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Fiscal Rules and the Pro-Cyclicality of Public Investment in the West African Economic and Monetary Union

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Abstract

Evidence from a large panel of low-income and lower middle-income countries over the period 1995–2012 suggests that, contrary to other countries, public investment in the West African Economic and Monetary Union (WAEMU) has been pro-cyclical. Public investment contracts more in "bad times" than it increases in "good times" and appears to have become pro-cyclical since the introduction of the fiscal convergence criteria in 1994. The pro-cyclicality of public expenditure and the high asymmetry of shocks that affect WAEMU countries justify exploring options for greater counter-cyclicality of rules-based fiscal frameworks and for risk-sharing.

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Fiscal Rules and the Pro-cyclicality of Public Investment in the West African Economic and Monetary Union

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1. INTRODUCTION

The debt crisis in the Eurozone revealed new challenges for monetary unions. Countries entering a monetary union relinquish national monetary and exchange rate policies for the benefit of greater integration associated with the union. If countries in the union are subject to large asymmetric shocks, and there are no transfers through a federal budget, national fiscal policy would be the only instrument left to cushion these shocks. Yet, despite the need for fiscal flexibility, existing monetary unions observe strict fiscal rules that typically limit the leeway of national fiscal policies to respond to shocks. Concerns about debt externalities of national fiscal policies and possibly weak incentives for fiscal restraint provide a common rationale for fiscal rules in monetary unions (De Grauwe, 1992).[1] However, fiscal rules may also reduce the quality of fiscal policy because they disregard the composition of fiscal adjustment necessary for compliance (Blanchard and Giavazzi, 2004). The need to comply with fiscal rules may result in easy cuts in capital spending. These can have two main effects: First, they may amplify volatility through pro-cyclical cuts in expenditure and, in particular, public investment. Second, they may have a potentially negative impact on long-term growth if the level of public investment, or its quality, are negatively affected. Thus, among the most important challenges for monetary unions is to improve their capacity to ensure fiscal convergence, while also developing efficient mechanisms to mitigate asymmetric shocks, which do not affect all members at the same time.

In this paper we study the impact of fiscal rules on public expenditure, with emphasis on public investment, in the West African Economic and Monetary Union (WAEMU). Fiscal convergence rules in the WAEMU impose strict limits on the budget deficit. Current rules include a balanced basic budget deficit defined as domestic revenue minus domestically financed expenditure; a public debt ceiling at 70 percent of GDP; and the non-accumulation of public expenditure

arrears. The rules have not been systematically enforced in the past, especially concerning the basic fiscal balance. Even so, they still leave only limited room for counter-cyclical response in countries affected by asymmetric shocks. Counter-cyclical response through national budgets is bound by foreign financing, originating from outside of WAEMU, of any additional spending or of the budget deficit resulting from an adverse revenue shock. Moreover, a large part of current public expenditures are non-discretionary (wages, transfers, debt service) and thus difficult to cut in the short run. One can therefore anticipate that an unexpected change in revenue, or current expenditure, resulting from a shock, will be to a large extent cushioned by changes in discretionary public investment. Furthermore, unlike the relative ease in cutting investment expenditures in bad times, rapidly converting unexpected revenues into new projects is often difficult, reflecting, for example, bottlenecks in project selection or in procurement. It is therefore possible that volatility of public investment may well affect its average level too.[2]

We extend previous empirical work on pro-cyclical fiscal policies in Sub-Saharan Africa by Thornton (2008); Lledo, Yackovlev and Gadene (2011); and Guillaumont-Jeanneney and Tapsoba (2011) who found that total public expenditure is more pro-cyclical in WAEMU than in other African countries. We examine separately the cyclical patterns of public investment and current public expenditure, comparing WAEMU to a large sample of low-income countries (LICs) and lower middle-income countries (LMICs) in Sub-Saharan Africa and in other developing regions. We compare patterns estimated over 1995-2012 with earlier patterns in 1981-1994 to gain insight on the possible impact of the fiscal convergence criteria adopted in 1994, after the devaluation of the CFA Franc, the WAEMU's common currency. We also examine how these patterns differ in recessions and booms of economic activity. Our findings justify exploring options for greater counter-cyclicality of rules-based fiscal frameworks and

options for risk-sharing mechanisms with a view to reducing the pro-cyclicality of public investment. Risk-sharing mechanisms could include a move towards fiscal federalism through greater centralization of national budgets, the design of group insurance schemes, or both.

The rest of the paper is organized as follows. Section 2 presents some stylized facts on GDP growth, public investment, and the nature of shocks in the WAEMU. Section 3 discusses the empirical findings on the cyclical patterns of public investment and current public expenditure in the WAEMU and other LICs and LMICs. Section 4 discusses policy implications for greater counter cyclicality of fiscal rules and risk sharing. Section 5 concludes.

