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Performance of Fiscal Accounts in South Africa in a Cross-Country Setting

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**Performance of Fiscal Accounts in
South Africa in a Cross-Country Setting**

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Abstract

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This paper analyzes the cyclical fluctuations in South Africa in a cross-country context, and studies the impact of the output gap by controlling for export intensity, the debt burden, asset prices, and banking crises. Results show that South Africa's revenue performance was outstanding during the mid-2000s, and the recent decline in revenue was one of the least among the emerging and advanced markets. Results on the elasticity of tax revenue show that South Africa's elasticity is higher during business upturns, indicating good prospects for recovering the revenue lost during the global financial crisis.

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I. INTRODUCTION

This paper analyzes the cyclical fluctuations in South Africa in a cross-country context. This paper compares the revenue trends in South Africa with other emerging and advanced market economies. It analyzes where South Africa stands compared to these economies and studies the impact of banking crises, export intensity, debt burden, asset price movements, and the output gap, in the cyclical movement of revenues.

In this comparison the focus is on quantifying answers to three main questions. First, how well did South Africa perform during the global growth years of the 2000s? Second, how much revenue did South Africa lose during the global economic crisis? Third, how fast will South Africa's revenues improve during the 2010s as the economy recovers?

In answering the first two questions, the center of attention is on South Africa's revenue performance during the global economic upturn of the mid-2000s and during the global financial crisis of the late-2000s in a cross-country context. The paper compares South Africa's revenue collection during the boom and the bust to a set of advanced and emerging market economies (EMEs). These economies are listed on Table 1.

Table 1. Comparison Countries for South Africa

Resource Rich Economies	
Commodity	**Fuel**
Chile	Azerbaijan
Botswana	Kazakhstan
	Russia

Diversified Economies			
Advanced	**Emerging Markets**		
Iceland	Argentina	Turkey	India
Ireland	Brazil	Ukraine	Indonesia
Portugal	Colombia	Latvia	Malaysia
Spain	Mexico	Hungary	Thailand
Korea	Peru	Poland	

Note: A total of 24 countries excluding South Africa

In answering the third question, the focus is on both the comparison group listed in Table 1, and also on two larger groups: a 64-country group of EMEs and a 182-country group of low income, emerging market, and advanced market economies.

To answer the third question, the elasticity of revenue with respect to the output gap is estimated by controlling for export intensity, debt ratios, asset prices, and banking crises to measure the responsiveness of revenue performance on the business cycle. The response during business upturns and downturns is differentiated, and as well as between resource exporters and diversified economies.

Results in this paper show that South Africa had an outstanding revenue performance with respect to its comparison group during the mid-2000s. Revenue as a share of GDP increased by more than 3.5 percentage points of GDP from 2002 to 2007, this is the highest increase in South Africa's comparison group.

During the economic downturn, the decline in South Africa's revenues was limited to less than half a percentage point of GDP, when comparing the trough of the recession years 2008–2009 to the average of the peak years during the mid-2000s. This decline in revenue collection is one of the least when compared to South Africa's peers in other advanced and emerging market economies.

Last, the results on the elasticity of tax revenue show that only business cycle, measured by the output gap, is significant in explaining the deviations of revenue from its trend. And the elasticity of revenues with respect to the output gap is larger for resource-rich economies than for the diversified economies. Subsequently, South Africa's responsiveness to the business cycle is similar to that of diversified economies. Nevertheless, this elasticity of revenue is higher during the business upturns, indicating that South Africa has good prospects for recovering the revenue lost during the global financial crisis.

In what follows, Section II provides the literature review. Section III presents the data. Section IV studies how well South Africa did during the global growth years of the 2000s. Section V provides the analysis on how much revenue South Africa lost during the global financial crisis. Section VI studies how fast South Africa's revenues will recover during the 2010s. Section VII lists the caveats, and section VIII provides conclusions.

II. Literature

The literature on analyzing the impact of business cycle on tax revenue performance mostly focused on estimating the elasticity of tax revenue with respect to the business cycle. However, the literature did not focus on the impact of external accounts and the financial sector on tax revenue performance. As the recent economic crisis has shown, these indicators may also play a role in the deviation of the tax revenue from its structural level in some countries.

In the literature that focused on explaining the elasticity of tax revenue with respect to the business cycle, some researchers focused on explaining tax revenue elasticities. In particular for South Africa, Aydin (2010) estimated the elasticity of tax revenue with respect to the business cycle, incorporating the impact of asset and commodity prices and the credit cycle. Results show that business cycle and credit growth has an important impact on revenue performance in South Africa.

