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A Reexamen Of Fiscal Cyclicality In Waemu[1] Countries

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Abstract *:We want to characterize and explain the cyclical behaviour of fiscal policy in WAEMU countries in the period from 1980 to 2016, using system GMM as the preferred estimation method for the underlying sample and model specification.Like in other sub-Saharan countries, total publicexpenditure in the WAEMU is found to be strongly procyclical. This is most pronounced for public investment, which overreacts to output growth with elasticity above 1.We further find that financing constraints (proxied by the foreign aid-to-GDP ratio) and fiscal space (proxied by the lagged public debt-GDP-ratio) partly explain this behavior. However, the improvement in the quality of fiscal governance as well as the adoption of multilateral budgetary surveillance rules (PCSCS) conditional on the quality of fiscal governance allow member countries to conduct a less procyclical fiscal policy.*

Keywords*: fiscal policy, cyclical stance, multilateral surveillance, institutions, system GMM, WAEMU.*

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I. Introduction

A large empirical literature[3] on the issue of cyclical fiscal policy[4] concludes that fiscal policy in developed countries is countercyclical or acyclic and procyclical in developing countries (DCs). In addition, both theoretical and empirical studies have thus identified two broad groups of factors that explain why fiscal policy has often been procyclical in developing countries: political and institutional factors that lead to political power dispersion, corruption, rent seeking behaviour (Tornell and Lane, 1999 ; Lane, 2003 ; Talvi and Végh, 2005) and financing constraints and limited access to international capital markets in bad times (Gavin and Perotti, 1997).Alternatively, the recent financial and economic crisis has highlighted the fact that a high debt environment can reinforce the pro-cyclical behavior of fiscal policy because it reduces fiscal space as well as the effectiveness of fiscal stimulus (Lledó and al., 2011; World Bank, 2015; Combes and al., 2017).

Regarding the case of the WAEMU countries, to our knowledge, only the study by Guillaumont-Jeanneney and Tapsoba, (2011) relates to zone. And the authors show that the PCSCS[5] multilateral rules reinforce the procyclical nature of fiscal policy.This study differs from the previous one on three levels.

Firstly, we calculate cyclicality indicators for disaggregated components of fiscal policy[6]. in WAEMU countries. A disaggregated approach is potentially useful in highlighting the components of government spending that are most prone to procyclicality. Furthermore, only examining broad aggregates can be misleading if subcomponents move in offsetting ways. Identifying differences in cyclical behavior across spending categories may stimulate further theoretical research and may also be useful in making projections about future fiscal trends. Moreover, the work of Alesina and Perotti (1995) establishes that the composition of government spending is critical in determining the success of attempts at fiscal adjustment.

Then, the examination of the cyclicity of the components of public expenditure in parallel with the cyclicity of overall expenditure allows us to know whether compliance with the multilateral budgetary rules for monitoring the PCSCS[7] was not accompanied by an anti-public invesment expenditure bias (Blanchard and

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[3]Gavin and Perotti (1997); Talvi and Végh (2005) ; Kaminsky and *al*. (2004), Manasse (2006), Alesina and al. (2008), Ilzetzki *and al* (2008).

[4] Fiscal cyclicality is expected to indicate the extent of the reaction of fiscal policy to business cycle. It is a question of examining the extent to which counter- or pro-cyclical fiscal policies affect the business cycle (i.e. stabilize or amplify economic fluctuations).

[5] The regional Convergence, Stability, Growth, and Solidarity Pact, (PCSCS) adopted by the Conference of Heads of State of WAEMU in December 1999.

[6] More precisely, we determine the nature of the cyclical behavior of fiscal policy in WAEMU countries by using the variables public consumption expenditure and public investment expenditure as indicators of The Cyclicality of Fiscal Policies.