2. STYLIZED FACTS: GDP GROWTH, PUBLIC INVESTMENT, AND ASYMMETRIC SHOCKS

We consider 67 low-income (LIC) and lower middle-income (LMIC) countries, according to the World Bank's classification, including the 8 WAEMU members, over the period 1995-2012. We compare WAEMU to two other country groups: 28 other Sub Saharan Africa LICs and LMICs (excluding WAEMU), and 31 other LICs and LMICs in the rest of the world (see Appendix Table A1 for group definitions). As Table 1 shows, at 3.6 percent on (un-weighted) average, annual real GDP growth in WAEMU ranks well below comparator groups. Growth volatility in WAEMU, as measured by the coefficient of variation of annual GDP growth, has been higher than in other LICs and LMICs, but lower than in other SSA comparator countries. Public investment in proportion to GDP has also been low in WAEMU. At 6 percent of GDP on average, it ranks well below the other two groups. Reflecting weak public investment, unsurprisingly perhaps, WAEMU lags behind the rest of Sub Saharan Africa as a whole on almost all infrastructure indicators, with most notable gaps in in paved road density, mainline

density, and generation capacity (IMF, 2010). Such infrastructure gaps could be partly responsible for WAEMU's "missing growth".[3]

Table 1: GDP growth and Public Investment, 1995-2012 (in %)

	WAEMU (8 countries)	Other SSA LIC and LMIC (28 countries)	Other LIC and LMIC (31 countries)
GDP growth per year			
Average	3.56	4.12	4.34
Standard deviation	4.32	6.58	4.15
Standard deviation/Average	1.21	1.60	0.96
Public Investment/GDP			
Average	6.02	7.85	7.15
Standard deviation	2.64	6.20	9.48
Standard deviation/Average	0.44	0.79	1.32

Note: Based on the country groups in Appendix, Table A1. Standard deviations reflect variations both within and between countries.
Source: Authors' calculations based on data from World Economic Outlook, IMF.

Turning to the degree of synchronization of shocks, as Table 2 shows, over 1995-2012, the average correlation of each WAEMU member country's annual GDP growth with the un-weighted average annual GDP growth of other WAEMU members was 0.117. Burkina Faso and Togo had the highest GDP growth correlation (0.56 and 0.47, respectively) with average GDP growth of other WAEMU members, while all others had no significant correlations with the rest of WAEMU members. The low correlations of real GDP growth among WAEMU members contrast with the much higher correlations of GDP growth observed in monetary unions among advanced economies where economic integration is much higher.[4] The use of terms of trade changes as a more direct measure of exogenous shocks points to a similar conclusion (Table 2, last column). The average correlation of individual WAEMU members' terms of trade changes with the rest of the WAEMU is 0.21, with only Benin, Burkina Faso and Mali exhibiting relatively high positive correlations with the rest of WAEMU members. We next consider how fiscal variables respond to shocks.

Table 2: Asymmetric shocks in WAEMU, 1995-2012

	GDP growth (in %)		Comparison with other WAEMU members	
	Average	St. Dev.	Correlation of GDP growth	Correlation of Terms of Trade changes
Benin	4.1	1.0	0.031	0.440
Burkina Faso	5.9	2.0	0.556	0.551
Côte d'Ivoire	1.7	3.6	0.157	-0.120
Guinea-Bissau	1.1	8.9	-0.257	-0.204
Mali	4.2	3.7	0.193	0.556
Niger	4.9	4.6	-0.169	-0.023
Senegal	3.9	1.7	-0.044	0.307
Togo	2.4	2.7	0.469	0.172
Average	3.5	3.5	0.117	0.210

Source: Authors calculations based on data from World Economic Outlook, IMF.

3. THE PRO-CYCLICALITY OF FISCAL POLICY

Evidence suggests that, contrary to high-income countries where fiscal policy is mostly uncorrelated with the business cycle, in developing countries fiscal policy is pro-cyclical: it turns expansionary in good times and contractionary in bad times (Talvi and Vegh, 2005). The pro-cyclicality of fiscal policy is often explained by the loss of international capital market access during bad times, which, in the absence of fiscal space through accumulated savings, makes it expensive, if not impossible, to finance expansionary policies during downturns (Aizenman et al, 2000; Gavin and Perotti, 1997).[5] The pro-cyclicality of fiscal policy has been also documented in African countries: Government consumption has been found to be pro-cyclical, the more so when dependence on foreign aid is high (Thornton, 2008). Pro-cyclicality of total public expenditure has been also found by Lledo, Yackovlev and Gadene (2011), but with a mitigating impact of foreign aid and debt relief.

Whether fiscal rules exacerbate pro-cyclicality of fiscal policy is largely an empirical matter. The outcome will depend on the design of rules and the incentives they create for policymakers.

Strict fiscal rules that target the overall fiscal balance on an annual basis may, arguably, amplify pro-cyclicality as shocks would trigger immediate expenditure and tax adjustments to meet the fiscal targets. By contrast, fiscal rules targeting the structural deficit or the deficit over the cycle could mitigate pro-cyclicality. Importantly, fiscal rules could mitigate pro-cyclicality if they change the incentives of policymakers toward creating fiscal space in good times for counter-cyclical response in bad times. There is factual evidence that policy incentives do change over time: Experience with credit rationing during bad times, especially after the East-Asian crisis in the late 1990s, prompted many developing countries to self-insure by building buffers of savings during good times. This made it possible for several emerging economies to respond counter-cyclically to the 2008-09 global financial crisis, including, to some extent, in Africa (Krumm and Kularatne, 2012).

