

WP/13/216

# IMF Working Paper

---

## Fiscal Discipline in WAEMU: Rules, Institutions, and Markets

*Ermal Hitaj and Yasin Kursat Onder*

**IMF Working Paper**

AFRW1

**Fiscal Discipline in WAEMU: Rules, Institutions, and Markets**

**Prepared by Ermal Hitaj and Yasin Kursat Onder<sup>1</sup>**

Authorized for distribution by Herve Joly

October 2013

**This Working Paper should not be reported as representing the views of the IMF.**

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

**Abstract**

This paper gauges the scope for market discipline and the effectiveness of the regional surveillance framework in the West African Economic and Monetary Union (WAEMU). The paper finds that the responsiveness of sovereign bond rates to governments' fiscal behavior in the regional financial market remains limited. In addition, the paper examines the effectiveness of fiscal rules and institutions in an environment where financial markets fall short of exerting a significant disciplining effect on governments.

JEL Classification Numbers: E43, E62, G12, H60, H63

Keywords: Fiscal discipline, fiscal rules, regional surveillance sovereign risk, sovereign spreads, WAEMU

Author's E-Mail Address: EHitaj@imf.org, YOnder@imf.org

---

<sup>1</sup> The authors are thankful to Herve Joly for continuous guidance, Douglas Shapiro for excellent research assistance, and participants in the AFR fiscal sector network seminar for helpful comments and suggestions. The views expressed herein are those of the authors and should not be attributed to the IMF, its Executive Board, or its management.

Contents		Page
I.	Introduction . . . . .	3
II.	Market Discipline Reviewed . . . . .	4
	A. Literature Review . . . . .	5
	B. An Overview of the WAEMU Sovereign Debt Market . . . . .	6
	C. Empirical Model Specification . . . . .	8
	D. Data and Estimation Results . . . . .	11
III.	Rules and Institutions: The EMU Experience and WAEMU . . . . .	13
	A. The EMU Experience . . . . .	13
	B. WAEMU and the EMU . . . . .	16
IV.	Discussion . . . . .	19
V.	Conclusion . . . . .	21
	References . . . . .	22
Appendices		
A.	Tables and Figures . . . . .	24
B.	Theoretical Model . . . . .	28
Tables		
1.	WAEMU: Treasury Bills Issuance (billions of CFA francs) . . . . .	7
2.	WAEMU: Baseline Results . . . . .	12
3.	WAEMU: Convergence Criteria . . . . .	24
4.	Countries Receiving Debt Relief . . . . .	25
5.	Descriptive Statistics . . . . .	25
6.	Alternative Specification: Basic Fiscal Balance . . . . .	26
Figures		
1.	WAEMU: Government Securities Emission (billions of CFA francs) . . . . .	8
2.	Euro Area General Government Budget Deficit (percent of GDP) . . . . .	14
3.	External Debt-to-GNP Ratio and Debt Relief . . . . .	25
4.	Ratio of Multilateral Debt to Total External Debt . . . . .	27
5.	Share of External Debt to Total Debt in WAEMU . . . . .	27

## I. INTRODUCTION

Achieving fiscal discipline in a monetary union without a central fiscal authority, while crucial for its stability, is a challenging task. A monetary union is likely to increase economic and financial interconnectedness among its members. Although regional integration is in itself a welcome development, it also brings new risks. One of them is that debt sustainability issues in one country could have a higher impact on the other members. Financial linkages, such as large holdings of public debt by banks in other countries of the union, can indeed be a powerful channel of transmission of a fiscal crisis from one country to the rest of the union, with implications for the stability of the latter as has been seen in the euro area. While ensuring fiscal sustainability in all the countries may be vital for the survival of a monetary union, some of its members may actually have incentives to overborrow in the absence of a credible commitment that no country will be bailed out by the others should it face an unsustainable debt burden. Countries with weaker fiscal situations benefit from the credibility of those with stronger public finances, and face lower interest rates than they would otherwise.

In such a context, fiscal discipline can in principle be supported by rules and financial markets. Fiscal rules can be useful in anchoring expectations and providing macroeconomic stability [Morris, Ongena, and Schuknecht, 2006], and have been viewed as a central pillar of the policy coordination framework that aims at ensuring the stability of a monetary union. Designing such rules is a delicate exercise: they need to help preserve fiscal discipline while leaving scope for countercyclical policies, since fiscal policy is the main tool to cope with asymmetric shocks in a monetary union. Market discipline can also help if a number of conditions are met, including free movement of capital, a credible no bail-out commitment, no monetization of the debt, and sensitivity of sovereign interest rates to fiscal behavior [Alexander and Anker, 1997].

This paper looks at the conditions necessary for fiscal discipline in the West African Economic and Monetary Union (WAEMU). The paper first evaluates the responsiveness of sovereign bond rates to governments' fiscal behavior in the regional financial market, thus gauging the market's ability to signal the need for fiscal discipline. Furthermore, it assesses the design and enforcement mechanism of fiscal rules in WAEMU through a comparative analysis. Finally, it discusses possible changes to the regional fiscal supervision architecture and ways to improve the regional financial market's ability to better discriminate based on fiscal behavior.

## II. MARKET DISCIPLINE REVIEWED

Market discipline in the context of sovereign borrowing can be broadly defined as the market's reaction to governments' fiscal behavior by pricing government bonds depending on market participants' perception of default risk. Put differently, it is the process during which differences in perceived default risks translate into variation in the interest rates. [Alexander and Anker \[1997\]](#) list the following as necessary conditions for market discipline to be effective in a monetary union:

1. Capital should be allowed to move freely.
2. National government debt must not be monetized by the central bank.
3. Member countries should be solely responsible for their own debt (the "no bail-out clause").
4. Interest rates must react strongly enough to put pressure on governments' fiscal behavior.

There are no restrictions on capital movement within the WAEMU area, and [Sy \[2010\]](#) finds that intra-WAEMU cross-border transactions in the T-bills market are high especially for countries with smaller banking systems.

The Central Bank of West African States (BCEAO) has price stability as its primary objective, and it does not engage in direct monetary financing of government debt. In fact, BCEAO's cash advances to national treasuries were discontinued in 2003, providing a catalyst for the growth of the local debt market.

Furthermore, the no-bailout clause has proven to be a de facto realistic assumption. One possible reason for the absence of a bailout mechanism in the past is that the resources necessary would have been difficult to mobilize within WAEMU, where per capita GDP in 2012 is estimated at about 770 US dollars, and all countries face domestic development challenges. The WAEMU authorities are working on a stability fund, which would address liquidity, but not solvency problems.

The absence of a viable bailout mechanism in the WAEMU was evident during the debt crisis of the 1980s and 1990s that required relief from the international community under the Highly Indebted Poor Countries (HIPC) Initiative. More recently, during the 2011 crisis in

Côte d'Ivoire, no bailout occurred, with the only assistance coming in the form of BCEAO help to rollover Ivorian debt. The Ivorian government and its short-term creditors agreed to restructure the rolled-over debt "into 2-year T-bills, 3- and 5-year bonds with interest rates of 4.75-5.25 percent (slightly below prevailing market rates)" [IMF, 2012]. The bulk of the creditors were WAEMU-area commercial banks, and the restructuring was done at no cost to governments of other WAEMU countries. The Malian government also rolled over its debt during the political and security crisis of 2012.

