IMF Working Paper

Fiscal Reaction Functions in the CFA Zone: An Analytical Perspective

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Abstract

The stance of fiscal policy in CEMAC and WAEMU is strongly influenced by fiscal effort in the previous period. This persistence underscores the risks of a procyclical fiscal policy stance, given these countries' high degree of dependence on primary commodities and exposure to terms of trade shocks. This paper finds that the coefficient of the lagged debt stock was significant and positive, consistent with the theory that higher levels of debt warrant greater fiscal effort. Various measures of economic performance, as captured by economic growth and per capita GDP, openness, and the terms of trade were also found to be important factors in explaining fiscal performance. As fiscal performance seems to be strongly affected by both real GDP growth and terms of trade fluctuations, there appears to be a need to develop supplementary fiscal-related criteria that take into account the influence of output and the terms of trade.

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I. INTRODUCTION

The two monetary unions in the CFA zone conduct their national economic policies within the framework of macroeconomic convergence criteria. The CFA zone includes the West African Economic and Monetary Union (WAEMU) and the Central African Economic and Monetary Community (CEMAC).[2] This paper attempts to establish the main factors responsible for fiscal performance in these two unions and use this as a basis to assess the appropriateness of the fiscal indicator being used to determine fiscal performance.

Understanding the determinants of fiscal performance is critical to fiscal policy design and implementation. First, a quantitative assessment of fiscal performance could help establish whether there has been a change in fiscal performance after the adoption of primary convergence criteria. Second, while the regional convergence pact reinforces the framework for fiscal discipline, a question arises as to whether it might also constrain the scope for countercyclical fiscal policy, given the limited ability of monetary policy to deal with asymmetric shocks. In this regard, adjusting the basic balance[3] in both WAEMU and CEMAC for exogenous factors, such as the terms of trade, could prove useful in developing supplementary indicators to the main convergence criteria. Finally, regional integration is gaining increasing popularity in Africa, with a greater emphasis on monetary unions. Countries interested in new monetary unions can benefit from fiscal policy lessons from the existing unions, especially regarding the design of fiscal frameworks underpinning the monetary frameworks.

Our approach is to examine fiscal reaction functions for the CFA zone from 1990 to 2006, for which period we adopt a fiscal indicator that reflects the fiscal effort of the countries under investigation.[4] The analysis extends that of Clement and others (1996), which evaluated the impact of devaluation on economic performance, by extending the period under review. It also builds on initial attempts by Doré and Masson (2002) that explored the effects of output and terms of trade on fiscal performance.

Our main results are as follows: (i) the stance of fiscal policy in CEMAC and WAEMU has been strongly influenced by fiscal efforts in the previous period; (ii) the stock of debt matters, in that higher levels of debt warrant greater fiscal effort; (ii) per capita GDP, a proxy for the tax base, affected the fiscal stance positively in both zones; (iii) the effects of terms-of-trade shocks on the basic primary fiscal balance were significant and positive in CEMAC,

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[2] The members of WAEMU are Benin, Burkina Faso, Cote d'Ivoire, Guinea Bissau, Mali, Niger, Senegal, and Togo. CEMAC's members consist of Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea, and Gabon.

[3] Basic balance is defined as revenue (excluding grants) minus expenditure (excluding foreign-financed capital expenditure).

[4] The CFA Franc was devalued by 50 percent in 1994.

reflecting the positive oil shock, but negative in WAEMU, where export prices for primary commodities have been less favorable; and (iv) openness was favorable to fiscal performance despite dependence on primary commodities and vulnerabilities to external shocks.

The rest of the paper is organized as follows: Section II presents a short review of the literature on the macroeconomic determinants of fiscal performance. Section III explores the institutional arrangements and economic characteristics of the monetary unions. Section IV presents the econometric methodology, reflecting discussions in Section II and III. Section V presents the empirical results and conclusions. Lastly, their policy implications are presented in Section VI.

II. LITERATURE REVIEW OF THE DETERMINANTS OF FISCAL PERFORMANCE

A. Transitory Determinants of Fiscal Policy

The level of economic activity has been established in the literature as one of the principal determinants of the primary balance. In view of the established consensus on the efficacy of fiscal policy for macroeconomic stability, the optimal policy stance would not be expected to be procyclical, as such, a fiscal framework tends to exacerbate economic and market volatility. However, a number of studies have found that for developing countries, fiscal policy is procyclical (Talvi and Végh 2000, Lane 2003, Gupta and others 2004, and Kaminsky, Reinhart, and Végh 2004). Procyclical fiscal policy has been found to be rooted in political-economy considerations, institutional constraints, and limited access to the international financial markets.

The impact of changes in the terms of trade on fiscal performance is an empirical question. A terms-of-trade improvement tends to positively affect capital-intensive sectors of the economy and increase fiscal revenues. On the other hand, it might hurt labor-intensive industries and lead to higher social spending (unemployment benefits). While much of the literature has focused on the relationship between the terms of trade and economic growth (Ramey and Ramey (1995), Martin and Rogers (2000), Fatas (2002), and Hnatcovska and Loayza (2005)), few have analyzed its impact on fiscal performance.

B. Economic Factors

The existing stock of debt has been used as one primary determinant of fiscal performance. A government may choose to borrow and accumulate debt to fund spending that contributes to improving physical infrastructure with positive impact on the rate of return on private capital and higher spending on education or health care may enhance a nation's human capital. However, there are a number of potential risks associated with high public debt, including adverse impact on economic performance, debt crises, and the resulting economic adjustment. In view of this, the connection between current policy actions and long-run solvency lies in the assumption that the primary balance systematically responds to past changes in the public debt. Bohn (1998) argues that debt is sustainable if primary surpluses

are a strict positive function of the debt-to-income ratio. Along the lines of Bohn (1998), IMF (2003) estimated fiscal policy reaction functions for emerging and industrial economies, with debt as an explanatory variable. A key finding is that primary surpluses respond to increasing debt levels, and that this response is stronger at high debt levels for industrial economies, whereas for emerging economies there is less response to an increasing debt ratio.

Trade openness can also affect fiscal performance through a number of channels. Openness could be favorable to growth through its impact on total factor productivity (TFP), thereby enhancing revenue performance. However, openness could increase a country's exposure and vulnerabilities to external shocks, with an adverse impact on revenue. According to Savvides (1998), trade openness can increase income inequalities and increase the demand for public goods, with an adverse impact on fiscal performance. Combes and Saadi-Sedik (2006) indicate that in oil-and mineral-producing countries, the existence of rent-seeking behavior and corruption could possibly have an adverse impact on fiscal performance.