In what follows, we extend previous research by comparing WAEMU to a large sample of other low-income and lower middle-income countries and by analyzing the pro-cyclicality of the two components of public expenditure, public investment and current expenditure, but also by analyzing the pro-cyclicality of the fiscal balance.[6] Data is taken from the World Economic Outlook and the IMF's IFS database. Our analysis spans over 1995-2012, covering the period since the introduction of the fiscal convergence rules. We compare the estimated patterns over this period with the period 1981-1994, preceding the fiscal convergence rules. In addition, we examine more closely the pro-cyclicality patterns in recessions and economic booms.

As we are interested in how shocks affect public investment and current expenditure in the short run, we regress the annual growth rate of public investment and current public expenditure in real terms on the annual real GDP growth rate, without considering other potential determinants of these fiscal variables over the medium term (such as, for example, the level of public debt or

of foreign aid).[7] We include country specific effects, to account for time-invariant country specificities, and time-specific effects, to capture the impact of possible symmetric shocks. The specification also includes a dummy for the years of armed conflict since these events could cause abrupt changes in both economic structure and in fiscal policy. As Blattman and Miguel (2010), among others, we use the UCDP/PRIO data on armed conflict first presented in Gleditsch et al. (2002) and updated in Themnér and Wallensteen (2014).[8]

Admittedly, a positive relationship between government expenditures and GDP growth could reflect not only a pro-cyclical behavior of fiscal variables but also an increase in infrastructure and/or social services demand resulting from a higher level of income.. To account for this possible simultaneity between GDP growth and the fiscal variables –-we use a Generalized Method of Moments (GMM) estimator with standard errors robust for both heteroskedasticity and autocorrelation. Lags of the independent variable (the real GDP growth) are used as instruments, together with an additional instrument constructed as the product of world GDP growth and each country's ratio of exports to GDP.[9] The over-identifying restrictions are tested through the Hansen-Sargan J test, which provides a test of the general validity of the instruments used. Regression coefficients for the WAEMU countries are estimated separately from the other countries of the sample. Results for the period 1995-2012 are reported in Table 3.

The results confirm the validity of the over-identifying restrictions and thus of the instruments used.[10] Public investment has been pro-cyclical in WAEMU over the estimation period, as the estimated elasticity to real GDP growth is positive at a 95% confidence level. By contrast, there is no significant pro-cyclicality of public investment in other LICs and LMICs (Table 3, column 1). The results for current public expenditure show an a-cyclical behavior of this fiscal policy variable for the two groups of countries (Table 3, column 2). Pro-cyclical public expenditure is

thus associated with public investment, rather than current expenditure, in the WAEMU. This supports the perception that public investment, more than current expenditure, is a major shock absorber, or residual fiscal variable. As to the fiscal balance, there is evidence of counter-cyclicality in other LICs and LMICs as the fiscal deficit (surplus) decreases (increases) when growth is stronger (Table 3, column 3). By contrast, in WAEMU the fiscal balance is a-cyclical. The absence of counter-cyclicality of fiscal deficits in WAEMU may reflect the large compensating changes in public investment when fiscal revenues are affected by shocks: In bad (good) times, when fiscal revenues shrink (expand), a contraction (increase) of public investment offsets the impact of the shock on the budget, resulting in only small changes in the fiscal deficit in proportion to GDP. Finally, it is worth noting that our dummy for armed conflicts does not reach statistical significance.[11]

Table 3: The Pro-cyclicality of Fiscal Policy (1995-2012)

	(1)	(2)	(3)
Dependent variable	DLNKFIG	DLNKCURX	DEF/NGDP
W*DLNKGDP	7.213**	-0.0386	-0.0152
	(2.072)	(-0.0382)	(-0.0185)
(1-W)*DLNKGDP	1.409	1.225	0.590***
	(0.502)	(1.522)	(2.643)
AC dummy	4.609	0.459	0.0034
	(1.126)	(1.535)	(0.0301)
Observations	1,086	1,108	1,147
Number of countries	67	78	78
Hansen J test:			
Statistic	2.958	4.609	6.030
Chi- sq (6), P-value	0.8140	0.5949	0.4199

Note. D and LN denote the first difference operator and the natural logarithm operator respectively. KFIG: real public investment; KCURX: current real public expenditure (total expenditure excluding public investment); DEF: fiscal balance; NGDP: nominal GDP; KGDP: real GDP; W: dummy variable for WAEMU countries. We convert nominal variables into real variables using the GDP deflator. AC is a dummy with value 1 for armed conflict episodes in a given year and 0 otherwise. Robust z-statistics are in parentheses. ***, **,* indicate

significance at 1%, 5%, and 10%, confidence levels respectively. The method of estimation is GMM with standard errors and statistics robust to both arbitrary heteroskedasticity and arbitrary autocorrelation. Instruments include: 1, 2, 3, and 4 lags of the two independent variables and the ratio of exports to GDP for each country multiplied by the world GDP growth. Accordingly, there are 6 over-identifying restrictions, equal to the total number of instruments minus the number of regressors. Each regression includes country fixed effects and time fixed effects. The null hypothesis of the Hansen J test (overidentification test) is that all moment conditions are valid, i.e. the instruments used are not correlated with the residuals.