[7] WAEMU introduced in 1999 the "Pact on Convergence, Stability, Growth and Solidarity between Member States of the WAEMU". The Pact disentangles the criteria into key and secondary criteria. The key criteria comprise: i) The Ratio of fiscal balance to nominal GDP (key criterion) should be greater than or equal to 0% in 2002. Its non-compliance results in sanctions, except in exceptional circumstances such

Giavazzi, 2004)[8]. Finally, we analyze the factors that explain this cyclical behavior found in the countries of the Union by assessing the influence of the quality of fiscal governance on the ability of the WAEMU countries to implement countercyclical fiscal policies. Indeed, most econometric studies explaining the pro-cyclical character of fiscal policy through institutional and political factors, often lead to ambiguous results.[9] However, one could consider indicatorsof institutional quality that better captures economic institutions supporting fiscal policy frameworks such as budget system and fiscal transparency, instead of implicit concept of institutions when one explores the institutional determinants of the cyclicality of fiscal policies in Sub-Saharan Africa (SSA). Because fiscal performances appear to be affected by fiscal institutions which have not been dealtwith the existing literature[10]. In addition, attempts to estimate the quality of fiscal governance on the behavior of the cyclicality of thefiscal policies of the countries were initiated using the examination of the impact of fiscal rules[11] on the cyclicality of the fiscal policy without achieving a consensual result[12].Although, we know for example that the introduction of fiscal rules has been encouraged since the severe global economic crisis[13]Consequently,we analyze the extent to which WAEMU's PCSCS could help authorities to implement countercyclical fiscal policy.

This article finds that the cyclical behaviour of WAEMU's government expenditure is strongly procyclical. We find thatis most pronounced for public investment, which overreacts to output growth with elasticity above 1. Our analysis shows that fiscal space (proxied by the lagged public debt-GDP-ratio) partly explain the procyclicality of WAEMU fiscal policies, as does foreign aid probably because of its own procyclical behavior. However, the improvement in the quality of fiscal governance as well as the adoption of multilateral budgetary surveillance rules (PCSCS) conditional on the quality of governance allow member countries to conduct a less procyclical fiscal policy.

The remainder of this paper is structured as follows. Section 2 presents a brief review of the literature. Section 3 highlights stylized facts of macroeconomic developments in WAEMU area over the last four decades, section 4 outlines the data and methodology used, Section 5 presents the empirical results, while the latter draws conclusions and outlines the major policy recommendations.

II. Literature Review

In the past decade, much of the literature associated with fiscal policy has been devoted to the issue of cyclicality. Several factors have been put forward to explain the reasons that hinder the ability of developing countries to adopt optimal stabilization policies.Two main sets of factors have been proposed as determinants of fiscal procyclicality in the existing literature.

One is related to the borrowing constraints which arise from imperfection of capital markets (Gavin and Perotti, 1997 ; Riascos and Végh, 2003; Kaminsky and *al.*, 2004). They argue that the lack of access to credit markets during contractions will tend to result in the government cutting back on spending and raising taxes, which is a common feature of developing countries.Aizenman et *al*. (2007) argue that since many developing countries have limited access to international credit markets, procyclical fiscal policy can arise during recessions when binding constraints force governments to reduce expenditure or increase taxation. On the other hand, the procyclical bias of fiscal policy in developing countries is also attributed to their limited

defined by Regulation No. 11/99/CM/UEMOA, Article 10; ii) The average annual rate of inflation should not exceed 3%; ii) The ratio of outstanding debt to nominal GDP should not exceed 70% by the year 2005;iv) current payment arrears should not be generated. There are also four second criteria: i) The tax burden should reach at least 17% of GDP. ii) The ratio of public wage bill to tax revenue should not exceed 35%;iii) The share of domestically-funded public investment should reach at least 20% of tax revenues iv) The ratio of the current account balance excluding grants to nominal GDP should be greater than or equal to 5%.

[8] In fact, the constraints linked to the PCSCS do not specify what type of public expenditure must be reduced in order to achieve the specific budgetary objectives. Thus, in the WAEMU over the 2000-2002 sub-period, Côte d'Ivoire fulfilled on average the condition of the key criterion which is the basic budgetary balance. The public deficit has shrunk, of course, but thanks to an amputation of investment expenditure greater than the reduction of the tax burden (Tanimoune and Plane, 2005). Which leads us to say, of course, that we must look at the budgetary balance but also at the composition of public spending.

[9] For example, studies of Calderón et *al.*, (2004 et 2016) ; Diallo (2009) and (Frankel et *al.*, 2013) suggest that better political institutions should lead to less procyclical fiscal policies. However, Llédo et*al*. (2011) find no evidence that political institutions have any effect on the cyclical behavior of fiscal policy.

[10]For example, Manasse (2006) employs several institutional indices including government stability, bureaucracy quality, law and order, and democratic accountability. Diallo (2009) employs the political rights and civil liberty indices to capture the degree of democratization. Frankel and *al.* (2013) construct an institutional quality index including law and order, bureaucracy quality, corruption, and non-political, non-economic, and non-financial factors affecting investment risk.

