

Can Monetary Union Alone Provide an Agency of Restraint for Africa?

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Abstract

Monetary integration in Africa is often promoted as a way to enhance and enforce fiscal discipline on national authorities, that is, provide an agency of restraint for them (see for example, Masson and Pattillo, 2004; and Yehoue, 2005). The basis for this idea is that money creation is the only channel through which fiscal policy becomes irresponsible, hence by giving the “first move” to monetary authority (or making monetary policy a dominant instrument) then the fiscal authority would be restrained in its policy choice by the amount of seigniorage provided by the independent monetary authority. But, money creation may not be the only channel, fiscal indiscipline may arise when fiscal policy is not sustainable and government bonds are considered net wealth, suggesting that monetary union alone may not restrain the national authorities and guarantee fiscal discipline if fiscal policy is dominant (Woodford, 1998). Thus, in designing institution for macroeconomic stability and growth the prevalence of different policy regimes (Monetary dominant or Fiscal dominant) is important. Using a panel data set, we assess the empirical evidence of either regime in Africa. The results give support to the fiscal dominant regime throughout the sample period, and for sub-samples. The study also reveals that fiscal indiscipline in Africa is exacerbated by the procyclicality of fiscal policy.

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I. INTRODUCTION

In a Fiscal dominant regime where the fiscal authority sets the primary balance independently of the level of government liabilities, a fiscal expansion may eventually require monetization, and result in a higher inflation. Hence, by giving the “first move” to monetary authority (or making monetary policy a dominant instrument), then the fiscal authority would be restrained in its policy choice by the amount of seigniorage provided by the independent monetary authority.³ But this is if money creation is the only channel through which fiscal policy becomes dominant. If Fiscal dominant regime can also arise when fiscal policy is not sustainable and government bonds are considered net wealth, then Monetary dominant regime alone may not provide an agency of restraint for fiscal authorities. Moreover, in the context of assessing the sustainability of fiscal policy, being in a Monetary dominant regime is a necessary but not sufficient, condition for sustainability.

The prevalence of different policy regimes is important for practical policy reasons. In the debate about the process of African integration the issue of the correct policy framework that each country should follow is an important part of the policy discussion. The main preoccupation of policy makers is that undisciplined fiscal policies could jeopardize monetary stability for the whole Africa. Nonetheless, applied works on the topic is far from abundant, and even less for the continent.

This paper adds to the existing literature by assessing the empirical evidence of Monetary dominant or Fiscal dominant regime in Africa using an annual balanced panel data set for the period 1980-2006. Given the political transition and central bank independence that occurred in most countries in the 1990s, an alternative sub-sample periods (1990-2006) and (1997-2006) are considered in the analysis in order to assess the likelihood of change in fiscal behaviour in the recent period, the latter period also allows for the inclusion of more countries. The results give support to the fiscal dominant regime throughout the sample period, and for sub-samples. The study also reveals that fiscal indiscipline in Africa is exacerbated by the procyclicality of fiscal policy.

³ See Sargent and Wallace (1981).

The rest of the paper is organised as follows. Section 2 reviews fiscal and monetary outcomes in Africa. Section 3 discusses the specifications. Section 4 presents the empirical analysis of fiscal policy regime in Africa. Finally, section 5 concludes.

2. FISCAL AND MONETARY OUTCOMES IN AFRICA

Macroeconomic dynamic in Africa has been dominated in the past by fiscal instability. Lack of fiscal discipline resulting in persistent deficits and mounting stock of debt has often forced many central banks around the continent to implement neutralizing policies leading to macroeconomic instability. Table 1 compares the experience with fiscal and monetary outcomes in five African regions for 1980-2005 and 2006.⁴

Table 1: Fiscal Outcomes and Inflation in Africa, Annual Averages, 1980-2005 and 2006 (all in percentage of GDP, unless otherwise stated)

Regions	1980-2005				2006			
	Primary balance	seigniorage	total debt	inflation	Primary balance	seigniorage	total debt	inflation
SADC	-1.37	2.05	103.33	145.9	-0.30	1.80	78.24	132.9
ECOWAS	-3.07	1.30	101.69	12.50	-2.78	1.21	76.51	10.21
COMESA	-1.85	1.30	127.80	17.30	-1.12	1.19	88.20	12.70
ECCAS	-2.60	3.20	114.60	17.10	-1.81	1.99	68.31	11.44
AMU	-2.11	1.00	75.12	6.60	-1.85	0.80	60.10	5.11
CMA	-0.60	1.00	43.20	10.00	1.51	0.30	31.30	5.60
WAEMU	-2.50	1.10	124.7	5.00	-1.99	0.77	54.50	5.82
CAEMC	0.40	0.60	105.4	6.10	1.12	0.43	64.03	6.10
Resource Intensive	-3.60	2.90	118.6	18.40	6.60	2.36	78.71	9.10
OIL	-3.60	2.51	122.6	20.30	7.60	2.19	79.22	7.70
NON OIL	-9.14	1.80	101.2	9.80	-1.81	1.17	70.21	15.40
Non Resource Intensive	-4.30	1.19	53.50	13.90	-3.00	1.00	55.60	10.80