III. INSTITUTIONAL ARRANGEMENTS, ECONOMIC CHARACTERISTICS, AND MACROECONOMIC DEVELOPMENTS IN THE TWO MONETARY UNIONS

A. Institutional Arrangements

Fiscal rules, such as the basic fiscal balance in WAEMU and CEMAC, are aimed at influencing policy design and anchoring expectations of the government's commitment to fiscal discipline. By eliminating the pursuit of an independent monetary policy, fixed exchange rates provide a framework for making a credible commitment to lower inflation and bringing about price stability.

The countries in the CFA zone have a common stable and convertible currency—the CFA franc—which was initially pegged to the French franc in 1948 and has been pegged to the Euro since 1999. The French treasury guarantees convertibility of the currency and participates in the executive boards of the two regional central banks, the Bank of Central African States (BEAC) in CEMAC and Central Bank of West African countries (BCEAO) in WAEMU. As a counterpart to the guarantee of the French treasury, each central bank is obliged to maintain 65 percent of its official reserves in the operations account. However, this has recently been reduced to 50 percent for WAEMU and will be gradually phased in over three years in CEMAC.

In order to prevent excessive recourse to central bank financing of budget deficits, both central banks have incorporated two monetary rules in their respective agreements. The first restricts outstanding credit to governments to 20 percent of the previous year's fiscal revenues. The second rule states that gross foreign assets for each central bank must be maintained above 20 percent of sight liabilities.

The application of convergence criteria in both WAEMU and CEMAC emphasizes constraints on public deficit and public debt sustainability, as unsustainable budget deficits and excessive indebtedness can increase the pressure for monetary financing and undermine the viability of the common currency. In 1993, in recognition of the crucial role fiscal policy plays in achieving macroeconomic stability, CEMAC member countries established a multilateral surveillance committee, which by end-2001 proposed a new framework for convergence that was adopted by the membership. In 1999, WAEMU members adopted a regional "Pact of Convergence, Stability, Growth, and Solidarity" establishing a set of convergence indicators pertaining to public finances, the real sector, the balance of payments, and common currency. These convergence criteria are as follows:[5]

Primary criteria:

- The ratio of the basic fiscal balance to nominal GDP must be in balance or in surplus.
- The ratio of outstanding domestic and foreign debt to nominal GDP must not exceed 70 percent.
- Average annual inflation rate cannot exceed 3 percent a year.
- Nonaccumulation of domestic and external arrears may not accumulate.

Secondary criteria

- The ratio of the wage bill to tax revenue cannot exceed 35 percent.
- The ratio of domestically financed public investment to tax revenue must be at least 20 percent.
- The ratio of external current account deficit, excluding grants to GDP, cannot exceed 5 percent.
- The tax-to-GDP ratio must be greater than or equal to 17 percent.

B. Compliance with Fiscal Convergence Criterion

Progress in compliance with the basic fiscal balance, one of the main primary criteria, has been stronger in CEMAC than in WAEMU, reflecting in large part the current oil boom.

- WAEMU. The basic fiscal balance improved substantially after devaluation, achieving balance in 1996. During the period 1995–99, WAEMU countries' real revenues grew faster than expenditures. However, since 2000, there has been an uptick in the rate of real spending which has outpaced the growth in revenues, and as a consequence, the basic fiscal balance has deteriorated to a deficit of 2 percent of

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[5] CEMAC has adopted the primary criteria while WAEMU has adopted both primary and secondary criteria.

GDP by end-2005. In 2000, six countries violated the basic fiscal balance criterion, but by 2005, all eight members were in noncompliance (Table 1).

- In CEMAC, the basic fiscal balance has been positive in all years with the exception of 1995, 1996, and 1998. It has averaged 3 percent of GDP since devaluation and reached a record 11½ percent of GDP at end-2006 (Figure 1). In 2000, with the advent of the current oil boom, only the Central African Republic and Chad, the non-oil producers, were in violation of the basic fiscal balance rule (Table 1). By end-2005, after the emergence of Chad as an oil producer, the Central African Republic was the sole violator of the basic fiscal balance rule.

Figure 1. Comparison of the Basic Fiscal Balance in CEMAC and WAEMU

(In percent of GDP)
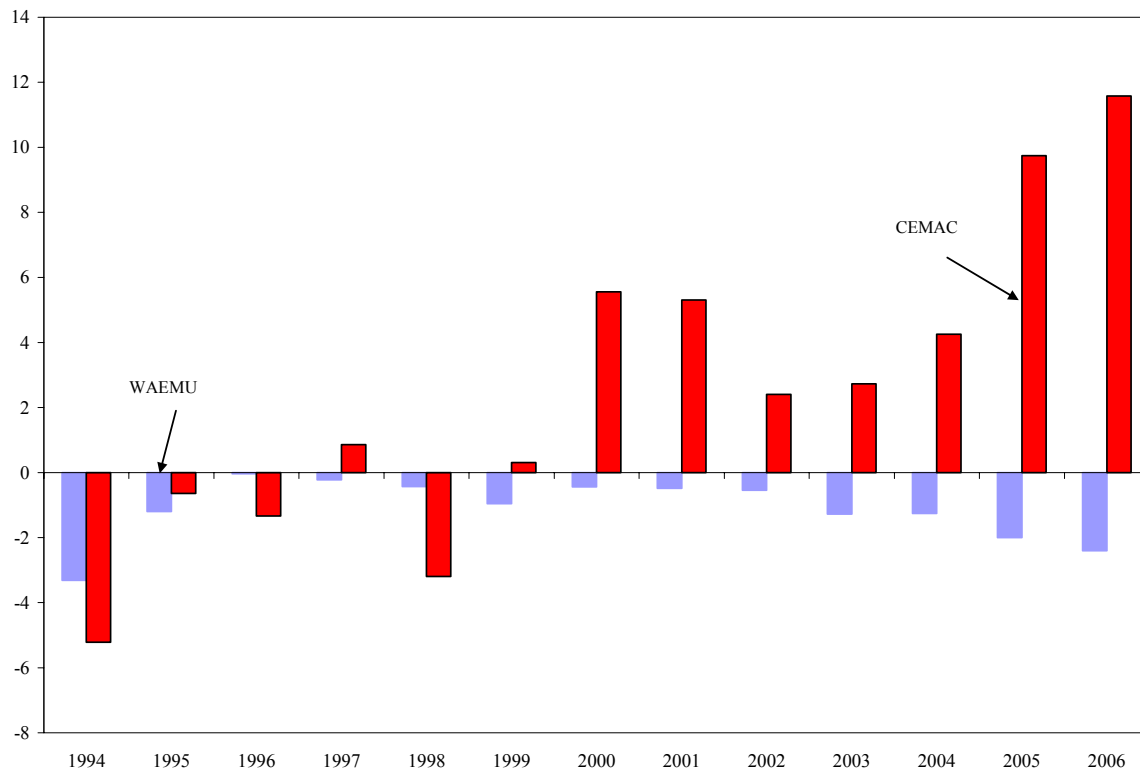
C. Economic Characteristics