In the literature that focused on explaining the elasticity of tax revenue with respect to the business cycle, some researchers focused on explaining tax revenue elasticities in a cross-country context. Bouthevillain, and others (2001) estimated the tax elasticities for the European countries, and Girouard and André (2005) for the OECD countries. This research estimated individual tax elasticities separately for each country in the sample either by using specific tax information or by applying time series econometrics. To our knowledge, there is no research on estimating tax elasticities by employing panel data econometrics. Applying panel data econometrics enriches the analysis by relying on the cross-sectional dimension. This is particularly important if the time variance is limited to a few business cycles and the countries do not have fully heterogenous elasticity coefficients.

 Some recent research papers focused on the impact of the business cycle on the fiscal accounts from the tax efficiency perspective. Sancak, Velloso, and Xing (2010) studied tax revenue response to the business cycle by quantifying the impact of the output gap on the tax efficiency ratios in a cross-country context. Authors show that business cycle has a significant impact on the tax efficiency ratio, and this impact differs depending on the phase of the cycle owing to changing consumption patterns and tax evasions during economic expansions and contractions.

III. DATA

This paper uses an annual unbalanced panel dataset with the earliest data starting at 1960 and the latest extending to 2009. The cross-section of this dataset includes the 182 countries reported in the IMF's *World Economic Outlook.*

Macroeconomic variables in this dataset are from the *World Economic Outlook* (IMF, 2010) and from IMF Staff projections.[1] The Banking Crisis dataset is from the Research Department of the IMF, and the data on financial indicators are from DataStream. Data on tax-to-GDP and corporate income tax-to-GDP ratios are from Abbas, Klemm, and Bedi (2010).

IV. HOW WELL DID SOUTH AFRICA PERFORM DURING THE GLOBAL GROWTH YEARS OF THE 2000S?

This section compares South Africa's tax revenue performance to 24 advanced and emerging market economies (AEMEs). As listed in Table 1, in the AEMEs sample, there are 5 advanced economies and 19 emerging market economies. In the advanced economies sample, the comparison group is chosen to compare the impact of the financial crisis, economic slowdown, and export decline on the fiscal accounts. In the advanced market economies, Iceland and Ireland experienced a systemic banking crisis starting in 2008. Portugal and Spain had been experiencing an economic slowdown owing to structural

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[1] One of the definitions of output gap used in this paper is from the staff projections of the Strategy, Policy, and Review Department of the IMF.

problems in their product and labor markets. Korea is an advanced market economy with high export intensity and is included in the comparison sample to analyze the impact of export decline on the fiscal accounts.

In the comparison group, the remaining 19 countries are emerging market economies. Among these 20, 5 are resource exporters.[2] Commodity exporters (Botswana and Chile) and fuel exporters (Azerbaijan, Kazakhstan, and Russia) are included to analyze the impact of natural resource intensity on the elasticity of fiscal revenue with respect to the business cycle.

Within the emerging market comparison sample, 14 countries are diversified economies that have similar dynamics to that of South Africa. Among these diversified economies, 3 European economies suffered the most during the global financial crisis: Hungary, Latvia, and Ukraine fell into economic crises by the end of 2008.

This section compares the revenue performance of South Africa to the revenue performance of its comparison group during the global economic upturn of the 2000s. Figure 1 presents revenue performance, defined as total government revenue as a percent of GDP, by calendar year, of South Africa and of its comparison group.

Figure 1shows that revenue as a share of GDP had been on an increasing trend in all countries during the 2000s, excluding the fluctuation in the two commodity exporters. This figure indicates that the positive economic indicators during the 2000s had enabled these countries to improve their income stream.

Looking at the revenue trend of the advanced and emerging markets, one can see that the revenue trend in South Africa is similar to the revenue trend of diversified EMEs. Both the size of the revenue-to-GDP ratio and the rate of increase in this ratio are quite similar between South Africa and the diversified emerging markets.

Next, the difference in the revenue-to-GDP ratio of these countries from 2002 to 2007 is analyzed. 2002 is taken as the starting year of the global business upturn, and 2007 is assumed to be the end. The dots in Figure 1 show the difference in revenue-to-GDP ratios between these years for South Africa and for its comparison group.

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[2] Resource-rich classification is obtained from the IMF's *World Economic Outlook* (2009) publication. This classification is based on the share of resource-exports in the total exports of a country. And if this share is higher than a threshold level, then the country is classified as resource-rich. According to this definition, South Africa is classifies as a diversified economy.