Estimating the same set of regressions over the period 1981-1994, preceding the introduction of the fiscal convergence criteria in WAEMU, provides evidence on the possible impact of this fiscal framework on the cyclical patterns of public investment and current expenditures. As Table 4 shows, public investment exhibits a similar pattern of pro-cyclicality in other LICs and LMICs in 1981-1994 (Table 4, column 1). However, in WAEMU, contrary to the more recent period 1995-2012, there is no evidence of pro-cyclicality of public investment over the period 1981-1994, while current public expenditure was also a-cyclical in the earlier period as in the more recent period (Table 4, column 2). This confirms the perception that, since the introduction of the fiscal convergence framework, public investment, more than current expenditure, has responded pro-cyclically in the face of shocks that affect the budget in WAEMU countries. Here again, the dummy for armed conflicts does not seem to play a role in the pro-cyclicality of the fiscal variables.

Table 4: The Pro-cyclicality of Fiscal Policy (1981-1994)

	(1)	(2)	(3)
Dependent variable	DLNKFIG	DLNKCURX	DEF/NGDP
W*DLNKGDP	0.230	2.587	-0.450*
	(0.111)	(1.162)	(-1.810)
(1-W)*DLNKGDP	0.946	1.616**	0.209
	(0.385)	(2.140)	(0.751)
AC dummy	0.261	0.272	-0.0664
	(0.490)	(1.082)	(-0.664)
Observations	432	207	229
Number of countries	48	32	34
Hansen J test:			

Statistic	6.117	3.029	11.521
Chi- sq (6), P-value	0.4102	0.8052	0.0735

Note. D and LN denote the first difference operator and the natural logarithm operator respectively. KFIG: real public investment; KCURX: current real public expenditure (total expenditure excluding public investment); DEF: fiscal balance; NGDP: nominal GDP; KGDP: real GDP; W: dummy variable for WAEMU countries. We convert nominal variables into real variables using the GDP deflator. AC is a dummy with value 1 for armed conflict episodes in a given year and 0 otherwise. Robust z-statistics are in parentheses. **,* indicate significance at 5%, and 10% confidence levels respectively. The method of estimation is GMM with standard errors and statistics robust to both arbitrary heteroskedasticity and arbitrary autocorrelation. Instruments include: 1, 2, 3, and 4 lags of the two independent variables and the ratio of exports to GDP for each country multiplied by the world GDP growth. Accordingly, there are 6 over-identifying restrictions, equal to the total number of instruments minus the number of regressors. Each regression includes country fixed effects and time fixed effects. The null hypothesis of the Hansen J test (overidentification test) is that all moment conditions are valid, i.e. the instruments used are not correlated with the residuals.

The pro-cyclical changes in fiscal policy in developing countries have often been found to be asymmetric in good and bad times. For example, Gavin and Perotti (1997) found that fiscal balances in Latin America were more pro-cyclical in bad times, when negative deviations of GDP growth from average were large. In WAEMU, Guillaumont-Jeanneney and Tapsoba (2011) found total public expenditure to be more pro-cyclical in recessions than in good times. In our larger sample we further investigate this issue by examining whether the elasticity of public investment to GDP is different when countries face negative and positive shocks. For this exercise we concentrate on public investment, which, according to our results, was found to be pro-cyclical in the WAEMU over the recent period 1995-2012. For each country we identify periods of negative shocks as years with below-average real GDP growth (over 1995-2012) and periods of positive shocks as years with above-average real GDP growth. Regressions of real public investment growth on real GDP growth are estimated separately on periods of negative and positive shocks, while distinguishing the coefficients for WAEMU and non-WAEMU countries. We use a GMM estimator with robust standard errors for heteroskedasticity and autocorrelation, using the same instruments as for the previous regressions. Results are reported in Table 5.

