered using the Hodrick- Prescott Filter. Countercyclical means that the correlation coefficient is negative and statistically significant at 5%, procyclical when it is positive and significant, and acyclical when the coefficient is not statistically different from zero.

Analysis of the switch in the sign of the correlation coefficient between the cyclical components of government consumption and GDP in Sub-Saharan African countries in the sub-periods of 1970-1999 and 2000-2014 suggests that the region still has considerable scope to improve in terms of the cyclical stance of fiscal policy. Figure 3 shows that only 9 out of 37 countries in the region have moved from a procyclical stance (positive correlation) to a more countercyclical one (negative correlation).¹³ Only 4 countries (Guinea, Malawi, Zambia, and Zimbabwe) have registered a negative correlation between the cyclical components of government consumption and GDP in both periods. The majority of countries (24) continue to exhibit a procyclical behavior. As was noted before, regardless of the dynamic between periods, almost half of the region’s countries are classified as having acyclical fiscal policies in the recent period 2000-2014, since their correlation coefficients are not statistically different from zero.

Regression estimates (Equation 4) of the comparative analysis of the cyclical properties before and after 2000 suggest a shift in fiscal behavior across developing regions. Instrumental variables estimates in Table 3 show that fiscal policy has become more countercyclical (although not statically significant) after 2000 in Latin America and developing Asia. In Sub-Saharan Africa, the degree of procyclicality has declined, and the coefficient is no longer statistically significant. The reduction in the degree of procyclicality across developing regions in recent years has been the result of better fiscal management, particularly during the strong global growth experienced in 2000-08, which better prepared many developing countries (including those in in Sub-Saharan Africa) to face the international financial crisis in 2008/9. In sum, there has been an overall change to more acyclical behavior of the government consumption expenditure in developing regions in recent years, a phenomenon that does not exclude African countries.

¹³ These countries are: Angola, Cabo Verde, Chad, Kenya, Liberia, Mauritius, Nigeria, Rwanda, and South Africa.

Figure 3. Sub-Saharan Africa: change in the correlation coefficients between the cyclical components of Government Consumption Expenditure and GDP by country, 1970-1999 vs. 2000-2014



Note: Government Final Consumption Expenditures and GDP in real local currencies (source: UN-Statistics database) filtered using the Hodrick-Prescott Filter. Countercyclical means that the correlation coefficient is negative and statistically significant at 5%, procyclical when it is positive and significant, and acyclical when the coefficient is not statistically different from zero.

3.4 The effect of natural resources rents on the fiscal cyclical stance

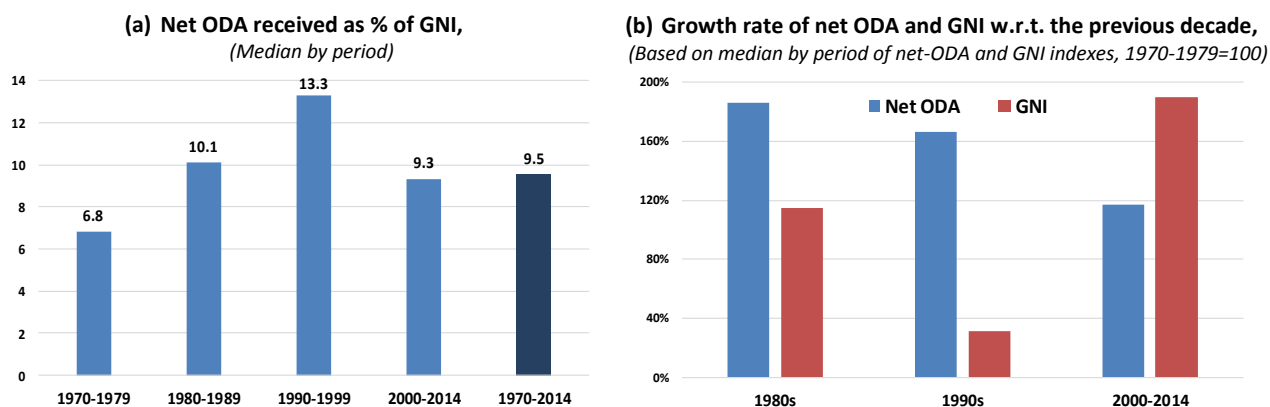
Table 4 presents the results of cyclical behavior of fiscal policy accounting for resource riches. In Sub-Saharan Africa, nonresource-rich countries seem to have a more procyclical fiscal stance than resource-rich countries. In fact, when instrumental variables are used, the coefficient of fiscal cyclicity is statistically insignificant for resource-rich countries. The opposite results are found in other developing regions: resource-rich countries in Latin America are clearly more procyclical than those without natural resources; and the fiscal policy stance in developing Asia is procyclical for resource-rich countries, but countercyclical and statistically insignificant for nonresource-rich countries. We also find that for the group of oil-rich countries in Sub-Saharan Africa (classified as oil-rich throughout the period), government consumption is procyclical.