Figure 1. Revenue Performance During the Global Growth Years
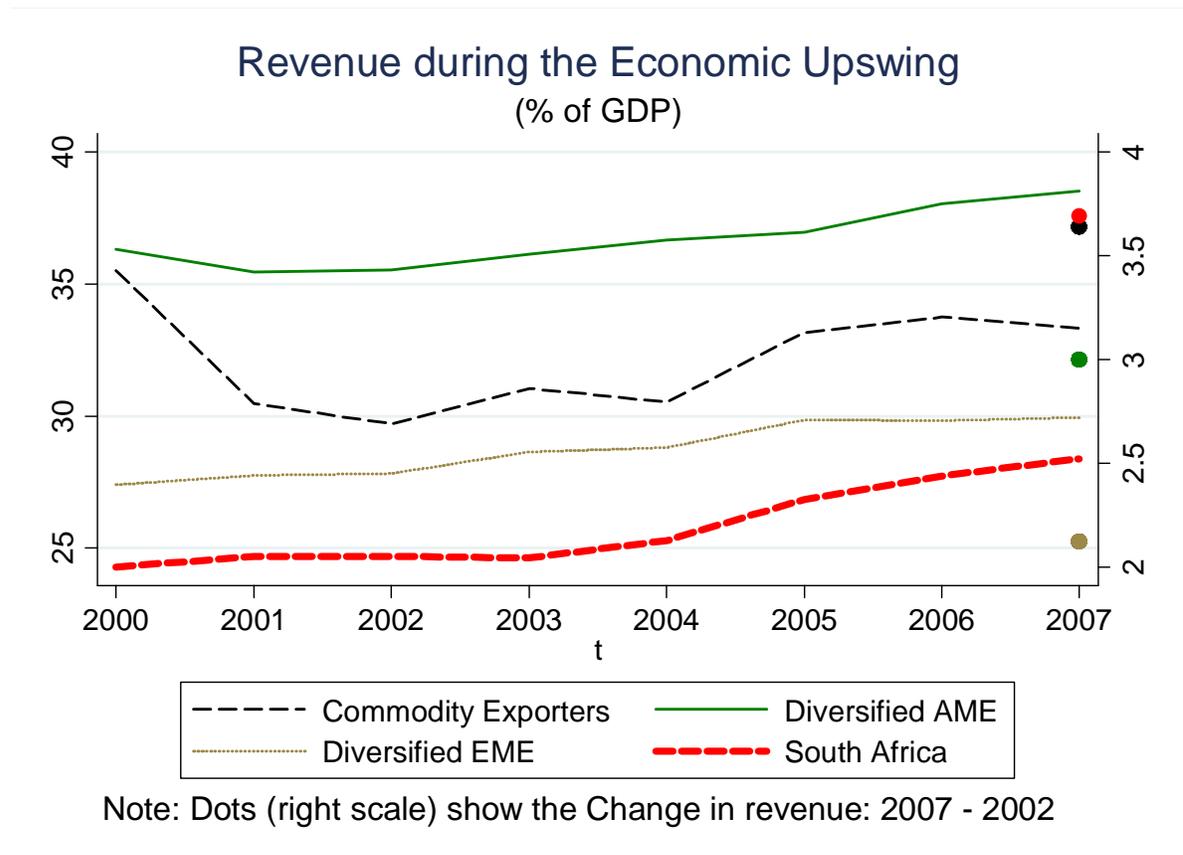
Change in revenue-to-GDP from 2002 to 2007 shows that all of these countries achieved a better revenue performance during this period; and South Africa and the commodity exporters had the highest increase in revenue collection during these five years, an increase of more than 3.5 percent of GDP in tax-to-GDP ratio.

Figure 1shows that South Africa significantly improved its tax revenue collection during the economic upswing of the 2000s in particular from 2004 onward. The following sections show that the improved revenue performance was explained mostly by the business cycle.[3] South Africa had a positive output gap of around 3 to 4 percentage points of potential GDP during this period, which is considered moderate compared to the magnitude of the positive output gaps experienced by South Africa's comparison group.

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[3] One can argue that the improvement in revenue performance in South Africa could be related to fiscal and administrative policies rather than the business cycle. Nevertheless, the impact of policy changes should be limited in South Africa. As shown by Aydin (2010), most of the tax policy changes contributing to a larger tax base, such as the South African Revenue Services established in 1997 and the introduction of the capital gains tax in 2001, happened during the late 1990s and early 2000s. In contrast, from 2004 to 2007, years of rapid increase in revenue collection, tax policies mostly were distortionary, such as the introduction of personal income tax relief during the 2003/04 fiscal year.