Table 5: The pro-cyclicality of public expenditure in "good" and "bad" times (1995-2012)

	GDP growth>Avg	GDP growth<Avg
	(1)	(2)
Dependent variable	DLNKFIG	DLNKFIG
W*DLNKGDP	8.166	9.423*
	(1.328)	(1.814)
(1-W)*DLNKGDP	4.655	4.513
	(1.374)	(1.156)
AC dummy	-0.949	-0.538
	(-0.689)	(-0.216)
Observations	592	493
Number of countries	66	66
Hansen J test:		
Statistic	9.752	4.329
Chi- sq (6), P-value	0.1355	0.6322

Note. D and LN denote the first difference operator and the natural logarithm operator respectively. KFIG: real public investment;KGDP: real GDP; W: dummy variable for WAEMU countries. We convert nominal GDP into real GDP using the GDP deflator. AC is a dummy with value 1 for armed conflict episodes in a given year and 0 otherwise. Robust z-statistics are in parentheses. **,* indicate significance at 5%, and 10% confidence levels respectively. The method of estimation is GMM with standard errors and statistics robust to both arbitrary heteroskedasticity and arbitrary autocorrelation. Instruments include: 1, 2, 3, and 4 lags of the two independent variables and the ratio of exports to GDP for each country multiplied by the world GDP growth. Accordingly, there are 6 over-identifying restrictions, equal to the total number of instruments minus the number of regressors. Each regression includes country fixed effects and time fixed effects. The null hypothesis of the Hansen J test (overidentification test) is that all moment conditions are valid, i.e. the instruments used are not correlated with the residuals.

In WAEMU, the elasticity of public investment to GDP is not significant in good times (Table 5, column 1). By contrast, in bad times, the elasticity of public investment to GDP is significant at a 90% confidence level (Table 5, column 2). Public investment seems thus to respond asymmetrically to growth shocks: It contracts more in recessions than it expands in booms. In non-WAEMU countries, we do not find evidence of an asymmetric response of public investment to growth shocks

The asymmetric pattern in the response of public investment in bad and good times observed in the WAEMU suggests that shocks may affect the level of public investment, in addition to increasing its volatility: The overall public investment level will be lower with negative and

positive shocks of equal variance than without shocks. This phenomenon could contribute to partly explaining why WAEMU countries record lower average public investment levels than other low-income and lower middle-income countries, as documented in Table 1. Negative shocks in WAEMU over 1995-2012 (in 58 instances out of 136; or for 42 percent of observations in the sample) were, on average, equivalent to a 2.8 percentage point drop in the GDP growth rate. Positive shocks (78 observations) averaged 2.1 percentage points of GDP. With negative GDP shocks larger, on average, than positive shocks, and occurring with almost similar frequency as that of positive shocks, the asymmetric response of public investment in bad and good times could partly explain its lower level observed in WAEMU compared to non-WAEMU countries.

4. POLICY IMPLICATIONS

In a monetary union, fiscal rules are important anchors of medium-term fiscal policy over the cycle so as to preserve fiscal discipline at the aggregate level. However, injecting some flexibility to existing fiscal convergence criteria could help mitigate the pro-cyclicality of public expenditure, especially that of public investment. As noted, because of the pro-cyclicality of public investment, the fiscal deficit has been largely uncorrelated to GDP growth in the WAEMU while in other low-income countries the fiscal balance appears to have been mildly counter-cyclical (Table 3, column 3). A countercyclical fiscal rule would allow for some positive correlation, with smaller deficits (larger surpluses) in booms and larger deficits (smaller surpluses) in contractions. At the same time, because shocks affecting WAEMU countries are highly asymmetric, they cannot be addressed by the common monetary policy of the currency union. There is thus room for establishing fiscal federalism arrangements or for adopting a form of risk sharing (or group insurance) to mitigate the incidence of these shocks. Risk-sharing

mechanisms would aim to allocate larger financial resources to the union members exposed to negative shocks. As countries facing difficulties seem compelled to drastically cut back investment in bad times, such mechanisms would also help raise average public investment rates in WAEMU. Options to establish such mechanisms and possible combinations are discussed in more detail below.

a) Options for counter-cyclical fiscal rules

Rules that target the overall budget balance and (binding) public debt rules impart pro-cyclicality to fiscal policy, as expenditures and/or taxes have to be adjusted in order to comply with the rules. At the same time, such rules may not lead to sufficient restraint in good times as strong cyclical tax revenues may help meet targets concerning the overall budget balance. Pro-cyclical rules would thus risk making the fiscal stance over expansionary while failing to realize savings for bad times. Moreover, the existing WAEMU fiscal convergence framework that requires balancing the annual budget of domestically financed expenditure does not guarantee debt sustainability as it excludes expenditures financed through the accumulation of foreign debt. A fiscal convergence rule accounting for all sources of financing would be a better safeguard for debt sustainability (IMF, 2013). Excluding foreign-financed expenditure from the definition of the basic budget balance has not succeeded in protecting public investment from volatility, as total public investment has become pro-cyclical since 1994.

There are various options for amending fiscal rules to allow some cyclical flexibility.[12] At least four different options can be considered for setting the budget balance target:

(i) Overall budget balance with *ad hoc* adjustments.
(ii) Cyclically adjusted (structural) budget balance.
(iii) Overall budget balance over the cycle.
(iv) A “Golden rule” with exclusion of the capital budget from the target.