Source: Authors' own calculation from IMF and WEO

Note

Seigniorage: change in money base in percent of GDP⁵

Primary balance: government revenue (excluding grants) less government expenditure in percentage of GDP

⁴ The regions include the Economic Community of West African States (ECOWAS), the Southern African Development Community (SADC), the Common Market for East and Southern Africa (COMESA), the Economic Community of Central African States (ECCAS) and the Arab Maghreb Union (AMU). Data limitation problems mean that Liberia, Djibouti, Egypt, Eritrea, Sudan, Algeria, Libya and Mauritania had to be dropped and we concentrate on the remaining 44 countries in the continent; 14 countries for ECOWAS (including 8 countries for CFA franc Zone, the West African Economic and Monetary Union, WAEMU), 14 countries for SADC (including 4 countries for the Common Monetary Area, CMA), 6 countries for COMESA, 8 countries for ECCAS (including 6 countries for the CFA franc Zone, the Central African Economic and Monetary Community, CAEMC) and two countries for AMU (see appendix 1).

⁵ This way of measuring seigniorage is standard in the literature and follows, inter alia, Fischer (1081), for more details see Drazen (1985), Blanchard and Fischer (1989) and Buiter (2007).

For all the regions in the continent (except AMU), the overall budget deficits has been persistently high and their debt to GDP ratios are also at unsustainable levels. Given narrow tax base, limited domestic markets for government debt and limited access to international market, such deficits have been possible because of resort to seigniorage revenues by national authorities. Consequently, the continent seems to have been prone to fiscal-dominance regime and high inflation. The problem is even greater for Angola, DRC, Zambia and Zimbabwe (all in the SADC region); Ghana, Guinea Bissau, Sierra Leone, Cape Verde and Nigeria (all in the ECOWAS region); Sao Tome and Principe (in the ECCAS region) and Uganda (in the COMESA region).

Evidence is however much stronger for the two longstanding monetary unions in Africa, the CFA franc zone (comprised of WAEMU and CAEMC) and the CMA. Both unions have been successful in providing low deficits and debt to its members, and had no systematic recourse to seigniorage revenues. But, this is at the expense of giving France and South Africa complete control of monetary policy. In doing so, the CFA franc zone and CMA members are not only borrowing French and South Africa's monetary policy but also their stable fiscal policy and institutions.

Importantly, although, the recent period has witnessed stronger effort to restore fiscal position by lowering deficits and debt in most of the regions, for some of the countries, this recent reduction in the level of debt is due to the write-down of debt by industrial countries and international financial institutions (the HIPC initiative) and does not necessary mean that national authorities are becoming more prudent. Past experience has shown however that deficits and debt problems in the continent are endemic, and that this has been the root cause of price and macroeconomic instability.

The need to overcome this perverse characteristic of the fiscal-monetary policy interaction in Africa is one of the main motivations behind the recent project of a continental monetary union. But, can monetary union alone solve the dependence of price dynamics from fiscal dynamics. According to the modern view of fiscal and monetary policy interdependence, the Fiscal Theory of Price Determination (FTPD), without fiscal stability, there cannot be price stability⁶

⁶ Leeper (1991), Woodford (1995), Sims (1995), among others

In a monetary union, for example, if a country is running excessive deficits and is in a position to default on its debt, it is bailed out by the central bank, and the costs are not borne by the country alone, but also paid by other members of the union. Knowing this, policy makers may not be as conservative in their fiscal policies. Even if the regional central bank is constrained from providing monetary financing or indirect bailouts to member governments in order to make them more responsible, there is no guarantee that such a statutory provision will be completely credible, particularly in Africa. Given narrow tax base and/or government revenue to GDP ratios and high government spending ratios, imperfect budgetary management and/or adverse shocks may inadvertently cause debt to accumulate to a point where it cannot be serviced, that is, where the government is incapable of generating the primary surplus needed to stabilize, much less reduce the debt to GDP ratio. In these circumstances, a default or bailout is inevitable, and the union central bank may be induced to provide the latter.⁷