V. How Much Revenue Did South Africa Lose During the Global Financial Crisis?

Next the revenue loss of South Africa during the global economic crisis is considered. Similar to the previous section, Figure 2 compares the revenue-to-GDP ratio of South Africa with its comparison group. However, this section focuses on the latter years of this graph, that is, the years of declining revenue.

The dots in Figure 2 show the decline in revenue for South Africa and for the countries in its comparison group. The decline is shown as the difference in revenue from the average of 2005–2007, which are the years of the highest revenue collected in most of these countries, to the average of 2008–2009, the recession years.

Figure 2. Revenue Performance During the Global Recession

Note: Dots (right scale) show change in revenue: avg(2008-09) - avg(2005-07)
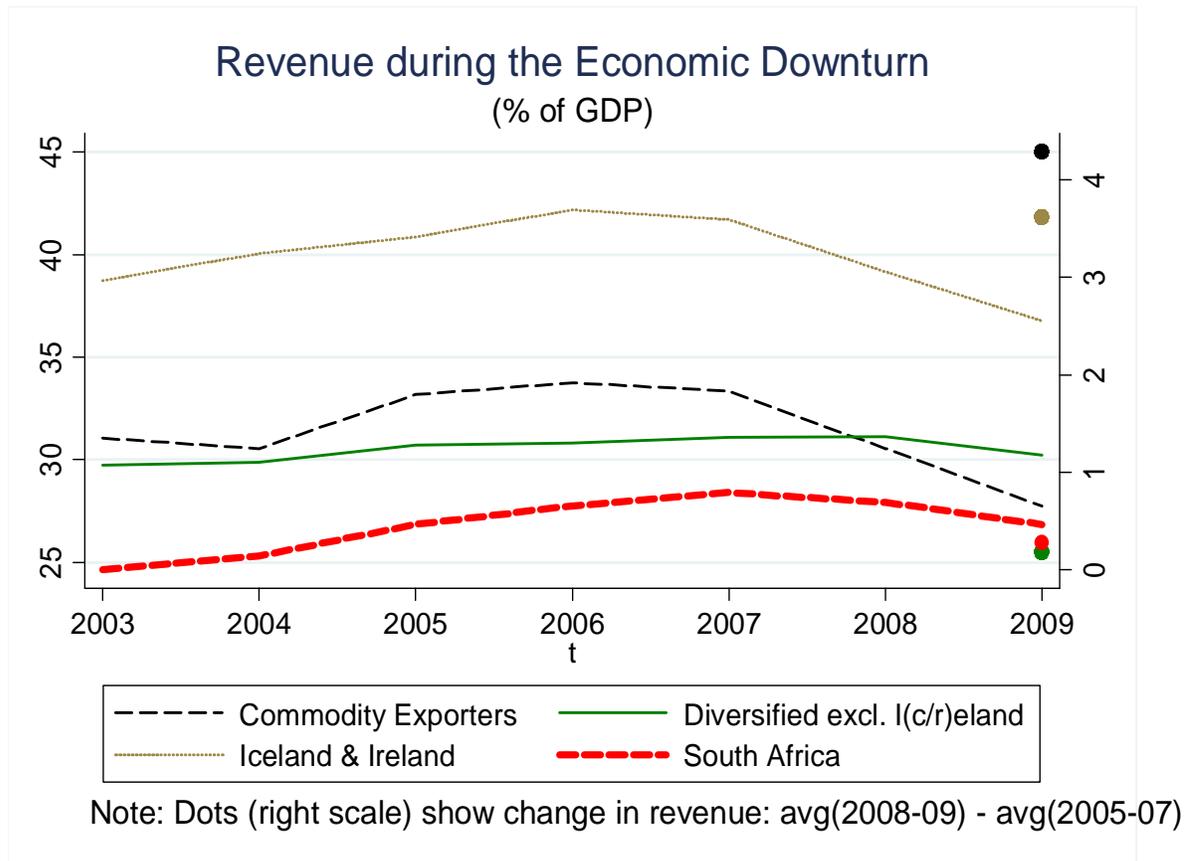
The dots in Figure 2 show that the impact of the global financial crisis resulted in a drop of revenue collection as a share of GDP in all the countries. Nevertheless, the decline in revenue experienced by South Africa was among the lowest, compared to its peer economies. Figure 2 shows that South Africa had a decline in revenues of less than a percentage point of GDP

during to the global financial crisis, whereas financially troubled Iceland and Ireland and the commodity exporters had the largest declines of around 4 percentage points of GDP. Also note that the impact of the business cycle, as measured by the magnitude of the negative output gap, was not as large in South Africa as in Iceland and Ireland or as experienced by some of the resource-rich economies.