The rest of the section examines the fourth condition of market discipline, i.e. the responsiveness of sovereign interest rates to fiscal behavior. The section starts with a review of the literature on the determinants of interest rates, followed by a short overview of the regional government debt market. It then elaborates on the empirical model used in this paper, and discusses the regression results. A detailed theoretical treatment of the model is provided in the appendix.

### A. Literature Review

The theoretical strand of the literature aims at laying out a framework to explain the interest rate spreads. Eaton and Gersovitz [1981] and Arellano [2008] provide a theoretical explanation of the determinants of the interest rate by building up a debt repudiation model. The main determinants of interest rate spreads in these models are debt and fiscal deficit levels, with the opportunity cost of default being a key dimension.

On the other hand, empirical findings regarding the impact of macroeconomic indicators on the interest rates have been heterogeneous, with a number of country-specific and cross-country studies producing different results. Gale and Orszag [2002] review 58 papers and find that in half of them fiscal deficit displays a predominantly positive and significant effect on interest rates, while the rest show either mixed or insignificant effect. Engen and Hubbard [2004] reach similar conclusions. Edwards [1984] finds evidence of the importance of external debt and debt service as key determinants of the variation in the interest rates along with GDP growth and export growth. Higher inflation should increase the cost of borrowing, as investors would want to be compensated for the loss in purchasing power. However, in a monetary union with cross-border transactions the link between inflation and interest rate differentiation across members is less direct, and inflation would not be expected to have a significant effect.

Global factors have also received attention when explaining variation in interest rates. During a global crisis resources in advanced countries might dry up, reducing funds available for investing in emerging and developing markets. Thus, even though countries might have consistently implemented sound macroeconomic policies, they might find their spreads increasing because of global savings or liquidity considerations. [Uribe and Yue \[2006\]](#) document that global risks have the potential to affect an individual country through world-interest-rate shocks. The Federal Reserve funds rate has been commonly used to capture the liquidity effect in the global markets.

While many papers have looked at the role of macroeconomic fundamentals, the effect of currency area spillovers on interest rates has received limited treatment in the empirical literature. If the no-bailout clause is perceived as unrealistic by the markets, deterioration in the fiscal balance of a member country might give way to concerns and lead to higher interest rates in other countries as well. [Faini \[2006\]](#) shows both empirically and theoretically that there are substantial spillovers among member countries in the the European Union (EU), and a fiscal expansion in a country will increase the interest rates in other countries.

## **B. An Overview of the WAEMU Sovereign Debt Market**

The regional government debt market has become an important source of financing for a number of WAEMU countries (Table 1). The elimination of BCEAO statutory advances to governments from 2003 served as a catalyst for the government securities market, which was sustained by excess liquidity in the banking system [[Sy, 2010](#)]. Banks' demand for government securities has gradually increased, sustained by several incentives. Interest earned on government securities is tax free, these securities carry a zero risk weight in the capital adequacy ratio calculation, and they are tradable across the WAEMU. Although most countries have issued government debt in the regional market, the three largest issuers accounted for about 88 percent of T-bills issued during 2009/2011, with Côte d'Ivoire alone issuing about 70 percent.

While the WAEMU debt market is dominated by government bills and bonds<sup>1</sup>, securities issued include bills and bonds issued by regional institutions, non-WAEMU institutions, and corporates [[Diouf and Boutin-Dufresne, 2012](#)]. Government securities issued in the WAEMU market consist mostly of T-bills. (Figure 1) The investors are predominantly regional banks.

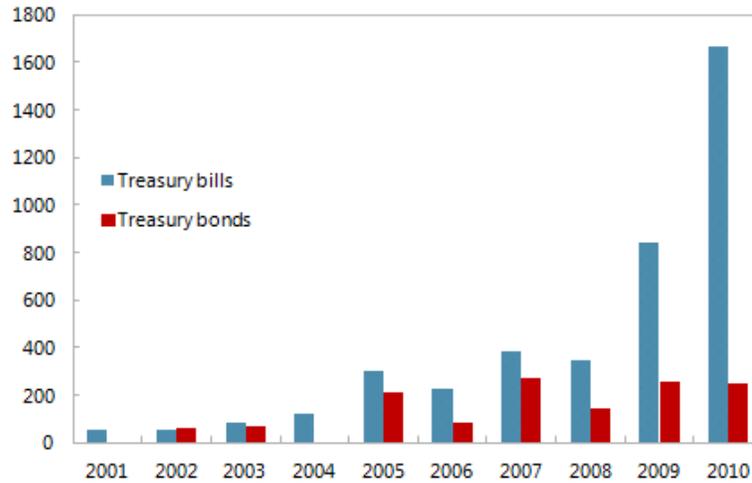
---

<sup>1</sup>Treasury bills have a maturity of 3/24 months, and Treasury bonds of 2/7 years.

**Table 1. WAEMU: Treasury Bills Issuance (billions of CFA francs)**

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Benin	0.0	0.0	0.0	0.0	23.4	45.6	0.0	40.1	119.7	119.8	237.7
Côte d'Ivoire	0.0	0.0	16.3	15.7	47.5	0.0	164.8	103.0	538.3	1245.9	2278.8
Mali	12.0	0.0	15.2	21.0	114.9	44.1	53.1	30.5	54.1	99.5	119.6
Senegal	42.9	0.0	23.0	45.3	35.5	50.8	67.2	63.2	82.0	94.7	238.8
Burkina Faso	0.0	51.9	30.9	41.5	43.3	50.9	46.9	61.0	34.3	43.6	160.8
Niger	0.0	0.0	0.0	0.0	30.0	23.3	50.0	35.0	0.0	35.0	64.5
Guinea-Bissau	0.0	0.0	0.0	0.0	6.0	6.7	0.0	0.0	0.0	0.0	0.0
Togo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	15.0	30.0	60.0
WAEMU	54.9	51.9	85.4	123.5	300.5	221.4	382.0	342.7	843.5	1668.5	3160.2

The excess bank reserves in the region are of a short-term character [Sy, 2010], rendering the 3/month and 6/month bills particularly attractive instruments. Furthermore, while cross-border transactions are non-negligible, foreign participation in the market remains marginal, and there is no organized secondary market [Diouf and Boutin-Dufresne, 2012].

**Figure 1. WAEMU: Government Securities Emission (billions of CFA francs)**

### C. Empirical Model Specification

The empirical model used in this paper to study how sovereign interest rates respond to macroeconomic indicators is based on the econometric specifications used frequently in the literature. The determinants of the country spreads have been widely studied in several papers, some of which are discussed above, and this section relies on a select few for the choice of variables in equation (1).

There is no consensus in the literature regarding the true econometric model, and we will use the following unbalanced panel data specification for our baseline model:

$$Y_{it} = \beta X_{it} + \lambda E_t + \gamma O_{it} + \mu_{it}, i = 1, \dots, N; t = 1, \dots, T \quad (1)$$

where  $Y_{it}$  is the interest rate for each country  $i$  and year  $t$ .  $X_{it}$  is a menu of explanatory variables,  $E_t$  denotes the ratio of excess reserves to GDP in the WAEMU area,  $O_{it}$  denotes the WAEMU area overall fiscal balance to GDP ratio<sup>2</sup>, and  $\mu_{it}$  is the error term.