[11] Fatás (2010) suggests fiscal rules as a narrower set of institutions.

[12] (Gali and Perotti, 2003; OECD, 2003; Annett, 2006; Golinelli and Momigliano, 2006; Wyplosz, 2006; Afonso and Claeys, 2008; Leigh and Stehn, 2009) attest that the implementation of fiscal rules did not impact on fiscal cyclicality. In contrast, Schick (2003) shows that the introduction of the fiscal rules of the Stability and Growth Pact could lead to procyclical policies. While Manasse (2006) shows that the presence of fiscal rules could reduce the budget deficit on average and strengthen the counter-cyclical nature of fiscal policy.

[13] Debrun et al. (2008) find that the number of countries utilizing such rules has increased more than 10-fold over the last 20 years. The majority of them favor rules targeting the budget balance, the public debt, or a combination thereof like is the case in the countries in our sample.

financial depth, that is, a restricted supply of funds available to the government and the private sector (Caballero and Krishnamurthy, 2004).

This approach could explain the situation of developing countries persuasively, but it has been criticized in the sense that it cannot explain the reason why these countries do not prepare by accumulating reserves in booms (Alesina and *al.,* 2008; and Ilzetzki, 2011) and that it is not based on econometric evidence (Woo, 2009). On the contrary, fiscal policy tends to be more often countercyclical in countries characterized by a high level of financial development and a monetary policy targeting inflation (Aghion and Marinescu, 2007) or in economies more open to the outside. (Afonso, et *al.,* 2008). However, Bénétrix and Lane (2013) in a recent study show that the budget cycle is affected by the financial cycle in addition to the production cycle for all the member countries of the euro zone

The second set of factor focus on political economy distortions (such as common pool problems, power dispersion, corruption, rent seeking behaviour, and social inequality) to explain the inability of governments to run surpluses or rein in spending in good times.For instance, windfall revenues may not be saved by governments and are spent instead in favor ofpowerful groups (Tornell and Lane 1999, Akitoby *et al.*, 2006)[14]. Procyclical policy responses may also result from rent-extractive governments that appropriate revenues to serve special interests rather than the public welfare (Alesina and al., 2008; Ilzetzki, 2011)[15].Talvi and Végh (2005) argue that a budget surplus arouses pressure to increase expenditure in good times, and they show that procyclical fiscal policy could be optimal if the government has a huge fluctuation in the tax base, which is common in the developing countries since tax systems in these countries tend to be consumption rather than income based. Woo (2009) shows that the social polarization of preferences over fiscal spending could make fiscal policy procyclical.In addition, Recent evidence shows that the strengthening of the institutional framework has enabled some developingcountries to escape the pro-cyclicality trap (Frankel et *al.,* 2013 ; Calderón et *al*., 2016).).

The evidence shows that fiscal policy has been pro-cyclical for most developing countries; including countries in Sub-Saharan Africa (SSA). For instance, Diallo (2009) investigates the impact of institutions on fiscal policy; he finds the existence of procyclical fiscal policies across the SSA region, but concludes this can be reversed by strong institutions[16].However, Lledó et *al.,* (2011) fail tofind a robust effect of political institutions on the cyclical stance of fiscal policyin 44 SSA (including all eight WAEMU members) during 1970–2008.

Nevertheless one could consider fiscal institutions, such as budget system and fiscal transparency, instead of implicit concept of institutions when one explores fiscal procyclicality because fiscalperformances appear to be affected by fiscal institutions which have not been dealt with the existing literature.

There are several practical issues about fiscal institutions which might affect fiscal procyclicality. First, fiscal transparency could reduce corruption and rent seeking behavior, and it in turn may help mitigate fiscal procyclicality. Second, one can think of the implementation time lags caused by the political procedure and institutional reason. Spending adjustments to the business cycle takes considerable time since they need formal procedure, such as the approval of the assembly. Also, it might take time or cost to adjust spending items because a large number of spending items are non-flexible. These characteristics make it more difficult for governments to operate countercyclical fiscal stimulus in both developed and developing countries. Third, the lack of forecasting ability could be one of the reasons behind fiscal procyclicality. It is difficult for policymakers to predict the exact timing of the business cycle. Policymakers determine fiscal policy under a veil of ignorance about the state of the economy in practice (Manasse, 2006), so they often decide expansionary fiscal policy after the economy starts to recover (Burger and Jimmy, 2006). This phenomenon is more common in developing countries because they have poor forecasting ability on economic situation. Fourth, the characteristics of government spending could affect the stance of fiscal policy. The level of fiscal procyclicality could vary depending on spending categories (Ilzetzki, 2011; Lane, 2003). Therefore, the composition of spending of each country could lead to a different level of fiscal procyclicality. Developed countries tend to have larger current transfers than developing countries, so they can mitigate the level of fiscal procyclicality through automatic stabilizers. Alternatively, the recent financial and economic crisis has highlighted the fact that a high debt environment can reinforce the pro-cyclical behavior of fiscal policy because it reduces fiscal space as well as the effectiveness of fiscal stimulus (Lledó and al., 2011; World Bank, 2015; Combes and al., 2017).