VI.   How Fast Will South Africa's Revenues Recover During the 2010s?

A.   Introduction

This section analyzes the elasticity of revenue with respect to the business cycle in a cross-country setting to quantify how much of the revenue lost in South Africa was due to the global financial crisis and how fast South Africa will recover this loss.

Figure 3 plots revenue as a share of GDP over output gap for South Africa and for its comparison group during the 2000s. Revenue as a share of GDP can be interpreted as an implicit tax rate, and increases in this ratio with respect to the output gap could resemble the elasticity of revenue with respect to the business cycle.

Figure 3. Revenue Sensitivity to Output Gap


Note: Output-gap data is calculated by using SPR dataset
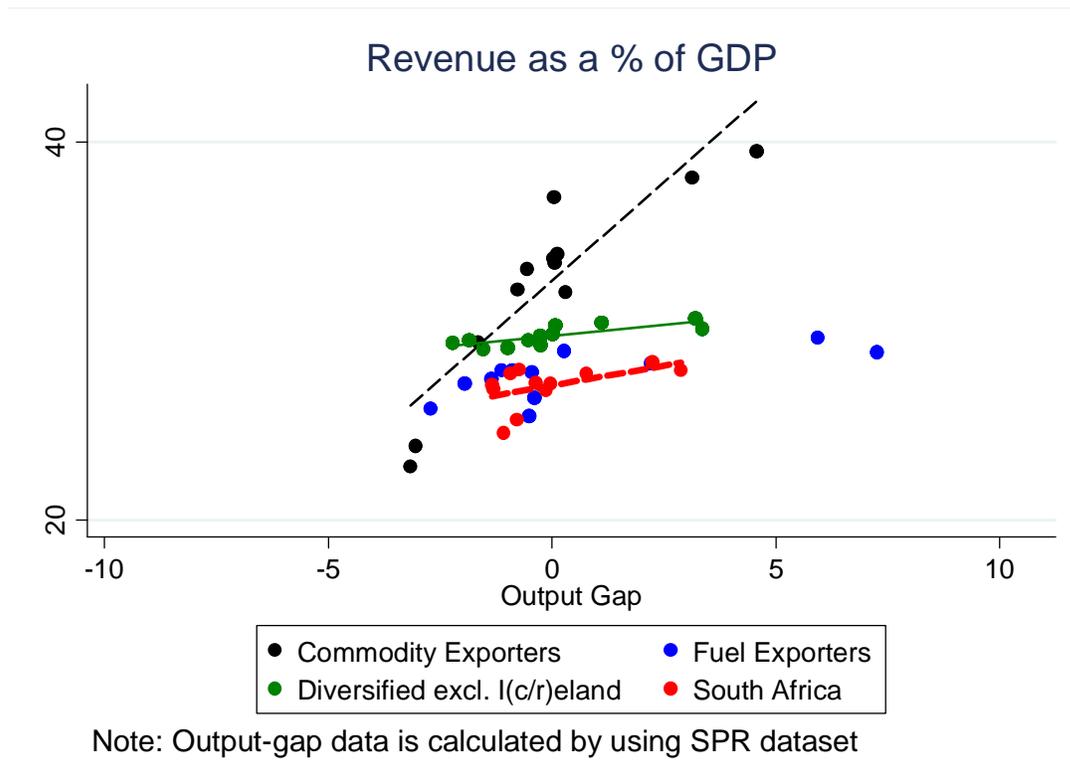
Figure 3 shows that in commodity exporters, revenue reacts more than one-on-one to the changes in the output gap, whereas in diversified economies, this effect is much smaller.

South Africa, a diversified economy, though with significant metal exports, has a reaction to output gap less than that of commodity exporters but more than the diversified economies.

B. Model and Results

Based on the information presented earlier, this section models the elasticity of tax revenue with respect to the output gap in a panel regression setting, as given in the equation below.

$$\left(\ln R_{it} - \ln R_{it}^* \right) = c_i + \varepsilon_R^Y \left(\ln Y_{it} - \ln Y_{it}^* \right) + \varepsilon_R^C \left(\frac{Export}{Y} \right)_{it} + \left(\frac{Debt^D}{Y} \right)_{it} +$$

$$+ \left(\frac{Debt^E}{Y} \right)_{it} + \varepsilon_R^{PER} PER_{it} + \alpha I_{it}^{BankingCrisis} + \upsilon_{it} \tag{1}$$