The members of CEMAC and WAEMU are characterized by highly open economies. The degree of openness in CEMAC, measured by the ratio of external trade to GDP, has risen since devaluation to 83 percent by end-2006 and averaged 70 percent during 1994−2006. Similarly, WAEMU countries have increased their exposure to international trade, which averaged 61 percent during 1994−2006. The degree of openness was indicated in Section II as one possible determinant of fiscal performance. It would be important to establish

econometrically what impact the exposure of both CEMAC and WAEMU to external trade has had on fiscal performance during the period of analysis.

Vulnerability to external shocks, arising from high degree of openness and limited export base, is also characteristic of the members of CEMAC and WAEMU. WAEMU's members are dependent on a narrow range of primary commodity exports, predisposing their economies to commodity price shocks. The share of the two main commodities in total exports averages around 48 percent, with high concentrations (greater than 85 percent) in Benin, Burkina Faso, and Guinea Bissau. CEMAC's members, with the exception of the Central African Republic (CAR.), are mainly oil producers, and oil accounts for around 85 percent of exports.

The stock of public external debt in the post devaluation period in both monetary unions averaged between 85−87 percent of GDP during 1994−2005 but has been declining. In early 2006, the International Monetary Fund, the World Bank, and the African Development Bank provided debt relief under the Multilateral Debt Relief Initiative (MDRI) to five WAEMU members, which contributed to a substantial reduction in the average stock of public external debt, estimated to be 36 percent of GDP at end-2006.[6] CEMAC's stock of public external debt declined to 25 percent of GDP at end-2006. Against this background, the convergence criteria do not provide much guidance for fiscal policy (i.e., the 70 percent debt-to-GDP limit).

Figure 2. CEMAC and WAEMU: Public Debt

(In percent of GDP)

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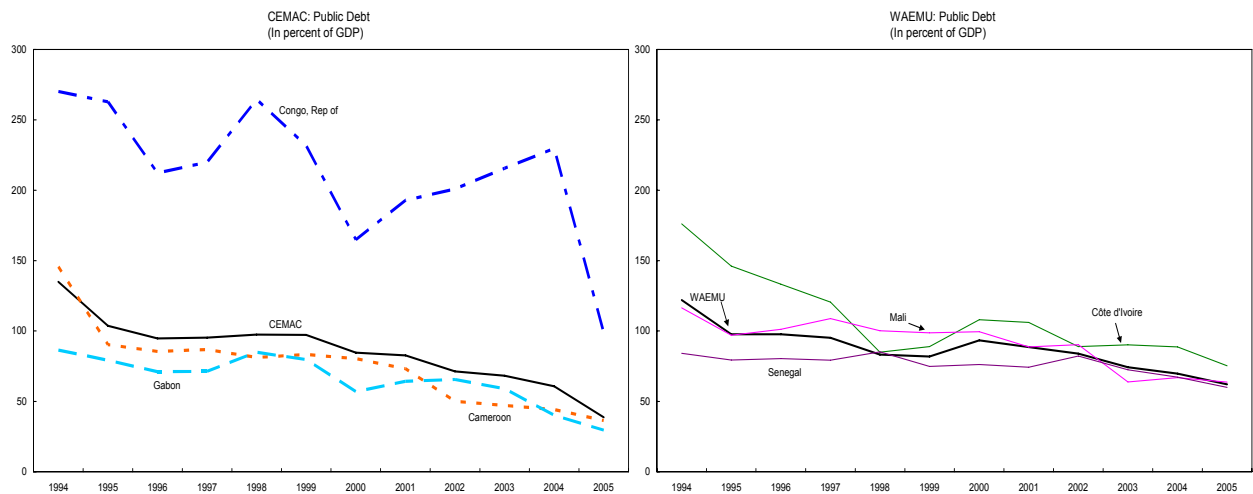
[6] Stock relief figures (WB, IMF, and AfDF) in percent of GDP are as follows for WAEMU countries: Benin (23.6), Burkina Faso (19.6), Mali (36.8), Niger (29.1), and Senegal (28.6). Other eligible WAEMU members include Cote d'Ivoire, Guinea Bissau, and Togo. Of the CEMAC countries, only Cameroon benefited from MDRI, while Chad, Congo, C.A.R are eligible. The use of the 70 percent debt-to-GDP limit seems not to provide much guidance for fiscal policy, as the debt relief has helped in reducing the debt ratio significantly.

The fixed exchange rate anchors the regions' macroeconomic policy, and means that inflation is determined in part by the strength of the Euro and supply shocks. After a spike in inflation in 1994−95 associated with devaluation, inflation in both regions has averaged less than 3 percent.