One issue with (1) is the potential for time-invariant unobservable country characteristics  $v_i$  (fixed effects) to be correlated with  $X_{it}$ , which would cause the former to be stored in the error

<sup>2</sup>The variable is a GDP-weighted WAEMU area overall fiscal balance to GDP that is calculated separately for each country excluding that country's own fiscal balance, thus varying across countries and years.

term  $\mu_{it}$  and the estimators to be biased.

$$\mu_{it} = v_i + \varepsilon_{it} \quad (2)$$

A good way to get rid of the country-specific unobservable characteristics is a fixed-effects (FE) estimation. The fixed effects model eliminates  $v_i$  by demeaning the variables using the following within transformation:

$$Y_{it} - \bar{Y}_i = \beta(X_{it} - \bar{X}_i) + \lambda(E_t - \bar{E}) + \gamma(O_{it} - \bar{O}_i) + (v_i - \bar{v}_i) + (\varepsilon_{it} - \bar{\varepsilon}_i)$$

The demeaned equation can be written as

$$\check{Y}_{it} = \beta\check{X}_{it} + \lambda\check{E}_t + \gamma\check{O}_{it} + \check{\varepsilon}_{it} \quad (3)$$

Since  $v_i$  is constant,  $v_i = \bar{v}_i$ , so the fixed effect is eliminated. The FE estimators can now be obtained by an Ordinary Least Squares (OLS) regression of  $\check{Y}_{it}$  on  $\check{X}_{it}$ ,  $\check{E}_t$ , and  $\check{O}_{it}$ .

It is, however, quite plausible for interest rates to be affected by their own lagged values. Markets might be slow to react to news about macroeconomic fundamentals and display a certain path dependence in determining countries' borrowing costs. That would necessitate estimating the following equation:

$$Y_{it} = \alpha Y_{i,t-1} + \beta X_{it} + \lambda E_t + \gamma O_{it} + \mu_{it}, i = 1, \dots, N; t = 1, \dots, T \quad (4)$$

The challenge, then, becomes accommodating the dynamic specification in (4) while still accounting for the country-specific effects. One could get rid of the country-level unobservable characteristics by first-differencing (4) and obtaining

$$\Delta Y_{it} = \alpha \Delta Y_{i,t-1} + \beta \Delta X_{it} + \lambda \Delta E_t + \gamma \Delta O_{it} + \Delta \mu_{it} \quad (5)$$

First-differencing equation (2), one obtains

$$\mu_{it} - \mu_{i,t-1} = (v_i - v_i) + (\varepsilon_{it} - \varepsilon_{i,t-1}) = \varepsilon_{it} - \varepsilon_{i,t-1} \quad (6)$$

This means that equation (5) can be written as

$$\Delta Y_{it} = \alpha \Delta Y_{i,t-1} + \beta \Delta X_{it} + \lambda \Delta E_t + \gamma \Delta O_{it} + \Delta \varepsilon_{it} \quad (7)$$

However, in (7), the inclusion of the lagged dependent variable  $\Delta Y_{i,t-1}$  gives rise to possible autocorrelation, and endogeneity is a well-known problem for this type of model as causal-

ity may work the other way. Indeed, the fall in volatility of the debt to GDP-ratio may be the result of a drop in spread volatility, whereas the volatility of debt stock itself may not have changed at all. The OLS fixed-effects estimation is thus not an option, because it would result in biased estimates. To solve this, [Blundell and Bond \[1998\]](#) developed a GMM Instrumental Variable estimation method, where the first-differenced lagged dependent variable is instrumented with further lagged levels. The Blundell-Bond estimator is thus the estimator needed to accommodate a dynamic specification, accounting, at the same time, for time-invariant country characteristics. The explanatory variables included in (7) are the following:

1. Macroeconomic characteristics: these variables have been widely used and found to be of significance in explaining the variance of the interest rates and include (i) Overall fiscal balance as a share of GDP. A higher fiscal deficit would decrease the likelihood of a government's willingness/ability to repay its debt when hit by a negative shock and would thus increase the default probability and the interest rate charged. (ii) General government's debt-to-GDP ratio, which is theoretically found to be monotonic with regard to the default probabilities. An increase in a government's debt-to-GDP ratio will decrease the government's ability to honor its debt and cause interest rates to increase. We use here domestic debt (issued almost exclusively in the WAEMU market), because most of foreign debt is on non-competitive concessional terms. (iii) Inflation rate, which is a key indicator of macroeconomic stability and the cost of living. Higher inflation is expected to increase the nominal interest rate requested by investors.
2. The level of excess bank reserves in the regional market is a factor that can influence interest rates in all countries. Better liquidity conditions in the union are likely to result in lower interest rates for all sovereigns, given the limited investment opportunities in the private sector.<sup>3</sup>
3. WAEMU area overall fiscal balance-to-GDP ratio, which is a proxy for liquidity demand in the region.
4. The paper gauges political risk by including an index provided by the International Country Risk Guide (ICRG) prepared by the PRS Group. The political risk index is obtained through assigning risk points to a weighted non-linear combination of various dimensions including, among others, government stability, internal conflict, corruption,

---

<sup>3</sup>For WAEMU countries the Federal Reserve funds rate may not be an optimal liquidity proxy because the regional financial market is still developing, and transactions with the rest of the world are quite limited. Hence, this paper will capture the liquidity effect using the overall level of excess reserves in the WAEMU banking system.

and religious tensions. The downside of this index is that it is compiled on the basis of subjective analysis of the available information.

The estimation results are discussed in the following section.

#### **D. Data and Estimation Results**

The data set used in this paper consists of all WAEMU countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo) over the period 1997/2011. All data used in the estimations are of yearly frequency. The dependent variable is the average short-term annualized interest rate a country is charged by markets.<sup>4</sup> The interest rates are obtained from the BCEAO, and the political risk variable is compiled by the PRS Group. The descriptive statistics are shown in Table 5 in Appendix B.

Table 2 presents the regression results for different methodological specifications. The first two columns present the results from a pooled OLS regression. The next two columns present the estimates obtained by using the Blundell-Bond estimator. As explained in the previous section, a dynamic model with one lag is deemed the most appropriate specification.<sup>5</sup> The discussion in this section is thus based on the results of the Blundell-Bond estimation.

The point estimates for the fiscal variables display the expected effects in the baseline model with lagged dependent variables as instruments. An increase in the level of domestic debt has a positive and significant effect on the interest rate, and it remains robust to the inclusion of the political risk variable. The effect of an improvement in the overall fiscal balance on interest rate is expectedly negative, but it loses its significance once political risk is accounted for.<sup>6</sup> This indicates that, while the channels for market-induced fiscal discipline are weak, financial markets do respond to countries' perceived fiscal health and discriminate among them by charging lower interest rates to countries in better standing.

An increase in excess bank reserves has a significant and relatively large negative effect on interest rates, with the magnitude of the coefficients being at least 10 times larger than that of

---

<sup>4</sup>The interest rate used in this paper is the annualized yield at issuance. While an imperfect measure, this is the only one available.

<sup>5</sup>The Durbin-Watson test tests points to autocorrelation in the residuals of the Fixed-Effects OLS regression. However, while helpful in correcting for autocorrelation, the dynamic specification is primarily a model choice that is believed to better reflect the data generation process.

<sup>6</sup>These results do not change when one uses an alternative measure of fiscal balance (Table 6 in Appendix A).

either fiscal variable above. In addition, an improvement in the WAEMU-wide average fiscal balance (excluding a country's own) has a negative and significant effect on interest rates.