These options have advantages and disadvantages. When fiscal rules target the overall budget balance, some degree of cyclical flexibility is possible on an ad hoc basis through changes in the numerical value of the budget balance target to accommodate shocks.[13] The main risk is that such ad hoc flexibility could come at the expense of the credibility of the rules-based fiscal policy. A cyclically-adjusted or structural budget balance target would allow flexibility to respond to output shocks. One drawback of structural budget balance rules is that output gaps and tax elasticities to income are difficult to estimate with sufficient reliability, especially for developing countries. A variant of the structural budget balance rule would require the government to achieve budget balance on average over the cycle — or any level of overall deficit or surplus deemed consistent with debt sustainability. A possible drawback could be a requirement for pro-cyclical tightening towards the end of the cycle if fiscal policy were too loose in the earlier phases (IMF, 2009). Another drawback is that the rule requires accurate timing of the cycle and stable national accounts data to preserve the credibility of the fiscal policy framework. The so-called "golden rule" excludes capital expenditure from the targeted budget balance. Protecting this category of expenditure can be justified on the grounds that public investment contributes to long-run growth. The downside is that this approach reduces the comprehensiveness of the budget balance target and, in turn, weakens its link with the objective of debt sustainability. It also implicitly assumes that all capital expenditure is productive, while at the same time excluding current expenditures (especially in human development) that may also raise productivity growth. In any case, gradual adjustment to deviations from fiscal targets would also be warranted. The Swiss and German fiscal rules are noteworthy examples of gradual adjustment mechanisms to deviations from fiscal rule targets. Both rules allow for counter-

cyclical flexibility by targeting the cyclically adjusted budget balance and use a notional control account to correct deviations from fiscal targets.[14]

Targeting the structural fiscal balance may be difficult in the WAEMU zone. Flexibility could be introduced through a framework targeting the overall budget balance over the cycle, inclusive of foreign-financed expenditures. Creating a correction mechanism based on a "notional control accounts" would create incentives for WAEMU countries to exercise fiscal restraint in good times in order to accumulate credits in these accounts. These savings could be used as fiscal space in bad times to offset the impact of adverse shocks. The rule could require corrective action to be exercised once accumulated deficits have reached a certain limit in proportion to GDP. It should be noted, however, that in the case of resource-rich countries where a large fraction of fiscal revenues comes from primary commodity exports, focusing on the overall balance over the cycle may not suffice. For short-run stabilization purposes, the fiscal framework would need to be supplemented by a focus on the non-resource primary fiscal balance, targeted over the cycle.[15]

b) Fiscal Federalism and Risk Sharing

Cushioning the impact of asymmetric shocks on monetary union members typically calls for fiscal federalism, in the form of some centralization of national budgets at the level of the union. A centralized budget would work as a shock absorber, by allowing countries hit by negative shocks to receive larger transfers from, and/or pay less tax to, the federal budget. This would be equivalent to an interregional transfer within the union from countries affected by positive shocks. These countries would pay more tax to the central budget—thus financing transfers to those countries hit by negative shocks—or, alternatively, would receive fewer transfers from the central budget. Interregional transfers can be *complementary* to inter-temporal transfers achieved

through some degree of national budget flexibility. This is because relying only on decentralized national budgets to offset shocks reduces the degrees of freedom of *future* national fiscal policy as the debt issued to counter the shocks will need to be serviced in the future.

There is space for pooling resources in the WAEMU, but large-scale fiscal federalism through budget centralization might be premature. Pooling resources to finance regionally important expenditure programs – especially in infrastructure, to facilitate trade and regional integration – might produce economies of scale, as well as providing a step towards fiscal federalism. This would also shield part of the national public investment budgets from the pro-cyclicality that they currently suffer. On the revenue side, a guiding principle for intergovernmental taxation is that local governments should tax less mobile tax bases, such as consumption or real estate, while corporate and personal income taxes should be centralized (Cottarelli, 2012). It remains questionable whether significant centralization of corporate or personal income tax revenues is feasible in the WAEMU given the narrow fiscal bases and the weakness of tax mobilization mechanisms in most countries.

The risk sharing implicit in fiscal federalism can also be achieved through group insurance in the form of a solidarity fiscal fund. Such a fund could perform transfers to adversely hit monetary union members. In its simplest form, a solidarity fund would be financed by contributions from all members. Adversely hit members would be entitled to withdrawals from the fund. This would enable them to cover revenue shortfalls or other insured fiscal risks. The more asymmetric the shocks that affect union members, the greater the gains from pooling resources or from contributing to a group insurance scheme such as a solidarity fund. This would compare positively to a policy of self-insurance, which would be equivalent to using only national resources (or budgets) to offset the shocks. Intuitively, as all members are not affected at the

same time by the asymmetric shocks, the pooled resources necessary to cushion shocks affecting union members at any time would be lower than the sum of resources that individual members would need to put aside to cushion shocks under self-insurance. Hence, for the same level of risk coverage, the contributions of individual union members to a solidarity fund would be lower than the amounts that member states would have to set aside under self-insurance schemes.