In sum, it is clear from this literature review that the cyclicalproperties of fiscal policy issue is interesting and relevant. Although not exhaustive, it appears from the empirical literature that there is no final "verdict" about the impact of institutional framework variables on the cyclical behaviour of fiscal policy in

[14]Tornell and Lane (1999, pp.85-86) and Lane (2003, suggest "the voracity effect" as the main reason for fiscal procyclicality. They argue that spending could grow more than the proportional increase in income if multiple power groups compete for fiscal revenues since the intensity of fiscal competition increases during booms.

[15]These papers empirically find that less corrupt governments are able to implement counter-cyclical policies.

[16]The effect of democracy itself on procyclicality may, however, be ambiguous; see Alesina and al., (2008).

SSA.Moreover, although studies examining the issue of fiscal cyclicality abound, few are those which specifically concern the countries of the Union. But the cyclical behaviour of fiscal policy in WEAMU is important, as, fiscal policies are to play a role in mitigating external shocks that exacerbate economic cycles across the region. This study therefore claims to complement the literature on the issue for the countries of the region.

III. Macroeconomic developments in WAEMU area : 1970-2016

The objective of this section is to analyze trends and developments in the budgetary situations of WAEMU member states. Recent macroeconomic developments in WAEMU area can be divided into three periods from 1970.Because the economic history of the States of the Union has been marked by two major events: the devaluation of the CFA Franc in 1994 and the entry into force of the PCSCS in 1999.

3.1-The period1970 - 1993

This period was characterized by a deterioration in the public finances of the countries of the Union.On the one hand, benefiting from a favorable economic situation[17], the States of the Union are carrying out expansive budgetary policies which have widened the deficit to 5% of the Gross Domestic Product (GDP) on average between 1975 and 1985.On the other hand, the downturn in commodity prices (started precisely in 1982) and the depreciation of the dollar (billing currency for their foreign trade) led to the worsening of budget deficits which reached on average 7.6% between 1986 and 1993. The states of the Union were forced to adopt Structural Adjustment Programs (SAPs) during the 1980s in order to reduce demand and restore macroeconomic balances, which resulted in a restrictive fiscal policy.In this context of persistent fiscal and external imbalances in most of the WAEMU countries, the devaluation of the CFA Franc which is the common currency of the Union was decided in 1994.

3.2-The period1994 to 1999 (Consolidation of public finances)

Compared to previous years, the period from 1994 to 1999 was characterized by a favorable turnaround in the situation of public finances following the devaluation of the CFA Franc in January 1994. Since the consolidation of public finances took place in a consistent manner satisfactory with the consequence of reducing the overall deficit in relation to GDP from 5.2% in 1994 to 1.4% in 1996.However, the period from 1997 to 1999, the mechanical effect of devaluation almost disappeared. The adjustment dynamic in the first years following the devaluation was slowed down, resulting in the deterioration of the main budget balance, which fell from 0.1% of GDP in 1997 to -0.6% in 1999.This situation, reflecting precarious performance, led to the adoption of a multilateral surveillance system, the PCSCS, on December 8, 1999.

3.3-The period2000-2016

More than ten years after the implementation of the WAEMU's Pact[18], considerable progress in the consolidation of public finances, as well as greater convergence of economic policies, has been observed in the WAEMU. Indeed, the analysis of public finance management performance, viewed from the perspective of the basic budget balance, has improved markedly from what it was in the late 1980s and early 1990s. However, the objective of zero or positive balance has known a sawtooth trend contained in an interval varying between -5.8% and 2.7%, i.e. an amplitude of 8.5 (Appendix 1 and Appendix 2). Overall, the experience of WAEMU fiscal rules was mixed, with limited observance of the deficit target, a complex set of rules, and limited incentives for voluntary compliance or because the criterion itself needs to be reviewed. The WAEMU convergence criteria, which include WEAMU fiscal rules, have been revised in 2014[19].