**Table 2. WAEMU: Baseline Results**

	(OLS, fe)	(OLS, fe)	(Sys GMM)	(Sys GMM)
	Int Rate	Int Rate	Int Rate	Int Rate
Overall balance to GDP	-0.125 (0.178)	-0.0816 (0.407)	-0.153*** (0.001)	-0.0577 (0.274)
Domestic debt to GDP	-0.000632 (0.992)	-0.0101 (0.874)	0.0944** (0.013)	0.103*** (0.006)
Inflation	-0.0464 (0.383)	-0.0534 (0.323)	0.0608** (0.016)	-0.0201 (0.487)
Excess reserves to GDP	-1.314*** (0.000)	-1.351*** (0.000)	-0.787*** (0.000)	-1.290*** (0.000)
WAEMU overall balance to GDP	-0.154 (0.537)	0.0367 (0.892)	-0.498*** (0.000)	-0.228* (0.099)
Political risk Rating		-0.0946 (0.114)		0.0502*** (0.000)
Lagged interest rate			0.736*** (0.000)	0.528*** (0.000)
Constant	6.081*** (0.000)	11.84*** (0.001)		
Observations	57	52	52	47
$R^2$	0.3970	0.4593		

$p$ -values in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

A rise in inflation does not affect the interest rates significantly, which is what one would expect in a currency union. Furthermore, all borrowing takes place in the regional market, which means there is no exchange rate risk, and capital is easily transferrable. Thus, an investor from country X can invest in country Y T-bills without the real rate of return being affected by country Y inflation.

The political risk variable seems to play a significant role in explaining the variation on the interest rates. Political risk rating can be thought of as a proxy for the market's perception

of the government's political stability. The results suggest that as political instability rises, the markets start losing their confidence on government's ability to repay and demand higher interest rates.

One of the possible limitations of this study is the relatively high share of concessional debt as it is illustrated in Figure 4 and Figure 5. The availability of soft concessional financing reduces the recourse to market borrowing and may reduce sovereign borrowing costs in the regional market. The lack of bond market depth and a secondary market to trade the government bonds is another limitation one should be aware of, because it is likely to violate the perfectly competitive lenders assumption that has been widely adopted by the theoretical literature.

All things considered, while the significance of the debt variable indicates that markets do discriminate based on perceived fiscal health, the magnitudes of the effects of the WAEMU-level excess reserves and overall balance indicate that availability of and demand for liquidity in the regional market are even more important determinants of the borrowing costs. This is in line with the results from Sy [2010], who finds that supply and demand conditions are the most important determinants of the yield curve in WAEMU.

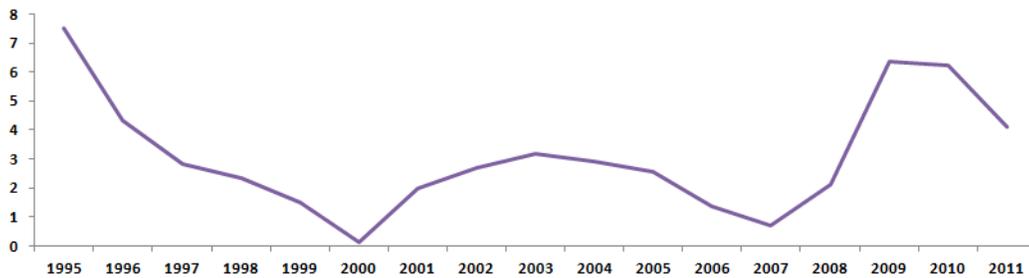
### **III. RULES AND INSTITUTIONS: THE EMU EXPERIENCE AND WAEMU**

#### **A. The EMU Experience**

Large divergences in public finances cast doubt on the viability of a monetary union in Europe, and achieving fiscal convergence before entering the union was considered a crucial step. This is why fiscal criteria occupied a central role in the Maastricht Treaty of 1992, which required candidate countries to reach a deficit level lower than 3 percent of GDP and a debt level lower than 60 percent of GDP before joining the European Economic and Monetary Union (EMU). The European Stability and Growth Pact (SGP) of 1997 aimed at preserving the fiscal consolidation momentum from the convergence process and maintaining fiscal discipline in the EMU. The SGP emphasized that the EMU would not engage in monetary financing of fiscal deficits, and that member countries would have to shoulder the cost of fiscal indiscipline on their own without recourse to common funds (the no-bailout clause). In addition, the SGP stipulated that, after gaining membership, members' fiscal policies should be consistent with a non-negative budget balance in the medium term. Recognizing the necessity of government spending to boost aggregate demand or enact structural reforms in the short

term, the SGP maintained the deficit limit of 3 percent of GDP, which, under the assumption of a nominal growth of 5 percent in the long run, is consistent with a steady-state public debt at 60 percent of GDP. Bringing and maintaining public debt below 60 percent was the other fiscal criterion. The SGP included an Excessive Deficit Procedure (EDP), under which, after the European Commission had identified a deficit in excess of 3 percent of GDP, the Economic and Financial Affairs (ECOFIN) Council would decide on whether the limit had been breached, make recommendations to the member country, and establish a deadline for corrective action. A deficit above 3 percent would be considered temporary and excused from being subject to the EDP if a country experienced a 2 percent decline in real GDP.<sup>7</sup> Countries would be expected to bring their deficit below the limit in the next year, unless there were “special circumstances,” which were not clearly specified.

**Figure 2. Euro Area General Government Budget Deficit (percent of GDP)**



Source: OECD Database.

The initial experience with the SGP was largely positive, with the euro area deficit being brought close to zero by 2000 (Figure 2). However, with the momentum from the EU accession process waning and the oncoming of a slight economic downturn, government spending and tax cuts contributed to a deterioration of fiscal balances [Schuknecht and others, 2011]. By 2003, the euro area deficit had exceeded 3 percent of GDP, with Germany and France breaching the limit for two consecutive years. The implementation of the EDP was blocked, and the SGP criteria came under scrutiny for being too rigid and not taking into account a country’s economic conditions. This led to discussions about a revision of the SGP, which was ultimately adopted in 2005. The medium-term objective (MTO) was not anymore a non-negative balance for all member countries, but an objective to be set by individual countries depending on debt levels and growth prospects. The debt limit of 60 percent of GDP and the deficit limit of 3 percent of GDP were maintained in the 2005 reform. However, exceptional

<sup>7</sup>A real GDP fall between 0.75 and 2 percent could also be considered an exceptional circumstance if supported by further evidence.

circumstances were relaxed to include an annual decline of any size in real GDP, or even a protracted period of very low growth. In addition, in deciding whether the deficit was excessive or not, the ECOFIN council could consider other relevant factors, such as potential growth and the business cycle, allowing for an assessment of the fiscal stance in cyclically-adjusted terms beyond the 3 percent headline deficit limit. Furthermore, while in the original SGP excessive deficit had to be eliminated in the year after it had been identified, in the reformed SGP the expected correction was a minimum of 0.5 percent of GDP a year. To sum up, the decision framework was made more flexible, and "the time frame for correcting deficits was relaxed, while procedural deadlines were extended".<sup>8</sup> While rendering the SGP more flexible, the 2005 reform had the potential of weakening the EDP<sup>9</sup> and contributing to a loss of fiscal discipline.