There are argument on the other side of this issue, namely that monetary union induces greater fiscal discipline by weakening the strategic influence of any single government over the monetary authority (Beetsma and Bovenberg, 1998)⁸ and by providing an “agency of restraint” (Collier, 1991) in making countries to voluntarily sign on to conservative monetary and fiscal policies. The latter is more likely to be effective if there is some external link, for instance an external currency peg. However, the CFA franc zones (WAEMU and CAEMC) have a fixed peg to the French franc (now the euro) as well as a guarantee of convertibility of their currency from the French Treasury. Yet, the independence of both regional central banks was compromised in the 1980s by large countries bypassing limits on monetary financing through borrowing by state-owned banks. This led to a serious economic downturn and a financial crisis, culminating in the 1994 devaluation (Guillaume and Stasavage, 2000), implying that monetary union alone may not guarantee the fiscal discipline needed in the continent. What it does is that it highlights the importance of policy coordination.⁹

Hence, the success of the continental monetary union project depends on how fiscal and monetary policies is coordinated in Africa.

⁷ See Bovenberg, Kremers and Masson (1991).

⁸ Both authors advised against fiscal policy coordination as this may have the perverse effect of once again strengthening the hand of the governments over the central bank.

⁹ Lack of coordinated fiscal policies can lead to negative externalities and, therefore, to policy changes in response to shocks that could jeopardize the common monetary policy. Recent research on optimal policy recognizes the importance of coordinating both policies (Demertzis et al. 2005, Benigno & Woodford, 2003; Eggertsson & Woodford, 2004a; Schmidt-Grobe and Uribe, 2004a,b and Hughes Hallet and Viegi (2000)

3. EMPIRICAL SPECIFICATIONS

When thinking about a Monetary dominant regime, it seems pertinent to expect a robust positive response of primary balance to the government liabilities. Hence, the following linear dynamic model, closely linked to the fiscal budget account identity, could give a reasonable specification for the primary surplus with the liabilities ratio as an exogenous variable and a lagged dependent variable,

$$ps_{it} = \beta_i + \delta ps_{it-1} + \gamma b_{it-1} + \mu_{it}. \quad (1)$$

The index $i(i = 1, \dots, N)$ denotes the country, the index $t(t = 1, \dots, T)$ indicates the period and β_i stands for the individual effects to be estimated for each country i , ps_{it} is the primary surplus as a percentage of GDP for country i in period t . ps_{it-1} is the observation on the same series for the same country i in the previous period, and b_{it-1} is the liabilities to GDP ratio in period $t-1$ for country i . In addition, it is assumed that the disturbances μ_{it} are independent across countries.

There are two reasons for using primary rather than the total surplus.¹⁰ First, the interest on the debt could create a spurious relationship. Second the intertemporal budget constraint of the fiscal authorities relates to the primary surplus. The reason for dividing the primary surplus by GDP is to make sure that the dependent variable in the equation takes the form of a ratio as do liabilities so that coefficients are easier to interpret. Since it is not easy for the government to dramatically change the fiscal policy stance in a single year, the use of the primary surplus lagged explanatory variable, which assumes that the primary surplus in period t is dependent on that in period $t-1$, seems reasonable.

Moreover, beside equation (1), one may also try to estimate the following specification for the government liabilities ratio,

$$b_{it} = \alpha_i + \eta ps_{it-1} + \psi b_{it-1} + v_{it}. \quad (2)$$

This specification is essentially compatible with the standard budget deficit and debt dynamics formulation. Specifications (1) and (2) are standard fixed effects models, essentially linear regression models in which the intercept terms vary over the individual cross-section units.

¹⁰ See Melitz (2000).

The existence of differences between the several countries should then be taken into account by the autonomous term that may change from country-to-country, in each cross-section sample, in order to capture individual country characteristics.

There are two main challenges with panel data estimations. One is the possibility that the real model might be heterogeneous, with different coefficients for the explanatory variables in the cross section dimension.¹¹ In this study, we assume that the underlying model is homogeneous, that fiscal policy framework is the same across all African countries, hence, the coefficients is the same for all countries.