Overall, the results need to be interpreted with caution because of the small sample of resource-rich countries in the analysis. Also, the sample does not include countries that are viewed as resource rich, but for which resource rents are not available: For example, Botswana, a major diamond producer, and Niger, which is producer of uranium. At the same time, the results for Sub-Saharan Africa could indicate that resource-rich countries are using stabilization funds to smooth consumption. In recent years, several of the region's resource-rich countries have established stabilization funds with windfalls from the commodity price boom that began in 2000. If well implemented, these stabilization funds can provide access to extra-budgetary funds in bad times, making them a useful tool to reduce the procyclicality of government consumption spending. Further analysis will be useful here.

3.5 How has ODA affected the cyclical nature of fiscal policy in Sub-Saharan Africa?

Figure 4a shows that the median size of ODA flows to GNI remains large in Sub-Saharan Africa, although it is below the peaks levels in 1990-99. Importantly, in many poor developing countries, ODA supports over half of public spending. , despite a net official development assistance (net-ODA) is an important source of funds for many cash-strapped countries in Sub-Saharan Africa.

Figure 4. Sub-Saharan Africa: Net Official Development Assistance



Source: Authors' calculations based on the WDI database

The regression results show that government consumption in countries receiving net ODA equivalent to 10 percent or more of their GNI is more procyclical than in those receiving less than 10 percent (see Table 4). Other studies (Thornton 2008, Lledó, Yackovlev and Gadenne, 2011) also find that the procyclical bias is greater among countries in the region that are highly dependent on foreign aid inflows. In our analysis, this finding is stronger when endogeneity is considered, with a statistically significant coefficient of fiscal cyclicity greater than one for those countries receiving a net-ODA/GNI of at least 10 percent. This contrasts sharply with the stance of government spending in other countries in the region, which register a positive but not statically significant coefficient of cyclicity. It is important to caveat here that although most of ODA is given to promote a country's development and welfare, we are not capturing the effect on government investments (developing expenditure). Our finding might suggest that when a country is receiving above-average assistance, the government consumption expenditure overreacts to the cycle. That is, in good times ODA flows might reinforce the current expenditure cycle, resulting in stronger adjustments during bad times. In any case, a further analysis is needed to properly assess the real impact of ODA flows on the cyclicity of fiscal policy.

4. Conclusions

Our results show that government consumption has been more procyclical in Sub-Saharan African countries than in other countries during 1970-2014, and that accounting for endogeneity increases the degree of cyclicity in the region. Findings presented here are also broadly indicative of a favorable trend in the nature of fiscal policy in Sub-Saharan Africa in recent periods, with government consumption

shifting from a procyclical stance (in 1970-1999) to one that is acyclical (2000-2014). The cyclical properties of government spending in the region display asymmetry along the business cycle, with the level of cyclicity larger when the level of real economic activity is above the trend relative to when it is below the trend. We also find that resource wealth does not appear to increase the procyclicality of government consumption in Sub-Saharan Africa, the opposite of what is observed in other developing regions. This is clearly an area of further empirical investigation. Our results also validate the findings in the literature that official development assistance tends to exacerbate the procyclical stance of fiscal policy in the region.