The revised SGP initially was accompanied by an improvement in nominal government balances. However, this improvement was primarily due to the economic growth, which in some countries was led by the real estate boom, and in fact the expenditure stance was expansionary [Hauptmeier, Sanchez-Fuentes, and Schuknecht, 2011]. This stance was exposed by the onslaught of the global financial and economic crisis, which reduced incomes and revenue and contributed to fiscal imbalances across the euro area, with Southern Europe and Ireland among the highest deficit countries. The (long-delayed) reaction of the financial markets increased interest rates for the above-mentioned countries and exacerbated the crisis, which called for another revision of the SGP. The revision entailed a new Treaty on Stability, Coordination, and Governance in the Economic and Monetary Union that was signed in 2012. The fiscal component of the treaty, also known as the Fiscal Compact, limits the structural (cyclically adjusted) deficit to a maximum 0.5 percent of GDP. This limit can be expanded to 1 percent for countries where the debt level is below 60 percent and risks of debt sustainability are low. This deficit limit rule will be incorporated into the national legal systems, and an automatic correction mechanism will be triggered if the limit is breached. The EDP in the Fiscal Compact is, as before, also triggered by a nominal deficit above 3 percent of GDP. In addition, the Fiscal Treaty entails a debt-correcting mechanism, wherein countries with debt levels above 60 percent of GDP are required to reduce debt in excess of the 60 percent limit by 5 percent yearly.<sup>10</sup>

---

<sup>8</sup>Schuknecht and others [2011].

<sup>9</sup>ECB [2005].

<sup>10</sup>The 5 percent refers to the 1/20th rule, which stipulates that annual debt reduction should be no less than 1/20th of the debt exceeding 60 percent of GDP.

The new Treaty was signed by all members of the EU except the Czech Republic and the United Kingdom, and entered into force on January 1, 2013 for the 16 countries that completed the ratification before that date.<sup>11</sup> By end 2013, countries need to translate its provisions into national legislation. National governments will be given a timeframe to converge to the structural balance described above. Although more stringent and potentially more effective, the success of the new Fiscal Treaty will depend on oversight and implementation, which were the Achile's heel of both the original and revised SGP.

## **B. WAEMU and the EMU**

WAEMU fiscal rules, as specified in the union's treaty, are part of the larger convergence framework, whose underlying objectives are medium-term sustainable and inclusive growth, sustainability of the balance of payments, and improvement of the external competitiveness of the region. There are four first-order criteria, three of which relevant are to the fiscal realm: basic fiscal balance-to-GDP ratio should be zero or positive,<sup>12</sup> overall debt-to-GDP ratio should be less than 70 percent, and governments are prohibited from accumulating arrears into the following year. The fourth first order criterion stipulates that the average annual inflation rate should not exceed 3 percent.

The debt and deficit criteria are similar in spirit to those of the EU. However, they reflect not only the need to achieve fiscal discipline and ensure fiscal space in times of need, but also the need to prevent crowding out of private investment by the public sector. This is evident from the exclusion of foreign-financed capital expenditure from the basic balance definition. The focus on encouraging investment is reinforced by the second-order criteria, which include limiting the wage bill to 35 percent of tax revenue, and setting a 20 percent floor on the ratio of domestically financed investment to tax revenue.

Furthermore, the design of the fiscal rules reflects the recognition that the fiscal policy of member states needs to be consistent with the monetary policy of the union, whose main objective is price stability and the maintenance of the fixed exchange rate.

---

<sup>11</sup>For countries that finalized the ratification process after January 1, 2013 it is expected to enter into force in the first day of the month following the ratification.

<sup>12</sup>The basic fiscal balance is defined as total fiscal revenues, excluding grants, minus total expenditures excluding foreign-financed investment expenditure. From 2009, total fiscal revenues plus budget support grants plus counterpart of HIPC/MDRI-related spending for both current and capital spending less current expenditure and capital expenditure financed by own resources.

The debt limit, set at 70 percent of GDP, is higher than the debt limit in the EMU, which stands at 60 percent of GDP. However, debt in WAEMU is to a significant extent on concessional terms, and therefore its true tax burden may be overestimated by a nominal ceiling. In addition, this limit was set before the implementation of the Enhanced Heavily Indebted Poor Countries (HIPC) Initiative and the Multilateral Debt Reduction Initiative. With Côte d'Ivoire the last country to reach the completion point under the HIPC Initiative, WAEMU's average debt-to-GDP ratio in 2012 is estimated at 40.9 percent. This renders the debt limit largely non-binding, and an eventual amendment necessary if the criterion is to reflect the indebtedness level of the region. Disallowing accumulation of arrears into the following year is an important measure that aims at reducing opportunities for "creative accounting" [Milesi-Ferretti, 2004] and non-deficitary debt accumulation.

The institutional setup of the multilateral surveillance framework displays similarities to that of the EMU. The entity that monitors member countries' compliance with the convergence criteria is the WAEMU Commission. As part of the monitoring process, the commission prepares a half-yearly progress report and makes recommendations for correcting measures in case of non-compliance. The recommendations are made public only if the WAEMU Council does not achieve the two thirds majority necessary to act on the commission's recommendations.

The commission's counterparts in each member country are the National Committees for Economic Policy (NCEP), established to assist the commission with gathering and analyzing country data and monitoring progress toward the convergence criteria. To that end, the NCEPs produce quarterly reports on their countries' economic situation.

The correcting mechanism in place in WAEMU, although similar to the Excessive Deficit Procedure (EDP) of the SGP revised in 2005, displays some important differences. The member country is given 30 days to develop, in cooperation with the commission, a strategy to correct the budget deficit. The WAEMU Council publishes the commission's report, may support a member country in seeking financial support for the implementation of the corrective measures, and grant "priority access to available WAEMU resources." While the character and size of these resources is unclear, this assistance commitment goes beyond that offered by the EU to member countries in EDP. This is because (at least in theory) the EU treaty stipulates that members "shall not be liable for or assume the commitments of central governments, regional, local, or other public authorities, other bodies governed by public law, or public undertakings of another member state, without prejudice to mutual financial guarantees for the joint execution of a specific project" [EU, 2007].

According to the WAEMU Treaty, in case a government does not come up with a plan to correct its fiscal deficit within 30 days after being warned, or if the commission deems that the corrective measures have not been properly executed, it proposes to the council a series of sanctions as follows: i) the publication of a statement on the country's economic situation; ii) the withdrawal of the assistance discussed above; iii) the recommendation to the West African Development Bank to review its intervention policy vis-a-vis the country; iv) and the suspension of the resources of the union to the member state; Although the basic fiscal balance criterion has been repeatedly breached (Table 3), the above mentioned sequence of sanctions has, to the authors' best knowledge, never been implemented.

The EDP mechanism in the WAEMU is less precise than that of the EMU. To start with, there is no clear understanding of how much time a country is given to take corrective measures between the steps listed above. Furthermore, assuming a country announces additional corrective measures after step i), it is not clearly specified, if the measures prove insufficient, whether the process continues from step ii or reverts to step i. It is also unclear what constitutes an acceptable adjustment. If a country has a basic fiscal deficit-to-GDP ratio of 2 percent, are they supposed to return to balance during the next period, or is a yearly adjustment of 0.5 percent (as is the case in the reformed SGP of 2005 in the EU) considered satisfactory? Finally, unlike in the EDP of the EMU, the monetary value of the sanctions envisioned in steps iii and iv is unspecified.