The second challenge is the potential endogeneity of several regressors. This arises when there is lagged dependent variable among regressors or when lagged endogenous variable is among explanatory variables, which is true with our specification (1) and (2). In this case, both fixed and random effects estimators are biased.¹² The literature has used either vector autoregressive (VARs) or instrumental variable estimators. However, both have significant shortcomings. VARs tend to be sensitive to ordering and do not lend themselves to the modeling of multiplicative relationships. Many instrumental variable estimators, in turn, tend to suffer from weak instruments that make instrumental variable point estimates, hypothesis tests, and confidence intervals unreliable.¹³

As a significant innovation to the existing literatures, we use the one-step system GMM estimator developed in Arellano and Bover (1995) and Blundell and Bond (1998). Arellano-Bond estimator implies that the regression is time-differenced in order to remove cross-section specific effects. It estimates in a system the regression equations in differences and levels, each with its specific set of instruments. Relative to conventional instrumental variable methods, it improves substantially on the weak instruments problem through more formal checks of the validity of the instruments and provides for potentially improved efficiency.

The first differences of the variables are employed as their own instruments both for the lagged dependent variable and also for the exogenous variables. First difference version of Equation

¹¹ See Haque et al (2000).

¹² For more details see Kennedy (1998)

¹³ See Green (2000) and Arellano (2003)

(1) and (2) can be written as follows, respectively for the primary surplus and for the government liabilities,

$$\Delta p s_{it} = \delta \Delta p s_{it-1} + \gamma \Delta b_{it-1} + \Delta \mu_{it}. \quad (3)$$

$$\Delta b_{it} = \eta \Delta p s_{it-1} + \psi \Delta b_{it-1} + \Delta v_{it}. \quad (4)$$

where $\Delta p s_{it} = p s_{it} - p s_{it-1}$

First differences directly eliminates the individual effects (β and α) from the models. However, differencing introduces a correlation between the differenced lagged dependent variable and the differenced error term, and the use of instruments is then required. Indeed the lagged values $p s_{it-2}$ and b_{it-2} will be uncorrelated respectively with $\Delta \mu_{it}$ and Δv_{it} , and can therefore be used as instrumental variables for the first differenced equations in (3) and (4). Further, in order to account for the effects of the business cycle, the output gap can also be included in the specification as follows,

$$\Delta p s_{it} = \delta \Delta p s_{it-1} + \gamma \Delta b_{it-1} + \chi \Delta z_{it} + \Delta \mu_{it}. \quad (3)$$

$$\Delta b_{it} = \eta \Delta p s_{it-1} + \psi \Delta b_{it-1} + \Phi \Delta z_{it} + \Delta v_{it}. \quad (4)$$

where z is the output gap computed as the difference between actual GDP and potential GDP as a percentage of potential GDP using Hodrick Prescott. This allows testing the following hypothesis:

- (i) If γ is positive, then an increasing speed in the change of the primary surplus responds to an increasing speed of change in the government liabilities ratio, which may be viewed as a Monetary dominant regime.
- (ii) If η is positive, then the primary surplus does not respond to the government liabilities, which may be considered as a Fiscal dominant regime.
- (iii) If χ and ϕ are negative and positive respectively, then fiscal policy does not respond in a stabilizing manner to business cycle, which is an evidence of procyclical fiscal policy.

4. EMPIRICAL ANALYSIS

4.1 Data

In order to assess the prevalence of Monetary or Fiscal dominant regimes in Africa, We use annual balanced panel data from 1980 to 2006 for the primary surplus as a percentage of GDP (excluding interest payment) and for the government liabilities to GDP ratio. This gives a maximum of 27 years of annual observations for 20 countries. Of the 20 countries in the data set, 10 are from the South African Development Communities (SADC), 4 are from the Common Market for East and Southern Africa (COMESA), 4 are from the Economic Community of West African State (ECOWAS) and the remaining 2 are from the AMU. For the alternative sub sample periods, we also use annual balanced panel data from 1990 to 2006 for 20 countries and from 1997 to 2006 for 42 countries.¹⁴ The sources of the data are the International Financial Statistics of IMF, the SADC website and the central bank websites. Table 2 presents summary descriptive statistics for the full sample.

Table 2: Descriptive statistics (full sample):1980-2006

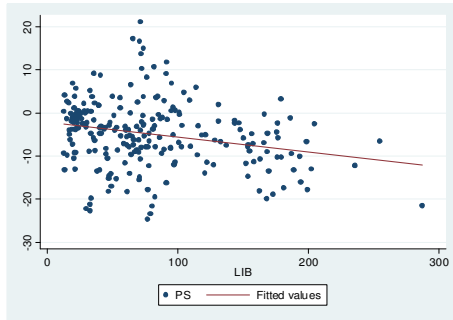
Variable	Obs	Mean	Std.Dev
Primary surplus	540	-4.371722	5.746234
Liabilities	540	85.44772	48.06163
Output gap	540	-.3123333	9.757567

A first assessment of the data can be made in order to check the nature and magnitude of the existing correlation between the primary surplus ratio and the liabilities ratio. For instance, such correlation is negative around -0.18 for the entire sample, -0.29 and -0.17 for the sub-sample periods 1990-2006 and 1997-2006 respectively; -0.22 for de facto MU (comprising of WAEMU, CAEMC and CMA), -0.25 for SADC, -0.47 for ECOWAS; but positive for COMESA (0.23) and AMU (0.21). On the one hand, this hints at the possibility of a Monetary dominant regime in Africa except for COMESA and AMU, on the other hand, it reveals different degrees of adherence to both regimes within the country sample.