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TABLES

Table 1. Cyclicity of Fiscal Policy, 1970-2014

Dependent Variable: Cyclical component of government consumption expenditure (GovCons_Cycle), Sample Period 1970-2014 (Annual data)

VARIABLES	Sub-Saharan Africa			Latin America			Developing Asia			Industrial Countries		
	(1) Pooled OLS	(2) Fixed Effect	(3) IV/2SLS	(4) Pooled OLS	(5) Fixed Effect	(6) IV/2SLS	(7) Pooled OLS	(8) Fixed Effect	(9) IV/2SLS	(10) Pooled OLS	(11) Fixed Effect	(12) IV/2SLS
RGDP_Cycle	0.580*** (0.139)	0.582*** (0.139)	0.769** (0.331)	0.468*** (0.0931)	0.467*** (0.0924)	0.368*** (0.114)	0.533*** (0.112)	0.532*** (0.113)	0.0378 (0.251)	0.0817 (0.0508)	0.0807 (0.0503)	-0.00511 (0.0457)
GovCons_Cycle (t-1)	-0.0305 (0.0488)	-0.0319 (0.0485)	-0.0211 (0.0685)	0.0624* (0.0371)	0.0636* (0.0378)	0.0695 (0.0716)	0.118* (0.0647)	0.116* (0.0646)	0.127 (0.118)	0.226*** (0.0559)	0.225*** (0.0560)	0.218*** (0.0419)
PublicDebt/GDP (t-1)	-0.00133 (0.00287)	-0.00154 (0.00303)	-0.00144 (0.00406)	-0.00157** (0.000621)	-0.00189*** (0.000559)	-0.00189* (0.000996)	-0.00167 (0.00382)	-0.00231 (0.00389)	-0.00266 (0.00433)	-0.000648 (0.000430)	-0.00106* (0.000561)	-0.00123* (0.000746)
Observations	1,450	1,450	1,403	854	854	823	708	708	690	957	957	915
R-squared	0.043		0.043	0.088		0.084	0.063		0.024	0.060		0.052
Number of Countries	37	37	37	20	20	20	20	20	20	22	22	22
Kleibergen-Paap rk Wald F statistic			32.6			60.3			36.5			149.9
Country FE		YES	YES		YES	YES		YES	YES		YES	YES

Notes: Government Final Consumption Expenditures and GDP in real local currencies filtered using the Hodrick-Prescott Filter. The cyclical component of GDP is instrumented with its own lags and the weighted average of the GDP growth of each country's export partners. Trade-partner growth is weighted by the share of the country's total exports to each of its trading partners, each country's weighted-trade-partner growth is multiplied by the country's average exports/GDP. Constants are not reported. Standard errors in parentheses. Pooled and Fixed-Effect regressions with Driscoll-Kraay standard errors, while IV/2SLS with HAC standard errors.

***significant at 1%, ** significant at 5%, * significant at 10%

Table 2. Cyclical Properties of Fiscal Policy during Good Times and Bad Times

Dependent Variable: Cyclical component of government consumption expenditure (GovCons_Cycle), Sample Period 1970-2014 (Annual data)