A solidarity fiscal fund would collect contributions from all WAEMU member states during good times, with the objective of redistributing resources to member states when they face idiosyncratic shocks. As with all insurance schemes, this would raise the issue of moral hazard. It would also require verification that idiosyncratic shocks affecting the budget are exogenous and not policy-induced by systematic slippages or manipulation of the budget. In addition, such an approach would need incentives to ensure that fiscal insurance does not dilute efforts to maintain fiscal discipline through adequate revenue mobilization and spending controls. To address these concerns, the fund could feasibly cover fiscal revenue shortfalls attributable to measurable shocks up to a certain amount or up to a proportion of the shock. One option would be to cover a certain proportion of shortfalls in revenue that derive from terms of trade shocks (dos Reis, 2004). Moreover, a risk-sharing mechanism could be designed with the aim of strengthening compliance incentives with a rules-based fiscal framework. An option would be to condition a member country's access to the fund on its compliance with a counter-cyclical fiscal rule, if such a rule were to be applicable to the monetary union.

5. CONCLUSIONS

Evidence presented in this paper suggests that in WAEMU public investment is pro-cyclical and highly elastic to shocks, especially in bad times. Protecting public investment against shocks

would help accelerate growth as infrastructure is comparatively weak in WAEMU. Some policy options for protecting public investment and mitigating the incidence of asymmetric shocks were discussed. These range from injecting more counter-cyclical flexibility into WAEMU's rules-based fiscal framework, to designing fiscal federalism and risk sharing arrangements through solidarity funds. These options could be explored technically in more detail, from an implementation and coordination perspective. Ways and means to make foreign assistance more counter-cyclical could also be usefully explored. Despite being currently excluded from the fiscal convergence criteria, our results suggest that foreign-financed investment in WAEMU did not contribute enough to mitigate the pro-cyclicality of public investment. A better understanding of why this is so is warranted.

The weak response of public investment in good times raises another challenge. It raises the question why WAEMU governments find it difficult to increase capital budget execution despite efforts in public financial management and public procurement reforms. Judging by the World Bank's Country Policy and Institutional Assessment (CPIA) indicators, as well as by the evidence available through Public Expenditure and Financial Accountability (PEFA) assessments, these efforts have resulted in significant improvements to public financial management and procurement institutions, as well as legal frameworks, policies and systems. However, progress appears to have been uneven – stronger on upstream budget processes (budget preparation, budget classification) than on downstream ones (procurement, budget and contract execution, financial reporting, oversight). Change has been more evident in central finance agencies than in line ministries and at lower levels of government; and generally more focused on the 'de jure' than on the 'de facto' dimensions of public financial management and procurement. These reforms have arguably improved aggregate fiscal discipline compared to the

situation that prevailed in the 1990s. That said, as illustrated by our results, the extent to which they have translated into a more strategic allocation of resources (to investment in particular) and, crucially, into more efficient and effective public spending, remains less clear. Progress in public investment management will be critical for any risk-sharing mechanism to deliver intended results. Improving project selection, appraisal, procurement, budgeting, implementation and ex-post evaluation will strongly contribute to reducing the negative impact of shocks.

APPENDIX:

Table A1: Groups of Countries

WAEMU	SSA	LICs and Lower MICs
Benin	Burundi	Afghanistan
Burkina Faso	Cameroon	Armenia
Côte d'Ivoire	Cape Verde	Bangladesh
Guinea-Bissau	Central African Rep.	Bhutan
Mali	Chad	Bolivia
Niger	Comoros	Cambodia
Senegal	Congo, Dem. Rep. of	Djibouti
Togo	Congo, Republic of	Egypt
	Eritrea	El Salvador
	Ethiopia	Georgia
	Gambia, The	Guatemala
	Ghana	Guyana
	Guinea	Honduras
	Kenya	India
	Lesotho	Indonesia
	Madagascar	Moldova
	Malawi	Mongolia
	Mauritania	Morocco
	Mozambique	Myanmar
	Nigeria	Nepal
	Rwanda	Nicaragua
	São Tomé & Príncipe	Pakistan
	Sierra Leone	Paraguay
	Sudan	Philippines
	Swaziland	Sri Lanka
	Tanzania	Syrian Arab Republic
	Uganda	Tajikistan
	Zambia	Ukraine
		Uzbekistan
		Vietnam
		Yemen, Republic of

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Endnotes:

[1] A precondition for market-driven discipline in monetary unions is that a no-bailout clause can be properly enforced among the members, regardless of their systemic importance or of concerns regarding financial spillovers from debt default. In the absence of effective enforcement, market interest rates will not reflect the default risk of monetary union members. Because market discipline is likely to fail, fiscal rules seem necessary to deflect debt externalities and strengthen possibly weak incentives for fiscal restraint. Externalities may arise if national fiscal policies lead to unsustainable levels of public debt, putting pressure on the central bank to monetize part of this debt. Externalities may also arise through the financial sector, as a debt crisis in a fiscally distressed member may spill over to banks of other members that may hold the distressed debt. Incentives for fiscal discipline may weaken when a country joins a monetary union because the interest rate on its debt declines as the risk premium of exchange rate devaluation vanishes. A factor that plays in the opposite direction of strengthening fiscal discipline is that monetary union members surrender the option of financing budget deficits through money creation and thus face a harder budget constraint compared to countries with monetary autonomy.