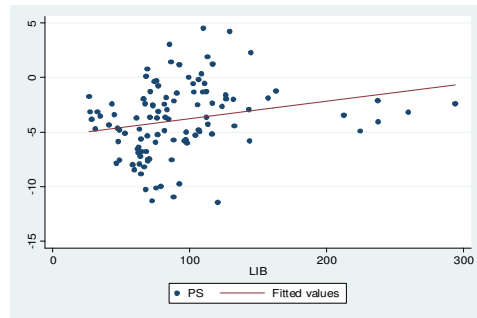
For a causal inspection of the underlying time series, figure 1 plots the primary surplus ratio and liabilities ratio for the sample, sub-sample and individual regional countries. Interestingly, the scatter diagram supports the existence of negative relationship in Africa except for COMESA and AMU.

¹⁴ The 42 countries are discussed in table 1 (also see appendix 1 for more details).

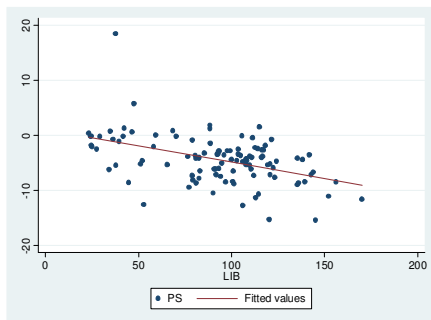
SADC



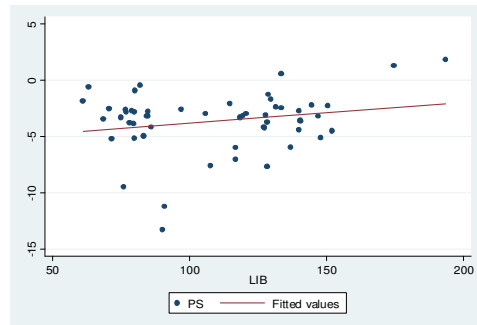
COMESA



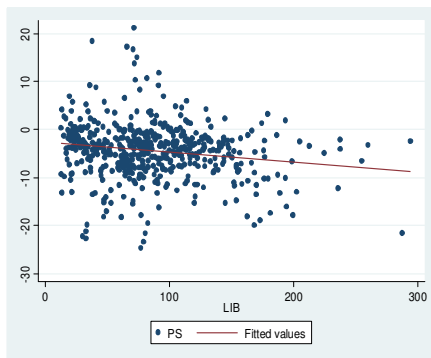
ECOWAS



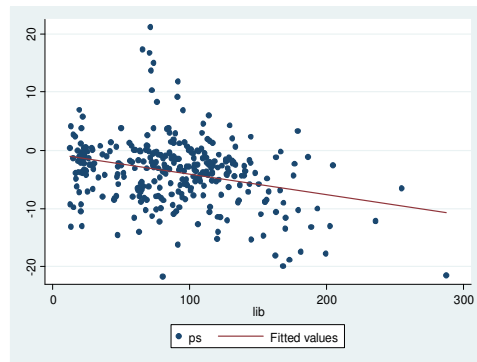
AMU



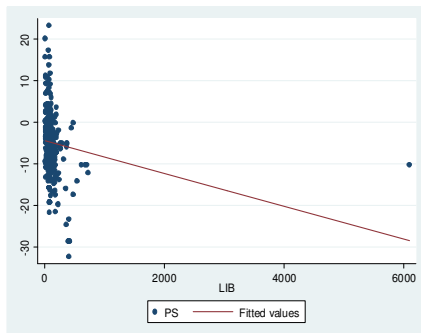
1980-2006



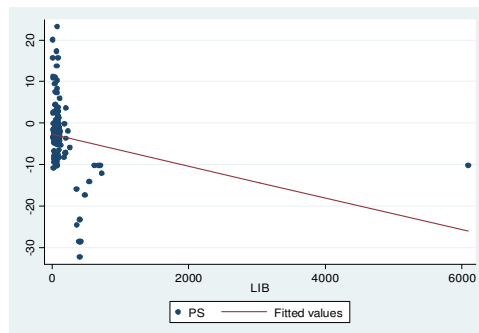
1990-2006



1997-2006



de facto MU



4.2 Unit root tests

The motivation behind panel data unit root tests is to increase the power of unit root tests by increasing the span of the data while minimizing the risk of encountering structural breaks due to regime shifts. Two alternative panel unit root tests are performed for primary surplus as a percentage of GDP and liabilities as a percentage of GDP. Levin et al (2002) proposed a test based on heterogeneous panels with fixed effects where the null hypothesis assumes that there is a common unit root process. The basic Augmented Dickey-fuller (ADF) equation is

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{k_i} \beta_{ij} \Delta y_{it-j} + \eta Z_{it} + e_{it} \quad (5)$$

The null hypothesis of the unit root to be tested is then $H_0: \alpha = 0$, against the alternative $H_1: \alpha < 0$.¹⁵ Alternatively, Im et al (2003) proposed a test that allows for individual unit root processes so that α in (5) may vary across cross-sections, hence relaxing the assumption that $\alpha_1 = \alpha_2 = \dots = \alpha_N$. The null hypothesis may in this case be written as $H_0: \alpha = 0$ for all i . The alternative is now given by

$$H_1 = \left[\begin{array}{l} \alpha_i = 0, \text{ for } i = 1, 2, \dots, N \\ \alpha_i \neq 0, \text{ for } i = N_1 + 1, N_2 + 2, \dots, N' \end{array} \right]$$

This implies that some fraction of the individual processes is stationary.¹⁶

Table 3: Panel unit root results

Series	Sample	Common unit root (LLC)			Individual unit root (IPS)		
		Statistics	Probability	N	Statistics	Probability	N
PS	1980-2006	-3.10	0.001	500	-2.52	0.000	500
	1990-2006	-2.90	0.002	285	-2.03	0.009	285
	1997-2006	-7.49	0.587	336	-1.22	0.999	336
LIB	1980-2006	-0.66	0.254	500	-1.55	0.437	500