VARIABLES	Sub-Saharan Africa				Latin America				Developing Asia				Industrial Countries			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Pooled OLS	Fixed Effect	IV/2SLS		Pooled OLS	Fixed Effect	IV/2SLS		Pooled OLS	Fixed Effect	IV/2SLS		Pooled OLS	Fixed Effect	IV/2SLS	
		Bad Times	God Times			Bad Times	God Times			Bad Times	God Times			Bad Times	God Times	
RGDP_Cycle	0.699*** (0.180)	0.697*** (0.187)	0.918 (0.628)	1.593* (0.821)	0.404*** (0.0898)	0.409*** (0.0954)	-0.0434 (0.314)	0.835** (0.381)	0.517** (0.208)	0.489** (0.211)	-1.156 (1.081)	0.712* (0.414)	0.0190 (0.0784)	0.0122 (0.0734)	-0.608*** (0.122)	0.145 (0.119)
DC ^c x (RGDP_Cycle)	-0.247 (0.334)	-0.240 (0.343)			0.138 (0.192)	0.123 (0.206)			0.0314 (0.255)	0.0839 (0.271)			0.122 (0.125)	0.133 (0.121)		
PublicDebt/GDP (t-1)	-0.00102 (0.00259)	-0.00113 (0.00272)	0.00113 (0.00441)	-0.00747 (0.00774)	-0.00155** (0.000620)	-0.00186*** (0.000542)	-0.00450 (0.00497)	-0.00123 (0.000996)	-0.00162 (0.00385)	-0.00225 (0.00386)	-0.00109 (0.00790)	-0.00136 (0.00511)	-0.000577 (0.000403)	-0.000939* (0.000530)	-0.00115 (0.00131)	0.000288 (0.000841)
GovCons_Cycle (t-1)	-0.0284 (0.0494)	-0.0296 (0.0492)	-0.0400 (0.0886)	-0.0317 (0.108)	0.0616 (0.0371)	0.0627 (0.0377)	0.00158 (0.102)	0.0872 (0.0950)	0.118* (0.0648)	0.116* (0.0646)	0.294** (0.132)	-0.0612 (0.164)	0.225*** (0.0552)	0.224*** (0.0554)	0.220*** (0.0619)	0.204*** (0.0666)
Memo:																
<i>Cyclical Pattern</i>																
RECESSIONS	0.699***	0.697***	0.918		0.404***	0.409***	-0.0434		0.517**	0.489**	-1.156		0.0190	0.0122	-0.608***	
EXPANSIONS	0.452*	0.457*		1.593*	0.542***	0.532***		0.835**	0.548***	0.572***		0.712*	0.141	0.145*		0.145
Observations	1,450	1,450	702	701	854	854	399	424	708	708	335	355	957	957	467	448
Number of Countries	37	37	37	37	20	20	20	20	20	20	20	20	22	22	22	22
Kleibergen-Paap rk Wald F statistic			12.1	9.6				11.5	11.4			4.8	10.4		36.1	36.9
Country FE		YES	YES	YES		YES	YES	YES		YES	YES	YES		YES	YES	YES

Notes: Government Final Consumption Expenditures and GDP in real local currencies filtered using the Hodrick-Prescott Filter. The cyclical component of GDP is instrumented with its own lags and the weighted average of the GDP growth of each country's export partners. Trade-partner growth is weighted by the share of the country's total exports to each of its trading partners, each country's weighted-trade-partner growth is multiplied by the country's average exports/GDP. DC^c is the dummy for positive cycles. Constants are not reported. Standard errors in parentheses.

Pooled and Fixed-Effect regressions with Driscoll-Kraay standard errors, while IV/2SLS with HAC standard errors.

***significant at 1%, ** significant at 5%, * significant at 10%

Table 3. Variation in Cyclical Behavior of Fiscal Policy Over Time: Comparing 1970-1999 and 2000-2014

Dependent Variable: Cyclical component of government consumption expenditure (GovCons_Cycle), Sample Period 1970-2014 (Annual data)