The ambiguity of the implementation mechanism above is compounded by the leeway provided by Article 71 of the WAEMU Treaty, which states that, if a member country is experiencing economic distress or is susceptible to such distress because of exceptional circumstances, the WAEMU Council can, conditional on unanimity, exempt it from the obligation to meet part or all of the convergence criteria. The region has been historically susceptible, among other things, to droughts, terms-of-trade deteriorations, and political instability, which makes Article 71 a potential exemption clause in a broad range of circumstances.

Fiscal rules are even more vital to fiscal discipline in monetary unions than they are in individual countries. However, they need to be appropriately designed and well enforced. A comparative analysis of WAEMU's fiscal supervision architecture shows that, while WAEMU fiscal rules are at least as strict as EMU rules, the implementation mechanism is considerably vaguer. This indicates that WAEMU's fiscal supervision framework has room for refinement, and the following section elaborates on possible improvement strategies.

#### IV. DISCUSSION

Although financial markets do react to fiscal variables, the main determinants of sovereign borrowing costs in WAEMU remain the relative supply and demand of loanable funds in the regional financial sector. The effectiveness of market monitoring needs to be improved for markets to exert a meaningful disciplining effect on government behavior.

The development, deepening, and diversification of the regional financial market is a key component of market oversight, because “market discipline is most effective in competitive and well-functioning markets” [Manganelli and Wolswijk, 2009]. The WAEMU financial market, while considerably deeper than a decade ago, is still in its early phase of development, which results in imperfect pricing of sovereign borrowing and insufficient market monitoring. The large amount of excess liquidity indicates that sovereign borrowing constraints are not binding. This is corroborated by the differential between sovereign borrowing rates and private sector rates. The latter remain considerably higher primarily owing to high ratios of non-performing loans and legal costs.

Reliance, if partial, on foreign and concessional financing is another factor that relaxes governments’ borrowing constraints and contributes to weakening the market discipline channel. Given the substantial development financing needs, concessional financing is bound to remain a preferred borrowing method when available. However, one could still envision other measures to improve sovereign bond pricing, such as informing and educating market participants about sovereign risks. Further measures could include introducing, based on debt-sustainability assessments, a non-zero risk weight for government paper in the financial institutions’ capital adequacy calculations.

On the other hand, the fiscal supervision framework needs further refinement. The current debt ceiling was set at a time when debt ratios were much higher (Table 3). Recent research conducted by World Bank and IMF staff in the context of the debt sustainability framework (DSF) suggests that a ceiling of 70 percent of GDP may be higher than desirable from the perspective of limiting the risk of debt distress. It could be lowered to closer to 50 percent, which is the level suggested by World Bank and IMF staff for countries with low to medium quality of policies and institutions in the sense of the DSF (i.e., countries with a Country Policy and Institutional Assessment (CPIA) index between 3.25 and 3.75). Most of the WAEMU countries indeed have a medium CPIA score. Whatever its level, the ceiling should be seen as a debt level to avoid reaching, not as an optimal level.

The design of the fiscal balance criterion could also be reconsidered if its main objective is to preserve fiscal sustainability. The exclusion of foreign-financed capital expenditure from the current definition raises two issues: first, it excludes a substantial source of debt accumulation, which in the past was a major contributor to overindebtedness; second, it discriminates among sources of financing to the detriment of regional financing at a time when it might actually be desirable to develop the regional market. An overall deficit target would allow better control over debt accumulation and would not create distortions. If the authorities were to move in this direction, the next issue to address would be how to set the ceiling for the overall deficit to both ensure debt sustainability and allow for countercyclical policy responses.

A solution considered in the euro area has been to set a target for the structural (cyclically-adjusted) balance. [Masson and Doré \[2002\]](#) and [Dufrénot, Houessou, and Nonfodji \[2007\]](#) suggest a definition of basic fiscal balance that is sensitive to output fluctuations and terms-of-trade shocks. However, such an approach may be more challenging to implement in the WAEMU, because of the absence of clear business cycles and data quality and availability issues. Determining cyclicalities is not a straightforward exercise even in advanced countries. A possible alternative approach would be to use as a reference for the ceiling the deficit level that would stabilize the debt ratio in the steady state. For instance, assuming nominal GDP grows by 7 percent at the steady state (5 percent for real growth and 2 percent for inflation, which is the BCEAO's objective), a deficit of 3.5 percent stabilizes the debt ratio at 50 percent. The ceiling could be set slightly below this level, while allowing it to exceed it temporarily (and by a limited amount) under exceptional circumstances.

Finally, the monitoring and enforcement mechanism may need to be strengthened. The WAEMU Commission encounters difficulties collecting the information it needs to do effective regional surveillance; for instance, the data on fiscal arrears do not seem easily available. The timeliness of information may also be an issue. Improving the availability, quality, and timeliness of information is critical if the regional institutions are to exercise meaningful surveillance. Another issue is enforcement. The sequencing of the steps in the WAEMU EDP correction mechanism needs to be better defined, and include specific deadlines. The monetary penalty could also be better specified, with a possible escalation as the duration of deviation from the rule increases. However, although the design of the EDP could perhaps be improved, the more fundamental issue is the readiness of member states to subject themselves to strong oversight and possible sanctions from their peers. This is obviously a highly political issue, and perhaps not an urgent one, but it will need to be addressed in the medium term.

## V. CONCLUSION

The determinants of interest rates by financial markets in the WAEMU region are explored using a yearly panel of country data for the 1997/2011 period. Estimation results indicate limited interest rate sensitivity to fluctuations in domestic debt and deficit. The variables with the largest coefficients are the WAEMU area overall deficit and excess bank reserves, indicating that the strongest determinant of interest rates is availability of and demand for liquidity in the WAEMU banking system.

A comparison of WAEMU's fiscal supervision architecture with that of the EMU shows that, while WAEMU fiscal rules are similar in spirit to EMU rules, the enforcement mechanism is weaker. Furthermore, the debt and deficit criteria could be reconsidered to better reflect the region's indebtedness levels, and accurately measure the contribution of fiscal deficit to debt accumulation.

Market discipline is most efficiently enforced by well-functioning, competitive financial markets. An improvement of the effectiveness of market oversight would necessitate further development of the regional banking system and financial market. In addition, WAEMU's fiscal supervision framework could benefit from further refinement, and the debt and deficit criteria could be modified to better reflect the economic characteristics of WAEMU countries and improve enforceability.