Figure 3. CEMAC and WAEMU: Inflation Developments
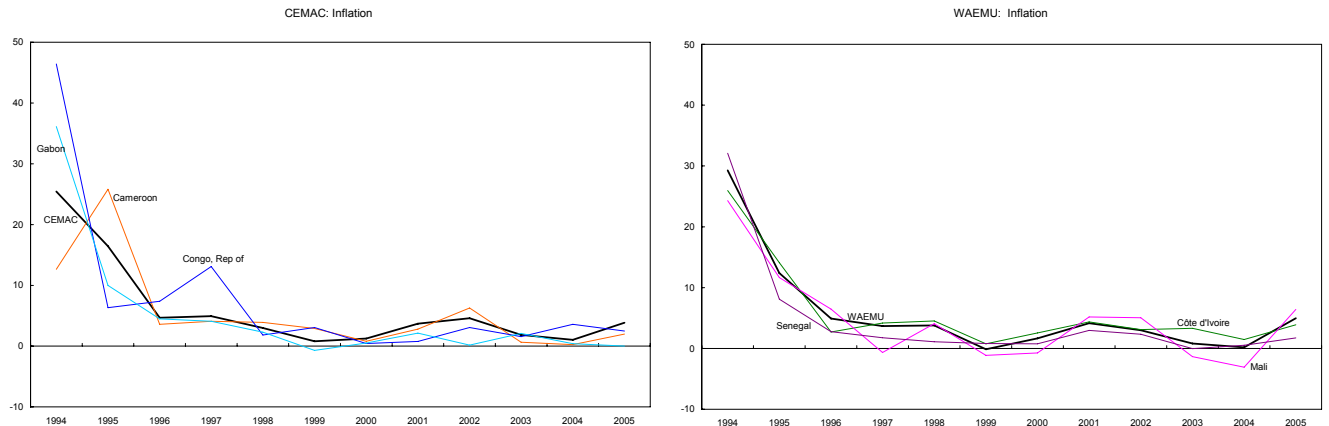
D. Macroeconomic Developments

Developments with broader fiscal indicators mirror those of the basic fiscal balance:

- In WAEMU, the fiscal deficit (excluding grants) initially narrowed after devaluation, but did not demonstrate a sustained reduction. The deficit fell by 3 percentage points to 4¼ percent of GDP in 1995, reflecting cuts in wages and capital spending and lower interest payments, but gradually increased to around 5 percent of GDP in 1999, reflecting a deceleration in economic activity. After 1999, the deficit continued to decline, reaching its lowest level of 3¾ percent of GDP by 2001, which can be attributed to lower interest expenses and reduced implementation of capital expenditures. However, it has subsequently increased because of a rising wage bill and outlays on goods and services.

- In CEMAC, fiscal policy in the immediate aftermath of the devaluation (despite an improvement in 1995) was expansionary, as measured by changes in the non-oil primary balance.[7] The non-oil primary deficit rose from around 5 percent of non-oil GDP in 1995 to 11 percent of GDP in 1998, owing to greater growth in expenditures than in revenues—with the deficit almost reaching predevaluation levels. This outturn was driven by persistent weak performance in Chad, Republic of Congo, and Gabon, which account for over 50 percent of the region's GDP. Low revenue buoyancy

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[7] Changes in the non-oil primary balance cumulatively widened by around 2 percent of non-oil GDP.

reflected weaker growth during that period. However, since 2000, due to a combination of expenditure restraint, particularly on current expenditures, and higher revenues associated with a positive oil shock and trade taxes, the overall balance has been in surplus, averaging 3 percent of GDP. Non-oil producers (CAR and Chad) continued to generate deficits during this period.[8]

Figure 4. CEMAC and WAEMU: Overall Deficit Excluding Grants

(In percent of GDP)
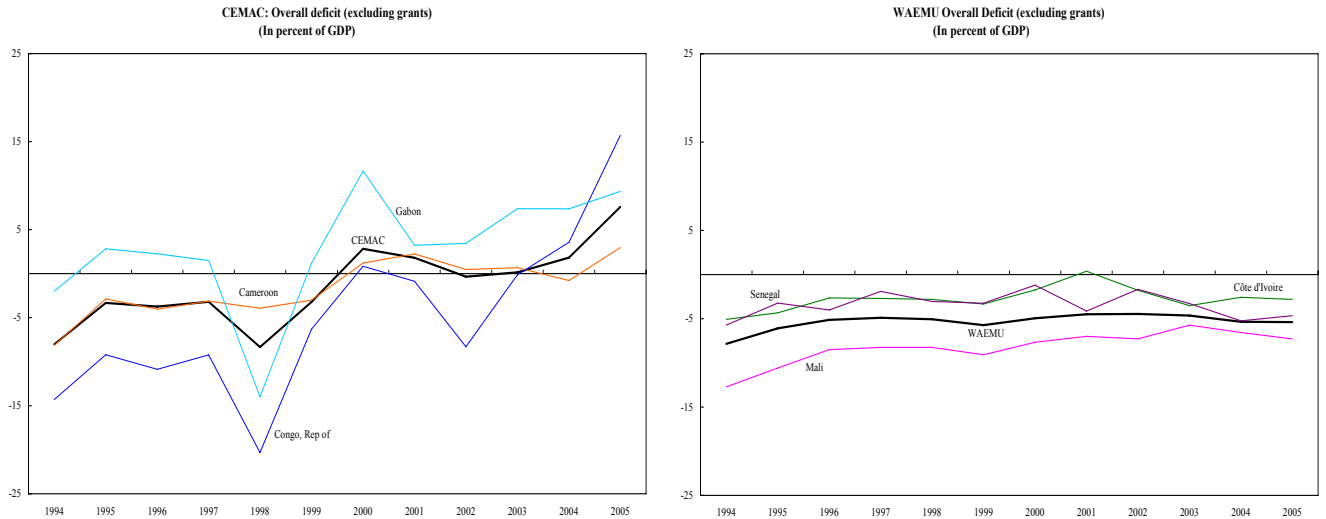
Different fiscal performance between the two monetary unions has been associated with differences in growth performance as well as changes in the terms of trade:

- There have been sharp contrasts in growth performance, reflecting differences in the economic features of the two monetary unions (Figure 3). During 1995–99, real GDP growth was comparable in both monetary unions, averaging 5 percent in WAEMU and 4 percent in CEMAC respectively. The moderate growth performance in the two unions, in part, reflected a restoration of competitiveness following devaluation, characterized by a surge in export growth, improvement in savings and investment ratios, and rising private consumption. However, since 2000, the economic performance of the two monetary unions diverged, with real GDP growth averaging almost 6 percent in CEMAC, double that of WAEMU. Non-oil output growth averaged 4 percent since devaluation, and has been sustained at around 5 percent by Cameroon, the largest and most diversified economy, and by Gabon and Republic of Congo.

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[8] Oil production in Chad came on stream in 2004 and the non-oil primary deficit contracted marginally in 2005.