VARIABLES	Sub-Saharan Africa				Latin America				Developing Asia				Industrial Countries			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Pooled OLS	Fixed Effect	IV/2SLS		Pooled OLS	Fixed Effect	IV/2SLS		Pooled OLS	Fixed Effect	IV/2SLS		Pooled OLS	Fixed Effect	IV/2SLS	
		Before 2000	After 2000			Before 2000	After 2000			Before 2000	After 2000			Before 2000	After 2000	
RGDP_Cycle	0.810*** (0.0861)	0.814*** (0.0872)	0.782*** (0.296)	0.456 (0.970)	0.573*** (0.0944)	0.571*** (0.0936)	0.646*** (0.154)	-0.193 (0.152)	0.643*** (0.117)	0.644*** (0.118)	0.0975 (0.345)	-0.172 (0.354)	0.0663 (0.0658)	0.0656 (0.0656)	-0.0169 (0.0631)	-0.00377 (0.0633)
Break ²⁰⁰⁰ x (RGDP_Cycle)	-0.758*** (0.149)	-0.766*** (0.149)			-0.431** (0.162)	-0.431** (0.162)			-0.503* (0.260)	-0.509* (0.277)			0.0436 (0.0978)	0.0429 (0.0975)		
PublicDebt/GDP (t-1)	-0.00164 (0.00243)	-0.00217 (0.00251)	-0.00219 (0.00421)	-0.00228 (0.00528)	-0.00154** (0.000610)	-0.00186*** (0.000553)	-0.00181* (0.00105)	-0.0113** (0.00494)	-0.00167 (0.00385)	-0.00234 (0.00397)	-0.000664 (0.00427)	-0.0129 (0.0139)	-0.000645 (0.000425)	-0.00105* (0.000548)	-0.00225* (0.00125)	-0.00420** (0.00188)
GovCons_Cycle (t-1)	-0.0286 (0.0484)	-0.0301 (0.0480)	-0.0198 (0.0806)	-0.0244 (0.129)	0.0616* (0.0365)	0.0627* (0.0371)	0.0968 (0.0818)	-0.0797 (0.132)	0.114* (0.0630)	0.112* (0.0628)	0.0710 (0.175)	0.195* (0.103)	0.226*** (0.0557)	0.225*** (0.0558)	0.150*** (0.0494)	0.347*** (0.0735)
Memo:																
<i>Cyclical Pattern</i>																
BEFORE 2000	0.810***	0.814***	0.782***		0.573***	0.571***	0.646***		0.643***	0.644***	0.0975		0.0663	0.0656	-0.0169	
AFTER 2000	0.052	0.048		0.456	0.142	0.140		-0.193	0.140	0.135		-0.172	0.110	0.109		-0.00377
Observations	1,450	1,450	850	553	854	854	524	299	708	708	392	298	957	957	585	330
Number of Countries	37	37	37	37	20	20	20	20	20	20	20	20	22	22	22	22
Kleibergen-Paap rk Wald F statistic			25.9	6.3			38.3	32.6			22.7	23.3			75.1	74.3
Country FE		YES	YES	YES		YES	YES	YES		YES	YES	YES		YES	YES	YES

Notes: Government Final Consumption Expenditures and GDP in real local currencies filtered using the Hodrick-Prescott Filter. The cyclical component of GDP is instrumented with its own lags and the weighted average of the GDP growth of each country's export partners. Trade-partner growth is weighted by the share of the country's total exports to each of its trading partners, each country's weighted-trade-partner growth is multiplied by the country's average exports/GDP. Break²⁰⁰⁰ is the dummy variable for observations after year 2000. Constants are not reported. Standard errors in parentheses.

Pooled and Fixed-Effect regressions with Driscoll-Kraay standard errors, while IV/2SLS with HAC standard errors.

***significant at 1%, ** significant at 5%, * significant at 10%

Table 4. The Effect of Natural Resources on the Cyclical Behavior of Fiscal Policy

Dependent Variable: Cyclical component of government consumption expenditure (GovCons_Cycle), Sample Period 1970-2014 (Annual data)

VARIABLES	Sub-Saharan Africa				Latin America				Developing Asia			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Pooled OLS	Fixed Effect	IV/2SLS		Pooled OLS	Fixed Effect	IV/2SLS		Pooled OLS	Fixed Effect	IV/2SLS	
		Non-Resource-Rich	Resource-Rich			Non-Resource-Rich	Resource-Rich			Non-Resource-Rich	Resource-Rich	
RGDP_Cycle	0.597*** (0.148)	0.598*** (0.147)	0.843** (0.358)	0.818 (0.650)	0.448*** (0.0803)	0.446*** (0.0797)	0.376*** (0.134)	0.399* (0.208)	0.554*** (0.116)	0.553*** (0.118)	-0.0913 (0.293)	0.607* (0.359)
RNR x (RGDP_Cycle)	-0.0799 (0.194)	-0.0785 (0.197)			0.0924 (0.0914)	0.0948 (0.0920)			-0.125 (0.183)	-0.126 (0.185)		
PublicDebt/GDP (t-1)	-0.00135 (0.00289)	-0.00155 (0.00306)	0.000456 (0.00411)	-0.00767 (0.00986)	-0.00157** (0.000621)	-0.00189*** (0.000561)	-0.00197* (0.00102)	-0.00342 (0.00776)	-0.00171 (0.00382)	-0.00235 (0.00391)	-0.00355 (0.00520)	-0.00510 (0.00898)
GovCons_Cycle (t-1)	-0.0310 (0.0493)	-0.0324 (0.0490)	0.0188 (0.0663)	-0.121 (0.152)	0.0616 (0.0371)	0.0628 (0.0377)	0.0911 (0.0817)	-0.0782 (0.114)	0.119* (0.0649)	0.117* (0.0648)	0.117 (0.132)	0.0826 (0.120)
Memo:												
<i>Cyclical Pattern</i>												
Non-Resource-Rich	0.597***	0.598***	0.843**		0.448***	0.446***	0.376***		0.554***	0.553***	-0.0913	
Resource-Rich (excluding Forest)	0.5171**	0.5195**		0.818	0.5404***	0.5408***		0.399*	0.429**	0.427**		0.607*
Observations	1,450	1,450	1,171	232	854	854	673	150	708	708	562	128
Number of Countries	37	37	33	10	20	20	18	7	20	20	19	6
Kleibergen-Paap rk Wald F statistic			22.7	12.6			55.2	10.8			27.7	11.3
Country FE		YES	YES	YES		YES	YES	YES		YES	YES	YES