IV. Econometric Analysis

We successively present the econometric approach, the econometric processing of estimation models, and the data.

4.1-The econometric approach

There are two methodologies adopted in the existing literature in measuring the cyclicality of fiscal policies. One is the correlation based measure of cyclicality (Lane 2003; Riascoc and Végh, 2003; Talvi and

[17] Commodity prices were favorable for the countries of the Zone

[18]For the recent state of convergence in the zone, see the semi-annual report on the execution of the multilateral surveillance of the WAEMU's commission, June 2018 or a summary in Table 2 in Appendix 2

[19]These convergence criteria are presented as follows: three (03) first order criteria namely : Overall fiscal balance $\geq$ -3 percent of GDP,The ratio of outstanding debt to nominal GDP should not exceed 70% and The average annual rate of inflation should not exceed 3%; and there are also two second criteria.These respectively relate to the ratio of the government's wage bill to tax revenue, which cannot exceed 35 percent and to the ratio of government tax revenue to GDP which should be at least 20 percent.

Végh, 2005; Carmignani, 2010; Ilzetzki, 2011; Huart, 2011), and the other is the regression based measurement. The former has a weakness that the result of correlation might be misleading under different volatilities of samples (Lane, 2003; Woo, 2009) even though it has an advantage of simplicity. Therefore, this paper uses the second method which is prevalently utilized in the literature.

Using fiscal reaction function (*equations 1, 2 and 3*), this section first analyzes the cyclical properties of government spending in WAEMU countries using a disaggregated approach to the components of public spending government and then we determine the reasons for this cyclical behavior. In particular, we underline the effect of the quality of fiscal governance (QGB) and that of the adoption of fiscal rules conditional on the quality of fiscal governance on the capacity of the countries of the Union to conduct countercyclical fiscal policies

To do this, our empirical strategy consists of two steps: in the first step, we seek to analyze the cyclical nature of fiscal policy in the Union from a disaggregated approach to public expenditure. In the second step, we determine the factors that may explain the cyclical nature of fiscal policy in countries in this zone.To do this, our empirical strategy consists of two steps: in the first step, we seek to analyze the cyclical nature of fiscal policy in the Union from a disaggregated approach to public expenditure. In the second step, we determine the factors that may explain the cyclical nature of fiscal policy in countries in this zone.

4.1.1.The cyclical nature of fiscal policy in WAEMU

To analyze the cyclical nature of fiscal policy in WAEMU, two empirical models will be developed. In the first model, following Lane (2003), Thorton (2008), Lledó et al., (2011) and Frankel et al., (2013), this function takes the following form:

$$\Delta FISCAL_{it} = \alpha_i + \beta \Delta RGDP_{it} + \gamma \Delta FISCAL_{it-1} + \varepsilon_{it} \quad (1)$$

In the second model, our interest will be in estimating a fiscal reaction function which will have the form of equation (2). Indeed, the choice of the estimate of these two equations makes it possible to empirically verify the theoretical hypothesis developed by Ilzetzki and Végh (2008) for the UEMOA zone[20]. This also allows us to check whether the cyclical behavior of fiscal policy varies from one specification to another.

$$\Delta FISCAL_{it} = \alpha_i + \beta \Delta RGDP_{it-1} + \gamma \Delta FISCAL_{it-1} + \varepsilon_{it} \quad (2)$$

where $FISCAL_{it}$ is various categories of the log real government spending in country i and year t.$FISCAL_{it}$ is a fiscal indicator and Δ is a first difference operator. ε_{it} denotes a residual random term Our focus on government spending is consistent with the argument developed by Kaminsky, Reinhart, and Vegh (2004) that policy instrument variables, rather than outcome or targetvariables, are a more appropriate way to measure the cyclicality of fiscal policy. Anotherpolicy instrument that may also serve this purpose is government tax rates, but datalimitations for our sample prevent us from using tax rates as dependent variables. Othermeasures of fiscal policy, such as the overall fiscal balance and tax revenues, are lessappropriate for measuring thecyclicality of fiscal policy because they reflect outcomes thatare only partially determined by policymakers and that are themselves likely to be affectedby fluctuations in the output cycle.