[2] Celasun and Walliser (2008) findings on a sample of 13 developing countries (including 4 WAEMU countries) over the period 1992-2007 suggest that aid volatility is detrimental to public investment in physical and human capital. While unexpected shortfalls entail direct cuts in investment, unexpected windfalls do not lead to higher investments of a symmetric order of magnitude.

[3] According to some estimates (Calderon, 2009), infrastructure gaps could cost Sub Saharan Africa as much as 2 percent per year of foregone GDP growth.

[4] According to estimates by Fatas (1998), the average real income growth correlation among 48 US states over 1960-1990 was 0.72, while the average real GDP growth correlation among 15 EMU members over 1961-1996 was 0.56.

[5] Another explanation of the pro-cyclicality of fiscal policy, suggested by Talvi and Vegh (2005), emphasizes the large variations in tax bases in developing countries during the cycle. Reflecting large revenue swings, counter-cyclical fiscal policy would cause large budget surpluses in good times, exacerbating pressure on policymakers from various constituencies to spend the accumulated savings. To deflect such pressures and avoid wasteful use of

resources, it is possible that policymakers may be tempted to avoid large surpluses by imparting pro-cyclicality to fiscal policy.

6 For regressions explaining the current expenditure and the fiscal balance variables the available data allowed us to increase the sample by 11 additional countries. We add Haiti, Kiribati, Kosovo Rep., Kyrgyz Rep., Lao People's Dem. Rep., Liberia, Micronesia, Samoa, Solomon Islands, Timor-Leste, and Vanuatu, to the sample. Bhutan and Mauritania were dropped since no data for these variables was available.

[7] Our focus in the short run is also the reason why we do not explore a specification leading to a panel cointegration analysis. Admittedly, we can also study the short term dynamics with an error correction model derived from a panel cointegration. However, due to the multiple complications arising from this methodology (Breitung and Pesaran, 2005) there are no obvious advantages of this specification compared to a panel estimation with stationary variables.

[8] We consider armed conflicts causing at least 1,000 battle-related deaths in a given year (level of intensity two in the UCDP/PRIO dataset).

[9] The choice of instruments follows closely Lane (2003).

[10] Under the null hypothesis that the over-identifying restrictions are valid, the J statistic is asymptotically distributed as a chi-square variable with $(m - k)$ degrees of freedom (where m is the number of instruments and k is the number of explanatory variables. All estimated regressions include two explanatory variables, as the impact of GDP growth on the fiscal variables is estimated separately for WAEMU and non-WAEMU countries, and 9 instruments — four lags of GDP growth for each of the two country groups and the growth of world GDP weighted by each country's export/GDP ratio.

[11] To check the robustness of the estimated elasticities of public investment to GDP growth we run individual regressions for each country for the WAEMU and non WAEMU groups, keeping the same specification than the

one used in the panel estimation. Because the limited degrees of freedom these estimations are not very powerful. However, the mean estimates across all countries would be as powerful as in the panel regression. These estimates present the advantage of potentially revealing the existence of outliers in the sample. We detect outliers using the following rule of thumb: if the coefficient associated with the pro-cyclicality of public investment is one standard deviation higher or lower than the mean of the group we consider the coefficient, and by extension the related observations, as outliers. We find two outliers for WAEMU countries for the period 1995-2012: one outlier driving up the mean, and the other one bringing it down. It appears then that the effect of the outliers on the results for the WAEMU group is mostly compensated and does not drive the main results. In addition, we obtain that the mean of the coefficients associated to the pro-cyclicality of public investment for WAEMU countries is lower than the coefficient reported in Table 3. However, consistently with our panel results, the mean of the coefficients for the WAEMU group is significantly higher than the one associated to the non-WAEMU economies.

[12] When considering flexibility, it is important to distinguish temporary from permanent (or persistent) shocks. While temporary shocks can be accommodated to the extent there is fiscal space for counter-cyclical response, adjustment to permanent shocks is inevitable. Such adjustment has to happen through some combination of price, labor, and capital movements. Fiscal policy can only delay, often unproductively, the necessary adjustment to permanent shocks.

[13] Adjustments made to fiscal rules during the global financial crisis provide examples of such attempts to accommodate cyclical shocks (see Schaechter et al., 2012). Latin American countries — especially Peru, Colombia, and Panama — offer recent examples of rules-based fiscal policies that target the overall budget balance, as well as of changes designed to accommodate the incidence of external shocks (Berganza, 2012).

[14] The Swiss "debt brake" framework (initiated in 2003) sets annual expenditure targets consistent with balanced structural budgets that reflect estimations of cyclically adjusted revenues (Beljean and Geier, 2013). Deviations from the target are accumulated in a notional control account. If the negative balance in this account exceeds 6 percent of expenditures (about 0.6 percent of GDP), then corrective action is required to reduce the account balance below this ceiling within three years. The recently revised (in 2011) German fiscal rule follows a similar design.

[15] Three WAEMU countries (Cote d'Ivoire, Mali, and Niger) are natural resource producers, with Togo being a prospective resource exporter.