## REFERENCES

- Alexander, V., and P. Anker, 1997, "Fiscal discipline and the question of convergence of national interest rates in the European Union," *Open economies review*, Vol. 8, No. 4, pp. 335–352.
- Arellano, Cristina, 2008, "Default Risk and Income Fluctuations in Emerging Economies," *American Economic Review*, Vol. 98, No. 3, pp. 690–712.
- Blundell, R., and S. Bond, 1998, "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models," *Journal of Econometrics*, Vol. 87, pp. 115–43.
- Diouf, Mame Astou, and Mr Francois Boutin-Dufresne, 2012, "Financing Growth in the WAEMU Through the Regional Securities Market: Past Successes and Current Challenges," .
- Dufrénot, G., E. Houessou, and E. Nonfodji, 2007, *Politique budgétaire et dette dans les pays de l'UEMOA (Economica)*.
- Eaton, Jonathan, and Mark Gersovitz, 1981, "Debt with potential repudiation: theoretical and empirical analysis," *Review of Economic Studies*, Vol. 48, pp. 289–309.
- ECB, 2005, "The Reform of the Stability and Growth Pact," *ECB Monthly Bulletin*, pp. 59–74.
- Edwards, S., 1984, "LDC Foreign Borrowing and Default Risk: An Empirical Investigation," *American Economic Review*, pp. 726–34.
- Engen, Eric M., and R. Glenn Hubbard, 2004, "Federal Government Debt and Interest Rates," *NBER Macroeconomic Annual*.
- EU, 2007, "Treaty on the Functioning of the European Union," .
- Faini, Riccardo, 2006, "Fiscal Policy and Interest Rates in Europe," *Economic Policy*, Vol. 21, No. 47, pp. 443–489.
- Gale, William G., and Peter R. Orszag, 2002, "The Economic Effects of Long-Term Fiscal Discipline," *Urban-Brookings Tax Policy Center Discussion Paper*.
- Hauptmeier, S., A.J. Sanchez-Fuentes, and L. Schuknecht, 2011, "Towards expenditure rules and fiscal sanity in the euro area," *Journal of Policy Modeling*, Vol. 33, No. 4, pp. 597–617.
- IMF, 2012, "Côte d'Ivoire - First Review Under the Three-Year Arrangement Under the Extended Credit Facility, Request for Modification of Performance Criteria, and Financing Assurances Review; Press Release," *IMF Country Report*, , No. 12/117.
- Manganelli, S., and G. Wolswijk, 2009, "What drives spreads in the euro area government bond market?" *Economic Policy*, Vol. 24, No. 58, pp. 191–240.
- Masson, P.R., and O. Doré, 2002, "Experience with budgetary convergence in the WAEMU," Techn. rep., IMF Working Paper WP/02/108. International Monetary Fund, Washington, DC.

Milesi-Ferretti, Gian Maria, 2004, "Good, bad or ugly? On the effects of fiscal rules with creative accounting," *Journal of Public Economics*, Vol. 88, No. 1, pp. 377–394.

Morris, R., H. Ongena, and L. Schuknecht, 2006, "The reform and implementation of the Stability and Growth Pact," *ECB Occasional Paper Series*.

Schuknecht, L., P. Moutot, P. Rother, and J. Stark, 2011, "The Stability and Growth Pact: crisis and reform," *ECB Occasional Paper*, , No. 129.

Sy, A.N.R., 2010, "Government Securities Markets in the West African Economic and Monetary Union: A Review," *African Development Review*, Vol. 22, No. 2, pp. 292–302.

Uribe, Martin, and Vivian Z. Yue, 2006, "Country Spreads and Emerging Countries: Who Drives Whom?" *Journal of International Economics*, Vol. 69, pp. 6–36.

## APPENDIX A. TABLES AND FIGURES

Table 3. WAEMU: Convergence Criteria

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012 <sub>est</sub>
<i>Bas. Fis. Bal./GDP</i>												
Benin	-3.0	-2.8	-0.1	-0.5	-1.4	0.1	1.5	-1.1	-1.5	1.5	-0.2	0.4
Burkina Faso	-2.5	-3.7	-2.9	-3.2	-3.5	-4.5	-5.8	-4.9	-1.9	0.4	1.2	-1.5
Côte d'Ivoire	1.1	-0.4	-1.7	-1.3	-1.6	-1.6	-0.6	-1.6	-1.0	-1.6	-4.0	-3.8
Guinea-Bissau	-6.9	-5.8	-7.0	-12.0	-7.2	-6.2	-7.7	-6.7	3.2	1.0	0.0	-1.4
Mali	-1.7	-1.3	-0.3	-0.7	-1.2	-0.4	-1.2	-1.2	0.4	0.2	-1.1	-1.1
Niger	-3.7	-1.9	-2.1	-2.2	-1.5	1.1	-0.2	1.9	-2.8	-1.0	-1.4	-0.4
Senegal	-1.2	1.2	0.2	-0.5	-1.2	-4.7	-2.6	-2.4	-2.1	-1.8	-4.0	-3.7
Togo	1.5	0.3	2.7	1.4	-2.0	-2.8	-2.7	-0.7	-1.4	1.3	-1.7	-3.8
WAEMU	-0.8	-0.9	-1.1	-1.3	-1.8	-2.1	-1.6	-1.8	-1.3	-0.6	-2.2	-2.4
violators	6	6	6	7	8	6	7	7	6	3	6	7
<i>Total debt/GDP</i>												
Benin	54.0	47.9	36.6	33.8	37.3	11.6	21.9	25.7	28.1	30.2	30.3	32.4
Burkina Faso	0.0	0.0	0.0	0.0	0.0	0.0	23.2	22.1	27.2	27.2	28.0	30.9
Côte d'Ivoire	175.2	150.7	133.6	120.4	107.2	107.1	75.6	75.3	66.5	66.4	71.2	49.5
Guinea-Bissau	208.3	230.7	217.3	195.6	179.3	176.9	187.5	157.6	163.8	49.0	44.2	46.9
Mali	88.7	56.1	51.6	48.4	48.3	19.9	21.0	20.8	22.9	32.8	30.1	31.4
Niger	85.2	88.9	69.9	58.8	52.3	17.2	25.1	21.0	27.8	24.3	23.1	27.1
Senegal	77.3	80.3	69.2	68.0	57.3	37.2	23.5	23.9	34.2	35.7	40.0	45.0
Togo	108.0	93.4	92.4	82.5	72.6	82.5	112.9	84.0	75.9	48.5	46.3	45.6
WAEMU	110.1	96.4	82.9	75.3	67.0	54.9	48.4	42.8	45.4	43.5	43.7	39.7
violators	6	5	3	3	3	3	3	3	2	0	1	0
<i>Overall Fis. Bal./GDP</i>												
Benin	-4.8	-5.1	-1.7	-1.2	-2.3	-0.3	0.2	-1.7	-4.3	-1.6	-1.8	-0.7
Burkina Faso	-3.9	-4.9	-3.0	-4.5	-5.0	16.6	-5.7	-4.4	-4.8	-4.5	-2.5	-3.6
Côte d'Ivoire	0.9	-1.1	-2.1	-1.7	-1.7	-1.8	-0.8	-0.6	-1.6	-2.3	-4.3	-4.3
Guinea-Bissau	-5.4	-3.6	-1.0	-4.6	-4.9	-2.3	-2.7	1.7	2.7	-2.5	-2.8	-1.9
Mali	-3.2	-3.8	-1.3	-2.6	-3.1	31.3	-3.2	-2.2	-4.2	-2.7	-4.1	-2.1
Niger	-3.5	-3.0	-2.8	-3.6	-2.0	40.3	-1.0	1.5	-5.4	-2.5	-2.8	-3.9
Senegal	-2.4	0.0	-1.3	-3.1	-3.0	-5.7	-3.7	-4.6	-4.8	-5.2	-6.7	-5.9
Togo	-0.1	-0.4	2.4	1.0	-2.4	-2.8	-1.9	-0.9	-2.8	-1.6	-2.9	-6.3
WAEMU	-1.6	-2.1	-1.7	-2.4	-2.7	6.9	-2.2	-1.9	-3.5	-3.1	-4.0	-3.9