Thus we examine fiscal cyclicality for the following public expenditure variables: government consumption expenditure($\boldsymbol{GC_{i,t}}$), investment expenditure ($\boldsymbol{GI_{i,t}}$) and total public expenditure ($\boldsymbol{GT_{i,t}}$). This categorization of government expenditure is based on the economic classification of public expenditure and taken from the Table of State Financial Operations (TOFE)[21]. As for the economic activity, in practice, it is measured either by real GDP or by the output gap. As part of this study, we carried out two series of estimates by considering these two variables in turn. However, it turns out that the estimates made by considering the growth rate of GDP provide the best results. Thus, like (Jaimovich and Panizza, 2007; Ilzetzki and Végh, 2008; Thornton, 2008; Lledó et al., 2011), we also adopt this variable. Thus, the $\boldsymbol{RGDP_{i,t}}$ variable, is the real GDP of country i at date t which is the proxy variable of economic activity.

The inclusion of the lagged dependent variable $FISCAL_{it-1}$ (to measure persistence of fiscal actions)nas a control variable in the explanation of the cyclical behavior of fiscal policy can be explained by purely practical arguments. According to Ballabriga and Martinez-Mongay (2002), it is realistic to expect high fiscal policy inertia since drastic changes in tax rates or reversal of past spending commitments are usually unfeasible. Galí and Perotti (2003) also recommend the inclusion of a lagged policy term arguing that any adjustment to a target budget balance is only gradual. However, the coefficient of the lagged dependent variable γ is expected to have a positive sign and be less than 1[22].Because automatic stabilizers are likely to be small in WAEMU

[20] The approach of Ilzetzki and Végh (2008) is based on theoretical models that assume a contemporary government response to changes in Real GDP and a delayed government fiscal response.

[21]Due to the unavailability of complete datasets on certain categories (transfer and subsidies), they were ignored in the analysis.

[22] For a given time series process suit$x_t = \gamma x_{t-1}$, or equivalentlysuit $\Delta x_t = \gamma \Delta x_{t-1}$ mean reversion implies that $0 < \gamma < 1$The series will either oscillate around the mean or drift away from the mean unless$|\gamma| < 1$.

countries[23], equations (1, 2 and 3) are reasonable approximation of discretionary fiscal policy. In addition, data to estimate equations(1, 2 and 3) are easily available, thus avoiding the shortcomings of the filtering approach.The cyclicality of fiscal policy isdetermined by looking at the sign and size of coefficient : β if β<0 fiscal policy is countercyclical; if β=0it is acyclical; and if β>0 it is procyclical.

In order to account for common shocks affecting fiscal policy in our sample, we introduce a dummy variable among the regressors to take account of the effects of the 1994 devaluation of the CFA franc, with the value 1 for the subsequent period. The assumption is that structural adjustments that accompanied the devaluation as well as the subsequent adoption of regional convergence criteria might have imposed some additional constraints on policy behavior of the fiscal authorities.We also control country specific shocks by including for instance the level of development measured by real GDP per capita (**$GDPPC_{it}$**). Following the conclusions of most of the previous empirical studies that fiscal policies are less procyclical in wealthier countries (especially advanced countries), we would expect a negative coefficient on GDP per capita.

Finally, given the heterogeneity across member countries, is also taken in account, we include in the estimates, year-specific dummy variables to control for the WAEMU's covariant shocks to ensure that the identified fiscal behavior is specific to fiscal authorities only. These variables are added one by one, for two main reasons. First, the sample and the method we use imply that there is a reasonable risk we will later quickly run into a degrees of freedom problem as we extend this initial specification.Second, the basic econometric specification that we will use is dominant in studies of fiscal cyclicality, because, apart from the baseline specification on the cyclicality of fiscal policy, there is no general theory of factors possible influences on fiscal cyclicality.Instead, there are various theories and assumptions about the possible impacts of several factors influencing fiscal cyclicality. Equation (3) allows us to take to account for common shocks affecting fiscal policy in our sample and to control for cross-sectional dependence that have influenced national fiscal policies in the WAEMU zone.

$$\Delta FISCAL_{it} = \alpha_i + \beta \Delta RGDP_{it} + \gamma \Delta FISCAL_{it-1} + X_{it} + \varepsilon_{it} \qquad (3)$$

However, we start our estimations with our benchmark specification which is based on equation 1. While equation 3 will allow us to test the robustness of our benchmark results in terms of cyclicality, but also to explain as much as possible the fiscal behavior of WAEMU countries by distinguishing between the effects of economic fluctuations and the effect of others factors on the behavior of fiscal policy.In addition to the study of the cyclical behavior of fiscal policy in the WAEMU zone, an analysis of the factors of this cyclical behavior will also be carried out.