Figure 5. CEMAC and WAEMU: Real GDP Growth

CEMAC: Real GDP Growth
(Percentage change)

Real GDP Growth: WAEMU
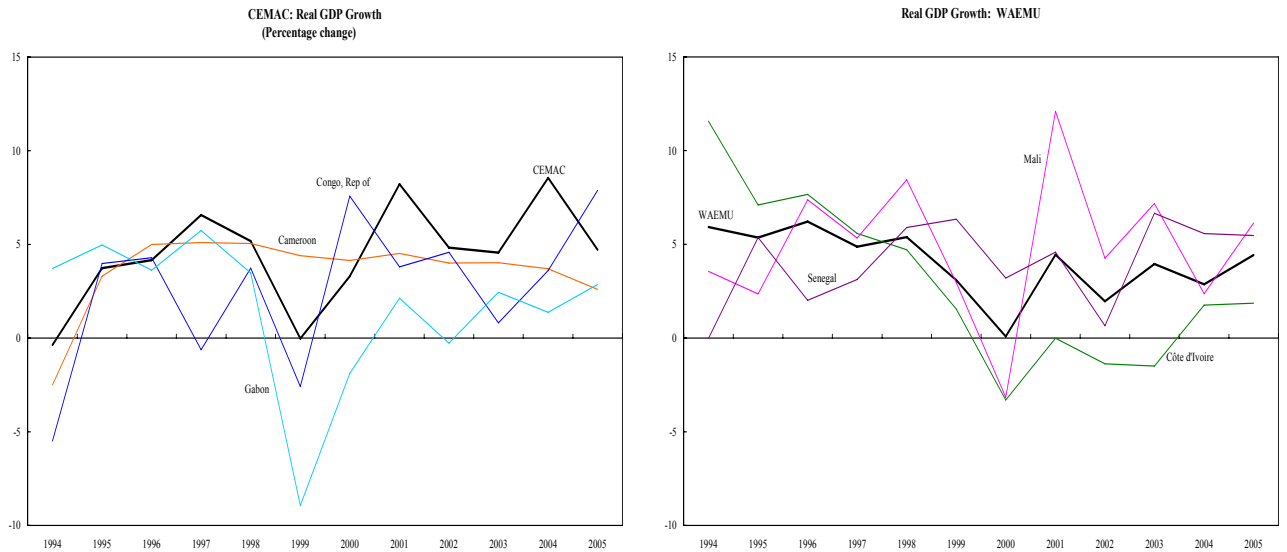
Overall, terms-of-trade developments have been more favorable for CEMAC than for WAEMU. From 1995–1999, although there were improvements in the terms of trade in both monetary unions, they tended to be volatile. Since 2000, growth in the terms of trade in CEMAC averaged 7.7 percent, reflecting favorable oil price developments, compared with a decline of almost 3 percent in WAEMU.

Figure 6. CEMAC and WAEMU: Developments in the Terms of Trade

CEMAC:Terms of Trade

WAEMU: Terms of Trade
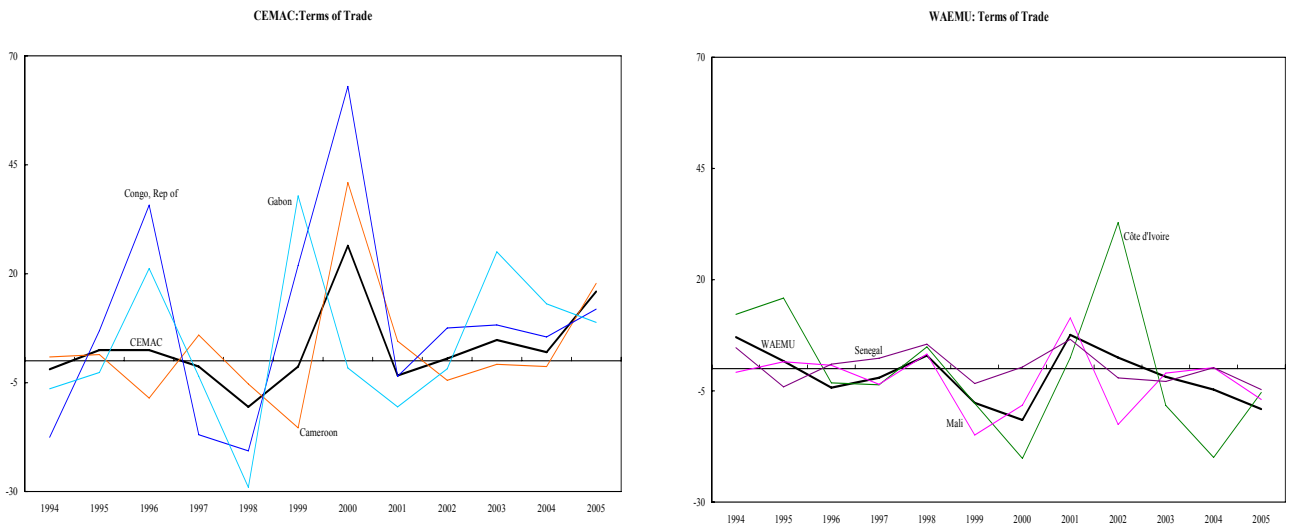
IV. ECONOMETRIC FRAMEWORK

A. Model Specification

Along the lines of Bohn (1998) and IMF (2003), and in view of the discussions in Section II and III, we specify an equation establishing the main factors influencing fiscal outcomes in the post-devaluation period 1990–2006.[9] We estimate different models encompassing the basic primary fiscal balance as the dependent variable. The basic fiscal balance, defined as total revenue excluding grants minus total expenditures less foreign financed capital spending, is a primary convergence criterion in both monetary unions designed to preserve fiscal sustainability. We modify this variable by excluding all interest payments to arrive at a "basic primary fiscal balance" which essentially is a measure of the fiscal effort of the economies under consideration.

A panel data approach is used on account of the analysis's limited period of coverage (1990–2006). Furthermore, panel data have advantages over cross section or time-series data, in that they make it possible to account for latent heterogeneity and to reduce standard errors of point estimates (efficiency gains). The first challenge in the application of panel data models is the choice of estimation method, which is very important to the validity of the estimates, as pooling the cross section and the time-series dimensions reduces the range of consistent and efficient estimation methods. The following equation was estimated using fixed effects and systems generalized method of moments estimators (S-GMM) that are more efficient in addressing misspecification issues compared to the difference estimators of Arellano and Bond (1991), Arellano and Bover, (1995) and Blundell and Bond (1998) by combining one system—regressions in first difference and in levels:

$$y_{it} = \sum_{j=1}^{k} \alpha_j X_{it}^j + \rho b_{it-1} + u_{it} \tag{1}$$

Where

y is a measure of the basic primary fiscal balance; $X_{it}^j = j^{th}$ explanatory variable, $j=1...K$, a vector of macroeconomic, institutional, and political variables explaining changes in the fiscal indicator of interest; α_j are the parameters to be estimated; b_{it-1} represents the debt to GDP ratio lagged by one period; $\mu_{it} = \alpha_i + \varepsilon_{it}$, α = country-specific effects (country-specific intercept) accounting for heterogeneity in the group of countries under consideration; ε = error term; $i = 1...N$ (country index); $t = 1...T$ (time index); and

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[9] For WAEMU, we exclude Guinea Bissau because of breaks in the data resulting from civil war.