	1990-2006	-3.35	0.000	285	-2.00	0.020	285
	1997-2006	-39.3	0.001	336	-5.95	0.001	336
GAP	1980-2006	-6.86	0.000	500	-3.40	0.000	500
	1990-2006	-6.11	0.000	285	-2.91	0.000	285
	1997-2006	-21.4	0.000	336	-2.57	0.000	336

Note: LLC — Levin, Lin and Chu. IPS — Im, Pesaran and Shin

¹⁵ This type of test is particularly useful for panel of moderate size, between 10 and 250 cross sections and 25-250 time series observations per cross section, (Levin et al, 2002). This fits our data sample.

¹⁶ For more detail see Phillip and Moon (2000), and Arellano and Homore (2001).

Table 3 reports the results of the panel unit root tests for the primary surplus-to-GDP (PS), Liabilities-to-GDP (LIB) and for the output gap (GAP) series. For the entire sample and sub-sample periods, both tests reject the existence of a unit root at the 1% significance level for the PS (except for the sub sample period 1997-2006) and GAP. On the other hand, for the LIB series, while both tests also allow the rejection of the null hypothesis for the sub-sample periods, both tests do not reject the unit root hypothesis for the entire sample.

4.3 Estimation Results

When a lagged value of the dependent variable appears as a regressor, the two-stage least squares first-differenced estimator (FD2SLS) and a one-step Arellano-Bond estimator (GMM-AB) have always been used to obtain consistent estimates.¹⁷ Moreover, it is sensible to admit that fiscal policy framework is the same across African countries; as such, it would not be incorrect if we generalize the results.

Table 4 reports estimation results for equation (3) and (4), using FD2SLS estimations and GMM-AB estimations with lagged values as instruments on the entire cross-sectional sample. The first two columns of reported estimated coefficients relate to the specification where the dependent variable is the primary surplus, and the last two columns report estimated coefficients for the case where liabilities is the dependent variable.

Table 4: FD2SLS estimators and GMM-AB for primary surplus and liabilities ratio (1980-2006)

Method	Dependent variable PS		Dependent variable LIB	
	FD2SLS	GMM-AB ¹⁸	FD2SLS	GMM-AB
PS	0.54* (0.06)	0.56*** (0.01)	0.80*** (0.01)	0.47** (0.06)
LB	-0.01 (0.90)	-0.02*** (0.01)	0.086 (0.23)	0.70*** (0.01)
GAP	-0.07** (0.02)	-0.002 (0.90)	0.62*** (0.01)	0.06 (0.45)
Observations	460	500	460	500

Note: The coefficient *, **, *** are statistically significant at the 10, 5 and 1 per cent level respectively.