Notes: Government Final Consumption Expenditures and GDP in real local currencies filtered using the Hodrick-Prescott Filter. The cyclical component of GDP is instrumented with its own lags and the weighted average of the GDP growth of each country's export partners. Trade-partner growth is weighted by the share of the country's total exports to each of its trading partners, each country's weighted-trade-partner growth is multiplied by the country's average exports/GDP. RNR is the dummy variable for those countries where the natural-resources-rents (excl. forest)/GDP ≥ 10%. Constants are not reported. Standard errors in parentheses. Pooled and Fixed-Effect regressions with Driscoll-Kraay standard errors, while IV/2SLS with HAC standard errors.

***significant at 1%, ** significant at 5%, * significant at 10%

Table 5. Sub-Saharan Africa: The Effect of ODA on the Cyclical Behaviour of Fiscal Policy

Dependent Variable: Cyclical component of government consumption expenditure (GovCons_Cycle), Sample Period 1970-2014 (Annual data)

VARIABLES	(1)	(2)	(3)	(4)
	Pooled OLS	Fixed Effect	IV/2SLS	
			net ODA/GNI < 10%	net ODA/GNI > 10%
RGDP_Cycle	0.423* (0.225)	0.426* (0.228)	0.405 (0.411)	1.247** (0.564)
ODA x (RGDP_Cycle)	0.287 (0.310)	0.282 (0.310)		
netODA/GNI (t-1)	0.0220 (0.0164)	0.0327 (0.0202)	-0.0216 (0.0506)	0.0366 (0.0229)
PublicDebt/GDP (t-1)	-0.00318 (0.00380)	-0.00344 (0.00362)	-0.00467 (0.00714)	-0.00237 (0.00607)
GovCons_Cycle (t-1)	-0.0367 (0.0493)	-0.0391 (0.0490)	-0.107 (0.115)	0.0233 (0.0626)
Memo:				
<i>Cyclical Pattern</i>				
net ODA/GNI < 10%	0.423*	0.426*	0.405	
net ODA/GNI > 10%	0.71***	0.708***		1.247**
Observations	1,450	1,450	714	689
Number of Countries	37	37	28	27
Kleibergen-Paap rk Wald F statistic			24.7	13.1
Country FE		YES	YES	YES

Notes: Government Final Consumption Expenditures and GDP in real local currencies filtered using the Hodrick-Prescott Filter. The cyclical component of GDP is instrumented with its own lags and the weighted average of the GDP growth of each country's export partners. Trade-partner growth is weighted by the share of the country's total exports to each of its trading partners, each country's weighted-trade-partner growth is multiplied by the country's average exports/GDP. ODA is the dummy variable for those countries where the net ODA/GNI \geq 10%. Constants are not reported. Standard errors in parentheses.

Pooled and Fixed-Effect regressions with Driscoll-Kraay standard errors, while IV/2SLS with HAC standard errors.