Where R_{it} is total revenue of country i at time t, and R_{it}^* is the structural revenue of this country. The first term on the right hand side of the equation is the country specific fixed effect. The second term is the output gap, $\left(\ln Y_{it} - \ln Y_{it}^* \right)$, measured as the deviation of real GDP from its trend level. The coefficient of the output gap, ε_R^Y, is the main statistic of interest; it is the elasticity of revenue with respect to the business cycle. The third term on the right hand side is the change in the export to GDP ratio, measuring the impact of the changes in the external demand on the fiscal accounts. The fourth and the fifth terms are the public and external debt-to-GDP ratios. PER is the price earnings ratio; it measures the impact of the asset prices on the fiscal accounts. $I_{it}^{BankingCrisis}$ is an indicator for banking crisis, and it is equal to 1 if time t is the starting date of a systemic banking crisis in country i. The last term on the right side is the error term.

In equation (1), there are three unknowns: trend value for revenue, trend value for output, and the elasticity coefficients. To reduce the number of unknowns, following Aydin (2010), the revenue gap and output gap are estimated through an HP filter. To avoid the end-point problem, the revenue and GDP series are smoothed including the five-year forecast projections of these variables, using a sample extended to 2015.[4]

Again following Aydin (2010), the most efficient model of equation (1) is estimated by applying a general-to-specific algorithm, where the most efficient model is chosen as the one that minimizes the error variance of the regression.

Results of the reduced form regressions of equation (1) are reported in Table 2 by solving for three samples. The first sample is the cross-section of all low-income, emerging market, and advanced market economies as reported in the WEO (IMF, 2010), where data is available for a country. Estimation results solved for this sample are reported in the first column of Table

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[4] Forecast values of revenue and GDP are from the IMF's April 2010 *World Economic Outlook*.

2. Second, results are reported for the regression analysis solved for a sample of emerging market economies, and these are reported in the second column of Table 2.[5] Last, in the third column of Table 2, results are reported for the regression analysis solved for the South African group as listed in Table 1.

Table 2. Panel Regression Results of Revenue Elasticity

Sample Selection:	Whole Sample	EME	ZAF Group
Dependent Variable:	Revenue Gap	Revenue Gap	Revenue Gap
Output gap	1.168***	1.236***	1.226***
	(0.0880)	(0.0876)	(0.111)
Export GDP	0.107***	0.106***	0.0419
	(0.0315)	(0.0341)	(0.0540)
bankingcrisis	0.757	1.172	1.873
	(2.192)	(1.493)	(1.778)
Constant	-4.373***	-4.653***	-1.580
	(1.266)	(1.482)	(2.054)
Observations	1685	733	237
R-squared	0.117	0.242	0.370
Number of i	147	65	21
Standard errors in parenthes			
*** p<0.01, ** p<0.05, * p<0.1			

Results reported in Table 2 show that on average the elasticity of revenue with respect the output gap is around 1.2 percent. The change in sample selection affects the magnitude of the coefficient estimate only in the second decimal point.

As reported in Table 2, in all the control variables given in equation (1), only changes in the external demand, measured as the exports-to-GDP ratio, has an impact on revenue performance, and this impact is rather small.

Even though the systemic banking crisis variable does not have a significant coefficient estimate, it is kept in the reduced form model because exclusion of this variable increases the error variance of the regression.

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[5] Emerging market economy definition for a country is taken from the classification of the Strategy, Policy, and Review Department of the IMF.

Next, as discussed in Sancak, Velloso, and Xing (2010), coefficient estimates may not be symmetric across the expansion and contraction cycles. To control for this effect two interaction terms are introduced separely into equation (1), as shown in equation (2).

$$\left(\ln R_{it} - \ln R_{it}^* \right) = c_i + \beta I_{it}^{Y>Y^*} + \varepsilon_R^Y \left(\ln Y_{it} - \ln Y_{it}^* \right) + \tilde{\varepsilon}_R^Y I_{it}^{Y>Y^*} \left(\ln Y_{it} - \ln Y_{it}^* \right) +$$
$$\varepsilon_R^C \left(\frac{Export}{Y} \right)_{it} + \alpha I_{it}^{BankingCrisis} + v_{it} \tag{2}$$

Where $I_{it}^{Y>Y^*}$ is an indicator variable equal to 1 when real GDP is higher than the potential in country i.

$$\left(\ln R_{it} - \ln R_{it}^* \right) = c_i + \beta I_{it}^{2003-07} + \varepsilon_R^Y \left(\ln Y_{it} - \ln Y_{it}^* \right) + \tilde{\varepsilon}_R^Y I_{it}^{2003-07} \left(\ln Y_{it} - \ln Y_{it}^* \right) +$$
$$+ \varepsilon_R^C \left(\frac{Export}{Y} \right)_{it} + \alpha I_{it}^{BankingCrisis} + v_{it} \tag{3}$$

Where $I_{it}^{2003-07}$ is an indicator variable equal to 1 from 2003 through 2007, to control for the global economic upturn.