The main independent variables are as follows:

- *The lagged dependent variable* to ascertain the degree of persistence.

- *Debt-to-GDP ratio*. This variable is introduced to capture the response of fiscal stance to debt. As the CFA zone puts a limit on the level of debt-to-GDP ratio for the members, it is important to establish the extent to which the basic primary fiscal balance has been responding to the level of public debt.

- *Terms of trade*. Based on the discussions in Section II and III, a number of variables are introduced to capture the impact of changes in the terms of trade on fiscal indicator. Various indicators relating to exposure to terms of trade are considered— terms of trade in levels and changes in the terms of trade. The main advantage of using the terms of trade is that they can be considered to be exogenous; members of WAEMU and CEMAC have limited power over their terms of trade, as the prices of their exports (primary commodities) are determined in the world markets and their imports are mostly manufactured goods produced by industrial countries.

- *Output*. Different measures of output along the lines of terms of trade are also introduced to capture the transitory impact of the state of the economy on fiscal performance. In this regard, real GDP growth and real per capita GDP are considered.

- *Openness.* Defined as the ratio of exports of goods and services plus imports of goods and services to GDP. Openness increases a country's exposure to and vulnerabilities to external shocks, which lower revenue. At the same time, openness could be favorable to growth through its impact on TFP, thereby enhancing revenue performance.

- *Time dummy variables*. To account for the effects of trends over time we include dummy variables for each year.

B. Data

Data on revenues, expenditures, debt CPI, GDP, and terms of trade were sourced from the World Economic Outlook database (WEO) covering1990–2006. Disaggregated data on revenues and expenditures were used to derive the basic primary fiscal balance.

V. ANALYSIS OF RESULTS

Regarding the choice of estimator, consistency hinges on the validity of the explanatory variables as instruments. Based on the Sargan test, we do not reject the overall validity of the instruments; however, the high p-value suggests some degree of overfitting. The second specification test pertains to serial correlation of the residuals in that the null hypothesis of no first-order serial correlation of the differenced residuals was rejected, while the null of no second-order serial correlation of the differenced residuals was not rejected. This suggests that the orthoganality conditions hold.

The coefficient of the lagged basic primary fiscal balance was positive and significant in the fiscal reaction functions for both CEMAC and WAEMU, suggesting a high degree of persistence of the basic primary fiscal balance. This in turn implies that the current fiscal performance is strongly determined by that of the previous year.[10] In the face of supply or demand shocks, fiscal adjustment is not immediate, and in the absence of automatic stabilizers, the reaction of the fiscal authorities is likely to be procyclical.

We find a positive relationship between basic primary fiscal balance and debt. The coefficients on lagged debt to GDP in both zones were comparable in magnitude suggesting that for a 10 percent increase in the debt stock, the basic primary fiscal balance has to improve between 1−3 percent. The size of the estimated coefficient was at the lower bound of that estimated by Abiad and Baig (2005) for emerging markets, and may reflect the highly concessional nature of the debt contracted by these low-income developing countries. In addition, CFA zone members have received debt relief over the period under investigation, creating fiscal space.

Different measures of the level of economic activity point to a significant impact of economic performance on fiscal performance. In CEMAC and WAEMU, per capita GDP, which proxies for the tax base, was positive, significant, and comparable in magnitude. However, the coefficient of real GDP growth was negative in CEMAC but positive in WAEMU despite comparable average growth over the period. This may reflect the effects of higher volatility of output in CEMAC relative to WAEMU over the period under investigation.

In CEMAC, the estimated coefficient of the level of the terms of trade was positive and significant, suggesting an improvement in the basic primary fiscal balance. In contrast, the estimated coefficient in the WAEMU equation, although significant, was negative. The estimated coefficient in the CEMAC equation was larger relative to that in WAEMU, perhaps reflecting the significant role of oil in CEMAC economies.

The coefficient on openness was positive in both WAEMU and CEMAC equations, suggesting that, on balance, its favorable impact on growth through its impact on TFP outweighed the negative impact of risk exposure, thereby enhancing revenue performance.

While time dummies were not significant in the WAEMU equations, they were for CEMAC, suggesting that the basic primary fiscal balance was below the average for the periods 1992, 1994, 1998, 2001, and 2002. In particular, oil prices fell by 5 percent in 1994, the year of devaluation; and by 32 percent in 1998. This suggests that spending may not have adjusted quickly enough in response to lower oil revenues.

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[10] The coefficient for CEMAC fell within the range for βOLS 0.76 and βfixed effect 0.49 and for WAEMU βOLS 0.70 and βfixed effect 0.56.

VI. CONCLUSIONS AND POLICY IMPLICATIONS

In both CEMAC and WAEMU, fiscal performance in the previous period had a large and significant impact on fiscal outcomes in a given year. This suggests a strong degree of persistence, which could give rise to procyclical fiscal policy when these economies face adverse terms of trade shocks. In addition, the coefficient on the lagged debt to GDP in both zones was positive, comparable in magnitude, and consistent with the theory that higher levels of debt warrant greater fiscal effort. There was econometric evidence that the terms of trade significantly impacted the basic primary fiscal balance in both monetary unions. The impact on fiscal performance was larger in CEMAC countries. The impact of openness on fiscal performance was positive in both monetary unions despite the increased vulnerability to external shocks.

In light of the observed econometric results, there seems to be merit to evaluating fiscal-related convergence rules in light of vulnerabilities to external shocks. Given data challenges, the difficulties in constructing measures of output gap in developing countries, and ongoing structural change in these economies, the development of supplementary convergence criteria should be indicative and not be used to set fiscal targets. Assessment of fiscal performance based on adjusted balances could be overtaken by debates on statistics and methodologies rather than on required policy measures.