***significant at 1%, ** significant at 5%, * significant at 10%

Appendix 1. Countries in the sample

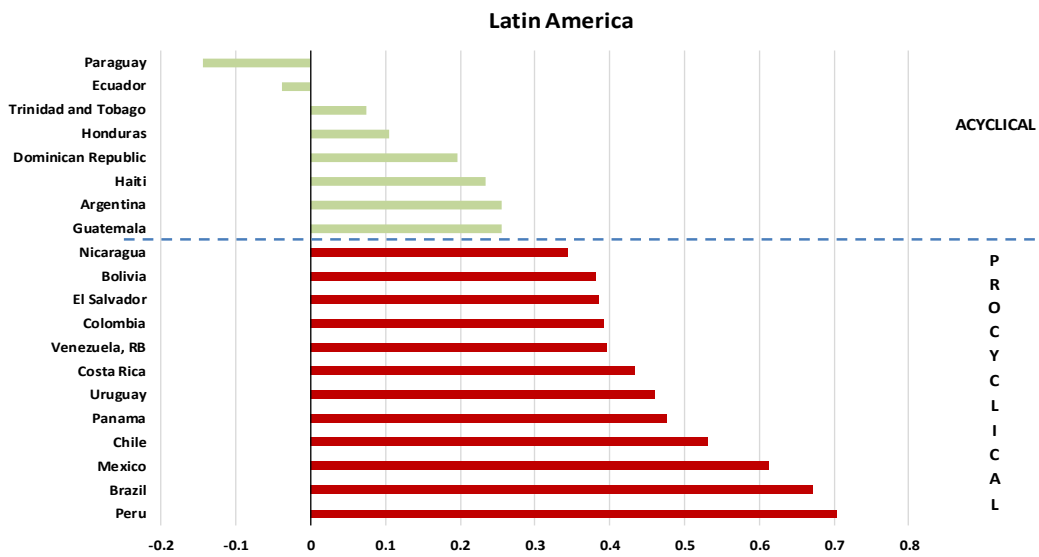
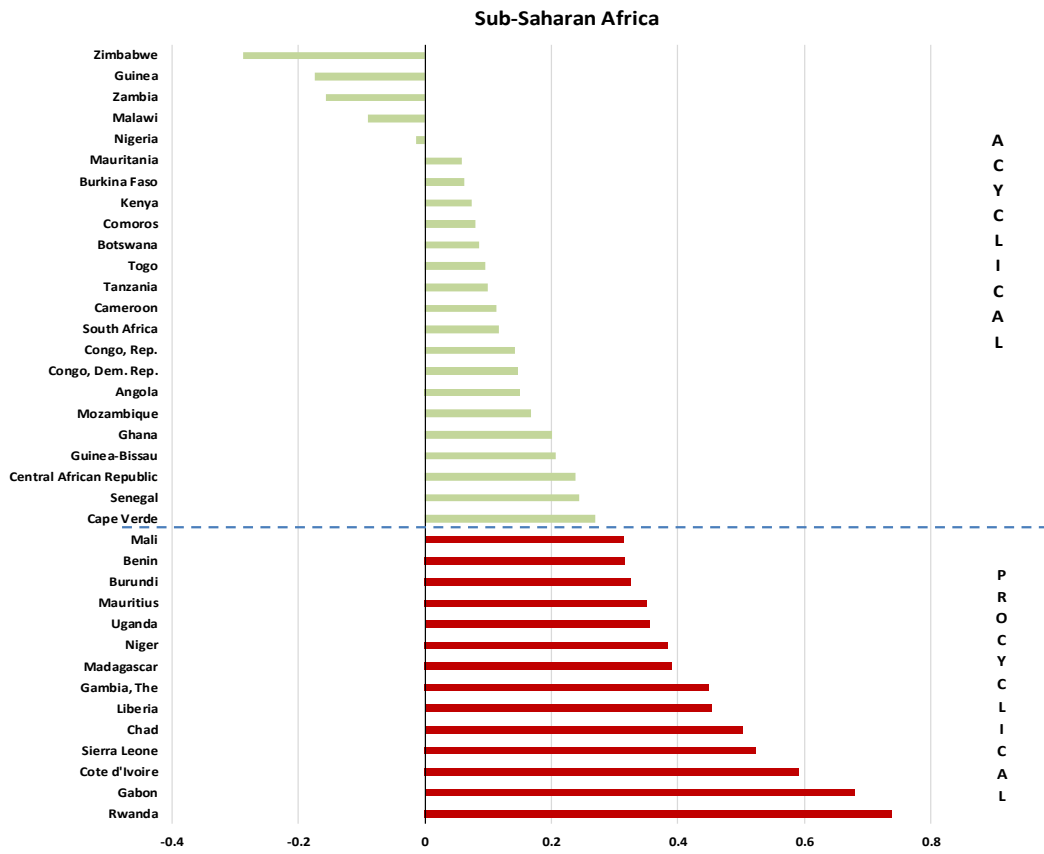
#	<i>Sub-Saharan Africa (37)</i>		<i>Latin America (20)</i>		<i>Developing Asia (20)</i>		<i>Industrial Countries (22)</i>	
	Name	Code	Name	Code	Name	Code	Name	Code
1	Angola	AGO	Argentina	ARG	Bangladesh	BGD	Australia	AUS
2	Benin	BEN	Bolivia	BOL	Cambodia	KHM	Austria	AUT
3	Botswana	BWA	Brazil	BRA	China	CHN	Belgium	BEL
4	Burkina Faso	BFA	Chile	CHL	Fiji	FJI	Canada	CAN
5	Burundi	BDI	Colombia	COL	India	IND	Denmark	DNK
6	Cameroon	CMR	Costa Rica	CRI	Indonesia	IDN	Finland	FIN
7	Cape Verde	CPV	Dominican Republic	DOM	Lao P.D.R.	LAO	France	FRA
8	Central African Republic	CAF	Ecuador	ECU	Malaysia	MYS	Germany	DEU
9	Chad	TCO	El Salvador	SLV	Maldives	MDV	Greece	GRC
10	Comoros	COM	Guatemala	GTM	Mongolia	MNG	Iceland	ISL
11	Congo, Rep.	COG	Haiti	HTI	Myanmar	MMR	Ireland	IRL
12	Congo, Dem. Rep.	COD	Honduras	HND	Nepal	NPL	Italy	ITA
13	Cote d'Ivoire	CIV	Mexico	MEX	Papua New Guinea	PNG	Japan	JPN
14	Gabon	GAB	Nicaragua	NIC	Philippines	PHL	Netherlands	NLD
15	Gambia, The	GMB	Panama	PAN	Samoa	WSM	New Zealand	NZL
16	Ghana	GHA	Paraguay	PRY	Sri Lanka	LKA	Norway	NOR