Regression results of equations (2) and (3) are reported in Table 3. These models are solved using the South Africa comparison group. Results reported in this sample show that elasticity of revenue with respect to the business cycle is asymmetric. During economic downturns, the elasticity of revenue with respect to the output gap is around 1. However, revenue is much more responsive to the business cycle during expansion periods, and the elasticity of revenue to the output gap during economic expansions is around 1.8.

Nevertheless, the output-gap dummy and the 2003–07 dummy have negative coefficient estimates of around -2 and -0.2, respectively, indicating that the asymmetry in the elasticity of revenues with respect to the business cycle kicks in only after a particular threshold of output gap. For instance, for the results reported in the second column of Table 3, the elasticity of revenue with respect to the business cycle is higher during the expansion years only if the output gap is more than 2 percent of the potential GDP.

As shown in Table 3, the coefficients estimated for the output gap and the interaction term of the economic upturn dummy with the output gap yield similar results across the second and the third columns of this table. However, comparison of the R^2 indicates that the model described in equation (2) has a better explanatory power.

Last, the two control variables on banking crisis and external demand lose their significance when asymmetric business cycles are introduced into these equations.

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Table 3. Panel Regression Results of Revenue Elasticity Controlling for Business Cycle
Asymmetry

Sample Selection:	ZAF Group	ZAF Group	ZAF Group
Dependent Variable:	Revenue Gap	revenue gap	revenue gap
Output gap	1.226***	0.901***	0.977***
	(0.111)	(0.117)	(0.107)
Export GDP	0.0419	-0.0142	0.0464
	(0.0540)	(0.0394)	(0.0502)
Bankingcrisis	1.873	-0.0722	2.453
	(1.778)	(1.298)	(1.624)
Positive Output Gap Dummy		-2.034***	
		(0.733)	
Dummy*Output Gap		0.931***	
		(0.0667)	
2003-07 Dummy			-0.224
			(0.634)
Dummy*Output Gap			0.803***
			(0.117)
Constant	-1.580	0.117	-1.887
	(2.054)	(1.501)	(1.871)
Observations	237	237	237
R-squared	0.370	0.673	0.486
Number of i	21	21	21

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Encouraged by the results shown in Figure 3 the following statements are tested. First, do the resource exporters have a different elasticity of revenue with respect to the output gap? Second, is the elasticity of revenue with respect to the business cycle different for South Africa?

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To measure the impact of the business cycle for resource exporters and for South Africa, an interaction term is added separately for each specification to equation(1), as shown below.

$$\left(\ln R_{it} - \ln R_{it}^* \right) = c_i + \varepsilon_R^Y \left(\ln Y_{it} - \ln Y_{it}^* \right) + + \tilde{\varepsilon}_R^Y I_{it}^{\text{Re} sourceRich} \left(\ln Y_{it} - \ln Y_{it}^* \right) +$$
$$\varepsilon_R^C \left(\frac{Export}{Y} \right)_{it} + \alpha I_{it}^{BankingCrisis} + v_{it} \tag{4}$$

Where $I_{it}^{\text{Re} sourceRich}$ is an indicator variable equal to 1 for natural resource exporters.

$$\left(\ln R_{it} - \ln R_{it}^* \right) = c_i + \varepsilon_R^Y \left(\ln Y_{it} - \ln Y_{it}^* \right) + \tilde{\varepsilon}_R^Y I_{it}^{ZAF} \left(\ln Y_{it} - \ln Y_{it}^* \right) +$$
$$+ \varepsilon_R^C \left(\frac{Export}{Y} \right)_{it} + \alpha I_{it}^{BankingCrisis} + v_{it} \tag{5}$$

Where I_{it}^{ZAF} is an indicator variable equal to 1 for South Africa.

Regression results of equation (4) and (5) are reported in Table 4. Similar to the previous analysis, these models are solved using the South Africa comparison group.[6]

Confirming the results presented in Figure 3, results show that natural resource exporters have a higher elasticity of revenue with respect to the business cycle. Again confirming the results in this figure, the interaction term for South Africa, as shown in the third column of Table 4, is not significant. In other words, the revenue elasticity with respect to the output gap for South Africa is similar to that of the diversified economies.[7]

Similar to the results shown in Table 3, banking crisis and external demand control variables lose significance in these models.