¹⁷ Also see Anderson et al (1981).

¹⁸ The Sargan test from the one-step GMM-AB estimator rejects the null hypothesis that the over-identifying restrictions are valid. The absence of second-order autocorrelation would imply that the estimates are consistent.

The hypothesis that primary surplus react positively to government liabilities, that is, $\gamma > 0$ should be rejected since the estimated coefficient is negative and statistically significant at 1 per cent (with GMM-AB estimator). In other words, the fiscal authorities in Africa seem not to act in accordance with the existing liabilities by increasing the primary surplus when liabilities increase. This is consistent with the prevalence of a Fiscal dominant regime where fiscal policy does not adjust to the intertemporal budget constraint, and the fiscal authorities do not respond in a stabilizing manner. Interestingly, there is a procyclical response of fiscal policy given the negative effects on the primary surplus of increases in the output gap.

In addition, table 4 also reveals that when the government liability is the dependent variable, African governments seem not to use primary surpluses to reduce the liabilities-to-GDP ratio. This can be seen from the fact that we obtain a positive and statistically significant η coefficient (with both estimators) for the primary surplus in the liabilities regression.

Since political transition and central bank independence that occurred in most countries in the 1990s may have had an effect on the prevalence of the fiscal regime, alternative sub-sample periods 1990-2006 and 1997-2006 are considered to account for a regime shift, the latter will also allow for the inclusion of more countries.

Table 5: FD2SLS estimators and GMM-AB for primary surplus and liabilities, sub-sample period, 1990-2006

Method	Dependent variable PS		Dependent variable LIB	
	FD2SLS	GMM-AB	FD2SLS	GMM-AB
PS	0.65 (0.23)	0.59*** (0.01)	0.92*** (0.01)	0.26 (0.35)
LB	-0.01 (0.95)	-0.39* (0.07)	0.21** (0.04)	0.51*** (0.01)
GAP	-0.02 (0.70)	-0.02 (0.59)	0.68*** (0.01)	0.25*** (0.01)
Observations	207	225	207	225

Note: The coefficient *, **, *** are statistically significant at the 10, 5 and 1 per cent level respectively.

The responsiveness of primary surplus to government liabilities remains negative and statistically significant with GMM-AB estimator (table 5). Again this can be read as evidence of the existence of a fiscal dominant regime in Africa. Interestingly, one may notice the decrease in the magnitude of the estimated γ and η coefficients, implying somehow a lesser impact of primary surplus to government liabilities. With the inclusion of more countries (42

in all), this negative relationship between primary surplus and government liabilities appears to be no longer significant (table 6).

Table 6: FD2SLS estimators and GMM-AB for primary surplus and liabilities, sub-sample period, 1997-2006

Method	Dependent variable PS		Dependent variable LIB	
	FD2SLS	GMM-AB	FD2SLS	GMM-AB
PS	0.99*** (0.00)	0.36*** (0.01)	0.12 (0.191)	0.13 (0.89)
LB	-0.01 (0.70)	-0.02 (0.11)	0.23** (0.02)	0.31*** (0.01)
GAP	-0.02 (0.67)	-0.09* (0.06)	0.18*** (0.01)	0.75*** (0.01)
Observations	252	336	252	336

Note: The coefficient *, **, *** are statistically significant at the 10, 5 and 1 per cent level respectively.

This could be read as a sign of increased efforts from the national authorities in the recent period to improve fiscal positions, though a regime shift has not yet occurred. In both sub-periods, again, fiscal policy remains procyclical by responding in a destabilizing manner to business cycle.

An additional test can be made to see whether the aggregate results hide a significant variation across country groups. Data limitation means that only 4 countries are selected for COMESA and ECOWAS respectively, we hope that this will not bias the results.