In light of the response of fiscal performance to terms of trade shocks, the rules should be sufficiently flexible to permit fiscal accommodation of short-term developments. This is essential, as a country's degree of dependence on primary commodities affects the volatility of tax revenues, and highly volatile revenues call for fiscal prudence in the face of positive shocks, i.e., saving part of the windfall in order to smooth spending during an economic downturn. Given the role of oil in CEMAC countries, the basic fiscal balance might not be the appropriate indicator of the fiscal stance, as these countries have met this convergence criterion since the advent of the most recent oil boom in 2000. The results on the response of primary balance to debt suggest that the debt limits need to be reconsidered, in light of considerable recent debt forgiveness.

REFERENCES

Abiad, A., and T. Baig, 2005, "Underlying Factors Driving Fiscal Effort in Emerging Market Economies," IMF Working Paper 05/106 (Washington: International Monetary Fund).

Arrelano, M., and S. Bond, 1991, "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations," *Review of Economic Studies,* Vol. 58, No. 2, pp. 277–97.

Arrelano, M., and O. Bover, 1995, "Another Look at Instrumental-Variable Estimation of Error-Components Models," *Journal of Econometrics,* Vol. 68, No. 1, pp. 29–51.

Baltagi, H.B., "Econometric Analysis of Panel Data," (N.J: J. Wiley & Sons).

Blundell, R., and S.R. Bond, 1998, "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models," *Journal of Econometrics,* Vol. 87, No. 1, pp. 115–43.

Bohn, H., 1998, "The Behavior of U.S. Public Debt and Deficits," *Quarterly Journal of Economics,* Vol. 113 (August), pp. 949–63.

Cashin, P., H. Liang, and C. J. McDermott, 1999, "How Persistent are Shocks to World Commodity Prices?" IMF Working Paper 99/80 (Washington: International Monetary Fund).

Cashin, P., and C. Patillo, 2000, "Terms of Trade Shocks in Africa: Are They Short-Lived or Long-Lived?" IMF Working Paper 00/72 (Washington: International Monetary Fund).

Clément, J.A.P., J. Mueller, S. Cossé and J. Le Dem, 1996, *Aftermath of the CFA Franc Devaluation,* IMF Occasional Paper 138 (Washington: International Monetary Fund).

Combes, J., and T. Saadi-Sedik, 2006, "How Does Trade Openness Influence Budget Deficits in Developing Countries?" IMF Working Paper 06/3 (Washington: International Monetary Fund).

Debrun, X, Masson, P and Pattillo (2005), "Monetary Union in West Africa: Who Might Gain, Who Might Lose, and Why?" *Canadian Journal of Economics*, Vol. 38, No.2, pp.454–481.

Doré, O., and P. Masson, 2002, "Experience with Budgetary Convergence in WAEMU," IMF Working Paper 00/108 (Washington: International Monetary Fund).

Fatás, A., 2000, "The Effects of Business Cycles on Growth," in N. Loayza and R. Soto (Eds.) *Economic Growth: Sources Trends and Cycles,* Central Bank of Chile, Santiago.

Gupta, S., B. Clements, B. Akitoby, and G. Inchauste, "The Cyclicality of Government Spending in Developing Economies," IMF Working Paper 04/202 (Washington: International Monetary Fund).

Hnatcovska, V., and N. Loayza, 2005, "Volatility and Growth," in Aizenman, J., and B. Pinto (Eds.), *Managing Economic Volatility and Crises: A Practitioner's Guide,* Cambridge University Press.

International Monetary Fund, 2003, World Economic Outlook, September 2003: A Survey by the Staff of the International Monetary Fund, World Economic and Financial Surveys (Washington).

Kaminski, G., C. Reinhart, and C. Vegh, 2004, "When It Rains It Pours: Procyclical Capital Flows and Macroeconomic Policies," in M. Gertler and K. Rogoff (Eds.) NBER *Macroeconomic Manual 2004,* Massachusettts: MIT Press.

Kaufmann, D., A.Kraay, and P. Zoido-Lobatón, 2002, "Governance Matters II—Updated Indicators for 2000/01," World Bank Policy Research Department Working Paper No. 2772, Washington D.C.

Lane, P., "Business Cycles and Macroeconomic Policy in Emerging Market Economics," mimeo, (Trinity College, Dublin, 2003b).

Martin, P., and C.A. Rogers, 2002, "Long-Term Growth and Short-Term Economic Instability," *European Economic Review,* Vol. 44, pp. 359–381.

Ramey, G., and V.A. Ramey, 1995, "Cross-Country Evidence of the Link Between Volatility and Growth," *American Economic Review,* Vol. 85, pp. 1138–1151.

Savvides, A., 1998, "Trade Policy and Income Inequality: New Evidence," *Economics Letters,* Vol. 61, No. 3, pp. 365–72.

Talvi, E., and C. A.Végh, "Tax Base Variability and Procyclical Fiscal Policy," NBER Working Paper No. 7499 (2000).