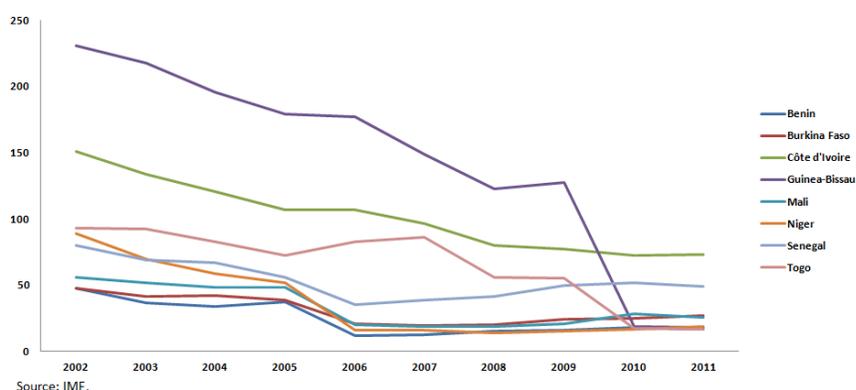
Source: Country authorities and IMF staff estimations.

**Table 4. Countries Receiving Debt Relief**

	Year of the Debt Relief
Benin	2006
Burkina Faso	2006
Côte d'Ivoire	2012
Guinea-Bissau	2010
Mali	2006
Niger	2006
Senegal	2006
Togo	2010

**Table 5. Descriptive Statistics**

Variable	Number of Observations	Mean	Standard Deviation	Min.	Max.
Average annual interest rate	65	4.89	1.11	1.77	6.85
Overall fiscal balance to GDP	65	-2.71	1.79	-6.49	1.50
Inflation (average)	65	2.83	3.04	-4.8	10.7
U.S. policy interest rate	65	2.29	2.0	0.1	6.24
Political risk indicator	58	55.55	6.54	39.58	66.83
External debt to GDP	65	58.97	50.02	11.57	189.69
General gov't debt to GDP	65	43.13	40.0	11.81	227.34
WAEMU excess reserves to GDP	10	0.55	1.35	0.55	2.12

**Figure 3. External Debt-to-GNP Ratio and Debt Relief**

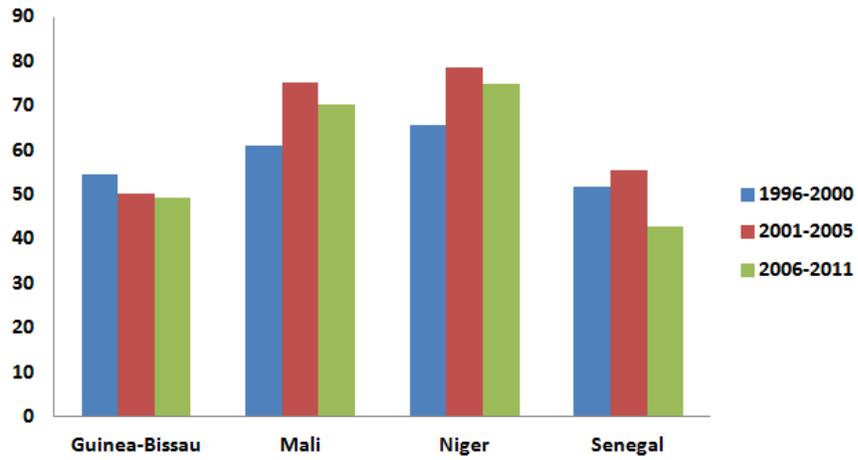
**Table 6. Alternative Specification: Basic Fiscal Balance**

	(1)	(2)	(3)	(4)
	Int Rate	Int Rate	Int Rate	Int Rate
Basic fiscal balance to GDP	0.107 (0.105)	0.0972 (0.169)	-0.190*** (0.000)	-0.0690 (0.276)
Domestic debt to GDP	-0.0448 (0.320)	-0.0556 (0.247)	0.139*** (0.000)	0.120*** (0.001)
Inflation	-0.0213 (0.551)	-0.0174 (0.651)	-0.0581* (0.056)	-0.0420 (0.161)
Excess deserves to GDP	-1.734*** (0.000)	-1.755*** (0.000)	-0.802*** (0.000)	-1.225*** (0.000)
WAEMU basic fiscal balance to GDP	1.009*** (0.000)	0.973*** (0.000)	-0.561*** (0.000)	-0.0488 (0.777)
Political risk rating		-0.00769 (0.859)		0.0538*** (0.000)
Lagged interest rate			0.847*** (0.000)	0.550*** (0.000)
Constant	9.062*** (0.000)	9.481*** (0.000)		
Observations	57	52	52	47
$R^2$	0.7039	0.7093		

*p*-values in parentheses

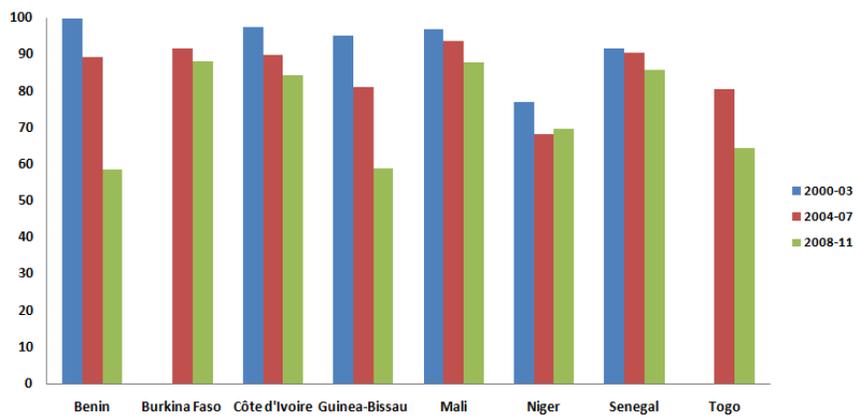
\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Figure 4. Ratio of Multilateral Debt to Total External Debt**



Source: IMF.

**Figure 5. Share of External Debt to Total Debt in WAEMU**



Source: IMF.

## APPENDIX B. THEORETICAL MODEL

We investigate the impact of market-based fiscal discipline on the interest rates spread in WAEMU area government bond markets in a simple framework. We will use the framework of [Eaton and Gersovitz \[1981\]](#). Governments do not pay their debt back if the value of defaulting is higher than the repayment. In [Eaton and Gersovitz \[1981\]](#), default probabilities are determined through current debt level holdings and governments' income processes. Governments default if the value of repaying is less than the value of default, and this is reflected in the spreads. Therefore, the probability of default is a function of  $f(b', y, \lambda)$  where  $b'$  is the current debt level holdings that is going to be repaid next period,  $y$  is the current income, and  $\lambda$  is the lenders' belief about the government being a reputable agent. The price of the bonds can be obtained as follows:

$$q(b', y, \lambda) = \frac{1 - \theta(b', y, \lambda)}{1 + r} \quad (8)$$

The left-hand side of the equation represents the price of a bond,  $\theta(b', y, \lambda)$  is the probability of default, and  $r$  is the risk free interest rate.

If the repayment probability increases, then the price of the bond increases, and the spread on the bond shrinks. To derive an equation that can be estimated empirically, we need empirical proxies that can gauge the information the market uses to determine the default probabilities. The details of the empirical model are explained in the Section II.