Table 6: FD2SLS and GMM-AB for primary surplus and liabilities ratio, across group of countries (1980-2006)

SADC				
Method	Dependent variable PS		Dependent variable LIB	
	FD2SLS	GMM-AB	FD2SLS	GMM-AB
PS	0.64 (0.21)	0.59*** (0.01)	0.92*** (0.01)	0.30 (0.24)
LB	-0.01 (0.95)	-0.39** (0.04)	0.22** (0.03)	0.50*** (0.01)
GAP	-0.02 (0.71)	-0.02*** (0.01)	0.67** (0.04)	0.24* (0.07)
Observations	230	250	230	250

Note: The coefficient *, **, *** are statistically significant at the 10, 5 and 1 per cent level respectively

COMESA

Method	Dependent variable PS		Dependent variable LIB	
	FD2SLS	GMM-AB	FD2SLS	GMM-AB
PS	0.39 (0.92)	0.38*** (0.01)	0.21 (0.85)	0.76 (0.45)
LB	-0.01 (0.50)	-0.01 (0.52)	0.20 (0.12)	0.70*** (0.01)
GAP	-0.05*** (0.01)	-0.03** (0.04)	0.37* (0.07)	0.09 (0.54)
Observations	92	100	92	100

Note: The coefficient *, **, *** are statistically significant at the 10, 5 and 1 per cent level respectively

ECOWAS

Method	Dependent variable PS		Dependent variable LIB	
	FD2SLS	GMM-AB	FD2SLS	GMM-AB
PS	0.51 (0.22)	0.21** (0.03)	0.08 (0.91)	1.68*** (0.01)
LB	-0.01 (0.62)	-0.05*** (0.01)	0.00 (0.98)	0.87*** (0.01)
GAP	-0.14** (0.05)	-0.01 (0.74)	1.30*** (0.01)	0.10 (0.56)
Observations	92	100	92	100

Note: The coefficient *, **, *** are statistically significant at the 10, 5 and 1 per cent level respectively

Indeed, many coefficients turned out to be insignificant, particularly for COMESA and ECOWAS, which can be attributed to the small sample size used for both regions. Nonetheless, there is no statistical evidence to support a Monetary dominant regime among these regions. The overall prevalence of Fiscal dominant regime however remains undisputed from the estimation results of the primary surplus and liabilities.

It should however be noted that the foregoing conclusion does not hold when two longstanding monetary union in Africa, the CFA franc zones (WAEMU and CAEMC) and CMA (otherwise known as de facto MU) are considered. The response of government liabilities to primary surplus is positive and statistically significant at 10 per cent (with GMM-AB estimator) (table 7). This is consistent with the prevalence of a monetary dominant regime where fiscal policy adjusts to guarantee solvency. However, fiscal policy is still procyclical, although insignificant with both estimators.

Table 7: FD2SLS estimators and GMM-AB for primary surplus and liabilities in de facto MU, 1997-2006

Method	Dependent variable PS		Dependent variable LIB	
	FD2SLS	GMM-AB	FD2SLS	GMM-AB
PS	0.18** (0.05)	0.09* (0.06)	-0.56 (0.23)	-0.27* (0.07)
LB	0.03 (0.11)	0.07* (0.10)	0.72* (0.06)	0.51** (0.05)
GAP	-0.04 (0.14)	-0.09 (0.16)	0.64 (0.16)	0.08 (0.19)
Observations	108	244	108	244

Note: The coefficient *, **, *** are statistically significant at the 10, 5 and 1 per cent level respectively.

5. CONCLUSION

Whether fiscal authorities adhere to a Fiscal or Monetary dominant regime might have practical implications in designing institution for macroeconomic stability and growth, and in fostering fiscal sustainability, both of which are necessary for a feasible monetary union in the continent. Given the way in which fiscal policy is being conducted in Africa, one might need to check for the prevalence of Fiscal dominant regime in the continent.

In this paper, we used a panel data set to test for the prevalence of Fiscal or Monetary dominant regime in Africa. The results show that African governments do not have a tendency to use the primary surplus to reduce the liabilities or improve the former when the latter increases, synonyms of a Fiscal dominant regime. This response seems to be lesser in the sub-period sample, implying that there has been an increased effort by the fiscal authorities to improve on fiscal outcomes in the recent period, though a regime change has not yet occurred. This conclusion does not change even with the regional group of countries estimates.

Additionally, when allowing for the interaction between fiscal policy and the business cycle, the evidence seems to support a procyclical fiscal policy in Africa. Governments tend to spend more and incur more debts during boom. Now, when the shock elapses in the following period, primary surplus goes down and government liabilities go up.

The foregoing conclusion does not hold for the two longstanding monetary unions in the continent. In general, the results support the assertion in Aguiar et al (2005) that if government lacks the ability to commit to its policy, the best fiscal policy available exacerbates the business cycle.

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Appendix 1

Map A: Building blocks for Monetary Union

The African Union's plan for an African-wide monetary union relies on the prior creation of monetary unions in the existing regional economic communities



Source: Masson and Pattillo (2004)