Table 1. CEMAC and WAEMU: Compliance with Selected Fiscal Convergence Criteria, 1994-2006 1/
(In percent of GDP, unless otherwise indicated)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006 Est.
CEMAC													
Basic fiscal balance (criterion: nonnegative) 2/						(As a percentage of GDP; criterion: non-negative)							
Cameroon	-7.5	-2.3	-3.8	-2.6	-2.4	-1.0	2.0	3.3	0.8	1.1	0.0	3.4	3.2
Central African Republic	-5.8	-2.3	-3.1	-1.9	-0.7	-1.8	-1.9	-1.0	-0.5	-3.3	-3.9	-4.5	0.4
Chad	-5.3	-2.8	-1.4	-1.0	-0.4	-2.0	-3.1	-2.4	-3.2	-3.4	-0.2	1.1	2.5
Congo, Republic of	-12.4	-7.1	-6.9	-6.1	-15.9	-0.6	7.1	8.9	-0.8	5.2	9.2	20.6	32.6
Equatorial Guinea	-2.7	-5.0	-5.0	2.9	-0.5	4.1	9.5	15.5	11.5	-1.7	9.9	22.3	15.7
Gabon	1.8	6.5	6.0	11.0	-1.3	4.3	13.9	7.7	6.8	10.8	11.0	12.5	15.1
Number of countries violating	5	5	5	4	6	4	2	2	3	3	2	1	0
Total debt/GDP (? 70 percent)													
Cameroon	145.6	90.3	85.4	86.9	81.1	83.3	80.4	73.2	50.1	47.1	44.2	36.4	3.1
Central African Republic	94.8	77.5	89.9	93.1	83.9	82.4	80.3	93.9	91.4	93.9	93.6	92.4	82.3
Chad	62.3	57.4	54.3	60.1	54.2	62.3	72.3	57.5	57.2	50.3	35.0	27.0	23.7
Congo, Republic of	270.2	262.8	212.2	220.0	264.4	231.6	164.9	192.8	200.9	215.6	229.6	98.7	82.5
Equatorial Guinea	218.1	140.1	92.9	46.7	59.7	61.1	36.3	24.8	10.2	10.1	6.2	3.6	2.7
Gabon	86.4	79.2	71.1	71.3	84.9	79.7	57.0	64.2	65.6	59.0	40.1	29.5	34.2
Number of countries violating	5	5	5	4	4	4	4	3	2	2	2	2	2
WAEMU													
Basic fiscal balance (criterion: nonnegative) 2/						(As a percentage of GDP; criterion: non-negative)							
Benin	-0.9	-0.7	1.3	1.5	3.3	2.7	1.9	0.4	0.1	-0.3	-0.4	-1.6	0.1
Burkina Faso	-2.7	-0.6	0.6	0.1	-0.5	-0.6	-1.4	-2.5	-3.7	-2.9	-3.1	-3.5	-4.3
Côte d'Ivoire	-3.0	-2.1	-0.4	-0.8	-0.8	-1.7	-0.3	1.1	-0.4	-2.4	-1.3	-1.6	-2
Guinea Bissau	-7.9	-0.1	-4.3	-0.3	-16.4	-9.3	-16.8	-13.1	-9.0	-10.6	-13.7	-24.6	-15.9
Mali	-3.1	-1.1	0.8	-0.5	0.2	-0.9	-0.6	-1.7	-1.3	-0.2	-0.7	-1.3	-0.6
Niger	-7.0	-3.7	-1.7	-3.0	-3.3	-4.8	-3.0	-3.4	-1.8	-2.0	-2.2	-1.5	-1.8
Senegal	-2.3	0.1	1.5	2.0	0.9	0.9	1.2	-1.4	1.8	0.5	-0.7	-1.2	-3.5
Togo	-8.3	-4.0	-3.6	-1.5	-3.0	-1.4	-2.7	1.5	0.3	2.6	1.4	-1.5	-2.7
WAEMU	-3.7	-1.6	-0.2	-0.3	-0.7	-1.1	-0.8	-0.8	-0.7	-1.1	-1.3	-2.0	-2.4
Number of countries violating	8.0	7.0	4.0	5.0	5.0	6.0	6.0	5.0	5.0	6.0	7.0	8.0	7
Total debt/GDP (? 70 percent)													
Benin	82.0	65.7	65.7	69.9	65.8	66.2	71.8	71.9	66.6	54.5	49.8	47.8	22.1
Burkina Faso	51.6	45.4	44.6	49.5	46.4	52.0	63.0	48.9	51.4	41.7	34.8	33.1	8.9
Côte d'Ivoire	176.1	146.1	133.2	120.5	84.9	88.8	108.0	106.0	88.9	90.2	88.7	75.3	177.4
Guinea Bissau	378.2	10.4	326.1	321.7	449.0	352.4	353.8	390.4	419.4	387.9	379.4	332.8	326.2
Mali	116.4	97.0	101.3	108.9	100.3	98.6	99.5	88.7	90.2	63.8	66.9	63.7	27.7
Niger	101.9	84.6	76.6	85.5	77.9	79.5	94.5	91.7	81.0	68.3	55.6	49.5	14.6
Senegal	84.1	79.4	80.4	79.3	85.2	74.8	76.2	74.3	82.2	72.4	67.3	59.9	44.9
Togo	121.1	93.9	85.6	73.8	79.7	73.3	98.2	94.4	93.9	89.7	79.6	73.0	67.8
WAEMU	122.0	97.7	97.7	95.1	83.2	81.8	93.4	88.6	83.9	74.3	69.6	62.2	70.2
Number of countries violating	7.0	5.0	6.0	6.0	6.0	6.0	7.0	7.0	6.0	4.0	3.0	3.0	2.0

Sources: IMF, World Economic Outlook database, July 2004; and staff estimates and projections.

1/ Revised set of criteria as valid from 2002 onward.
2/ Overall budget balance, excluding grants and foreign-financed investment.

Table 2. Explaining the Basic Primary Fiscal Balance

	CEMAC	CEMAC	WAEMU	WAEMU
Intercept	-0.28	-0.2	5.5	3.4
	(-6.87)***	(-3.49)***	(0.48)	(0.33)
Basic primary balance (t-1)	0.60	0.68	0.62	0.58
	(23.78)***	(10.71)***	(14.26)***	(14.38)***
Debt/GDP (t-1)	0.03	0.03	0.01	-0.0002
	(10.0)***	(4.93)***	(2.35)**	(-0.07)
Per capita GDP	0.02			0.01
	(3.55)***			(4.75)***
Real GDP growth		-0.28	0.13	
		(-3.06)***	(2.01)**	
Level terms of trade	0.09	0.1		-0.01
	(5.22)***	(3.57)***		(2.24)**
Terms of trade growth			0.01	
			(0.53)	
Openness	0.06	0.02	0.02	0.01
	(0.65)	(4.54)***	(2.08)**	(1.61)*
Year-1992	-0.05	-0.06		
	(-5.43)***	(-4.00)***		
Year-1994	-0.06	-0.08		
	(-1.74)*	(-1.67)*		
Year-1998		-0.05		
		(-1.70)*		
Year-2001		-0.02		
		(-1.77)*		
Year-2002	-0.03	-0.04		
	(-1.70)*	(-1.99)**		
Number of observations	96	96	112	112
Sargan test: p-value	0.99	0.99	0.96	0.99
AR(1) test: p-value	0.04	0.03	0.06	0.06
AR(2) test: p-value	0.27	0.23	0.60	0.54

   Notes: The basic primary fiscal balance is defined as revenues excluding grants minus total expenditures
excluding interest payments and foreign-financed capital spending. T-statistics are in parentheses and
*** denotes significant at the 1 percent level; ** denotes significant at the 5 percent level; and
* denotes significant at the 10 percent level. The coefficient on the lagged dependent variable
for CEMAC and WAEMU lies within the range for OLS and Fixed Effects estimators.