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[6] However, it should be noted that the number of countries within the resource-rich comparison group is quite limited. And the results should be interpreted only for those countries in the sample.

[7] This paper also tested for the significance of the South Africa interaction term solved by using the South Africa comparison group excluding the resource-rich countries. Similar to the results provided in Table 4, this coefficient is insignificant in such a specification as well (Results are available upon request from the author).

Table 4. Panel Regression Results of Revenue Elasticity Controlling for Natural Resource
Exporters and South Africa

Sample Selection:	ZAF Group	ZAF Group	ZAF Group
Dependent Variable:	Revenue Gap	revenue gap	revenue gap
Output gap	1.226***	0.961***	1.216***
	(0.111)	(0.0762)	(0.111)
Export GDP	0.0419	-0.0416	0.0384467
	(0.0540)	(0.0367)	(0.0541)
Bankingcrisis	1.873	1.327	1.857
	(1.778)	(1.197)	(1.777)
Resource-rich* Output Gap		0.866***	
		(0.0539)	
South Africa* Output Gap			0.5014159
			(0.494)
Constant	-1.580	1.518	-1.45339
	(2.054)	(1.395)	(2.057)
Observations	237	237	237
R-squared	0.370	0.716	0.703
Number of i	21	21	21
Standard errors in parenthes			
*** p<0.01, ** p<0.05, * p<0.1			

Last, equation (2) is solved by excluding external demand and financial crisis control
variables from the regression equation, and the new model is solved only for the diversified
economies in the South African comparison group. Results of this regression analysis are
reported in Table 5.

Similar to the results reported in Table 3, elasticity of revenue with respect to the business
cycle is asymmetric for the diversified economies. Again similar to the results reported in
Table 3, revenue has unit elasticity with respect to the output gap during the business
downturns.

Table 5. Panel Regression Results of Revenue Elasticity Controlling for Business Cycle
Asymmetry and Excluding Resource Exporters

| Sample Selection: | ZAF Group excluding Resource Exporters |
Dependent Variable:	Revenue Gap
Output gap	1.049***
	(0.120)
Positive Output Gap Dummy	-1.718**
	(0.727)
Dummy*Output Gap	0.663***
	(0.116)
Constant	-0.198
	(0.305)
Observations	188
R-squared	0.751
Number of i	16
Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

Unlike resource-rich economies, elasticity of revenue with respect to the business cycle
increases less in diversified countries during economic expansions. As shown in Table 5, this
elasticity is around 1.6 for diversified economies during expansionary periods, whereas it
was measured around 1.8 in Table 3. These results confirm the pattern of revenue
responsiveness with respect to the output gap as shown in Figure 3.

VII. CAVEATS

Caveats exist in estimating economic cycles. Use of different methodologies may yield
differences in estimating potential output, such as the use structural models versus the HP-
filter. Additionally, existence of structural breaks would also cause shifts in the potential
output estimates. These caveats are discussed more in detail in Aydin (2010).

This paper does not distinguish between policy responses and cyclical revenue movements
because of data limitations. A bias could be introduced to the results if revenue behavior
were driven mostly by policy changes. Nevertheless, assuming that not all countries
introduce business-cycle symmetric policies or that they introduce such policies during each
cycle or during each upturn, fiscal policies should not derive the cyclical movement in
revenues. Unfortunately, there is not sufficient information on the change in fiscal policies
across countries on policies such as changes in administrative procedures or tax rates, to
control for this effect in the panel regressions.

VIII. CONCLUSION

This paper analyzed the cyclicality of the fiscal balances in South Africa from a cross-country perspective. Results show that South Africa had an outstanding revenue performance during the global growth years of the mid-2000s, and its revenue as a share of GDP had increased on average more than the rise in revenue of its peer economies.

During the global financial crisis, even though South Africa experienced a loss in revenues, this decline was the least compared to other advanced and emerging market economies.

Results on the elasticity of revenues with respect to the output gap point that South Africa has indicators similar to those of diversified advanced and emerging market economies. South Africa has a lower elasticity of revenue with respect to the output gap than that of resource exporters. But this elasticity is asymmetric with respect to the business cycle: the increase in revenue collection in good times is larger than the revenue loss in bad times.

Based on these findings, the results show that as the South African economy recovers, revenues will improve; however, the improvement will be at a slower pace than the recovery expected in commodity and fuel exporters.

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