17	Guinea	GIN	Peru	PER	Thailand	THA	Portugal	PRT
18	Guinea-Bissau	GNB	Trinidad and Tobago	TTO	Tonga	TON	Spain	ESP
19	Kenya	KEN	Uruguay	URY	Vanuatu	VUT	Sweden	SWE
20	Liberia	LBR	Venezuela, RB	VEN	Vietnam	VNM	Switzerland	CHE
21	Madagascar	MDG					United Kingdom	GBR
22	Malawi	MWI					United States	USA
23	Mali	MLI						
24	Mauritania	MRT						
25	Mauritius	MUS						
26	Mozambique	MOZ						
27	Niger	NER						
28	Nigeria	NGA						
29	Rwanda	RWA						
30	Senegal	SEN						
31	Sierra Leone	SLE						
32	South Africa	ZAF						
33	Tanzania	TZA						
34	Togo	TGO						
35	Uganda	UGA						
36	Zambia	ZMB						
37	Zimbabwe	ZWE						

Appendix 1 continued

Sub-Saharan Africa: Countries and Periods defined as a Resource-Rich Economy

	<i>Country Name</i>	<i>Periods</i>
1	Angola	<i>1980-2014</i>
2	Cameroon	<i>1980-1989</i>
3	Chad	<i>2000-2014</i>
4	Congo, Dem. Rep.	<i>2000-2014</i>
5	Congo, Rep.	<i>1970-2014</i>
6	Gabon	<i>1970-2014</i>
7	Liberia	<i>1970-1989</i>
8	Mauritania	<i>1970-1979; 2000-2014</i>
9	Nigeria	<i>1970-2014</i>
10	Zambia	<i>1970-1979; 2000-2014</i>

Appendix 2. Cyclical properties of Government Consumption Expenditure by Region and Country, 1970-2014



Appendix 2 Continued