4.1.2. Determinants of Cyclical Fiscal Policy in the WAEMU

To find outthe influence of the quality of fiscal governance on the ability of the WAEMU countries to implement countercyclical fiscal policies, this paper estimates a one-step approach of the form (see, for example, Calderón and Schmidt-Hebbel, 2008; Alesina, et *al.* 2008; Diallo, 2009; Lledó, et *al.*, 2011 ; Frankel et *al.*, 2013 ; Calderón et *al*., 2016) :

$$\Delta FISCAL_{it} = \alpha_i + \beta_1 \Delta RGDP_{it} + \beta_2 Z_{it} * \Delta RGDP_{it} + \varepsilon_{it} \qquad (4)$$

Where Z_{it} denotes the explanatory variablesused as factors that may explain the cyclical stance of fiscal policy. The explanatory variables include the quality of fiscal governance index (QGB). Our aggregate measure of institutional quality (QGB) used a more reduced set of components from the ICRG political risk index. The rationale behind this synthetic index is to select the components that may have greater influence in the fiscal policy decision-making process. Following Frankel et al. (2013) we use corruption (COR), bureaucratic quality (QB). These four variables are normalised between 0 and 1 (with higher values indicating greater institutional quality).We run robustness checks using the aggregated of these two components namely QGB index. The synthetic index QGB is obtained by computing an average of his two components. The variable aid-to-GDP ratios is used to proxy for financing constraints. Aid dependency is important and remains the main source of financing for developing countries when they are shut out of capital markets, or during economic downturns.

In addition to these usual factors, we test the potential influence of variables measuring fiscalspace[24], which may affect a government's ability to conduct active spending policy. Fiscal spaceis defined as the room to maneuver, without jeopardizing fiscal sustainability.Fiscal space is proxied by the lagged public debt-GDP-ratio (***$DEBTRT_{it-1}$***). Note that the debt stock is introduced with a lag to ameliorate issues of reverse causality. In

[23] We need to point that that there is evidence that documents the inability of automatic stabilisers to have a smoothing effect on aggregate fluctuations among developing countries (Suescún, 2007).

[24] Heller (2005) defines fiscal space as the availability of budgetary room that allows a government to provide resources for a desired purpose without any prejudice to the sustainability of a government's financial position or the stability of the economy.

addition, official development assistance[25] (**$ODA_{i,t-1}$),** normalized by product, helps finance public spending. However, its favorable impact can be mitigated by its irregularity. Thus, the volatility and unpredictability of aid accentuate disruptions to the real GDP (Bulir and Hamann, 2003). This variable also reflects the financing constraints of the WAEMU countries.

Moreover, we introduce a dummy variable (**PCSCS**) among the factors to take account of the effects of adoption of regional convergence criteria, with the value 1 for the subsequent period. The assumption is that structural adjustments that accompanied convergence criteria might have imposed some additional constraints on policy behavior of the fiscal authorities.

Finally, to address whether the effectiveness of convergence criteria in reducing fiscal procyclicality depends on the level of quality of fiscal governance, we use the interaction term (**PCSCS_QGB**)[26] which allows us to measure the interaction of both PCSCS rules and government efficiency together in reducing procyclicality.

All control variables are included as the form of interaction variables to estimate the effect of these variables on fiscal procyclicality. $\beta_1 + \beta_2 Z_{it}$ is the net procyclicality of each explanatory variable (for any given level of variable).Thus, it easy to se that a decrease in procyclicality will depend on the values estimated for $\beta_2$and changes in the factor itself: decreases in the factor will decrease (increase) procyclicality if$\beta_2 > 0$ ($\beta_2 < 0$) ; decreases in the factor will increase (decrease) procyclicality if

$\beta_2 < 0$ ($\beta_2 > 0$).

Some existing literature (Lane, 2003; Aghion and Marinescu, 2007; Woo, 2009) utilize a two-step approachto examine the determinants of fiscal procyclicality. This approach could reflect a different output elasticity of each country avoiding unitary elasticity assumption of a one-step approach (Lane, 2003). However, it is likely to be biased and overestimate the true effect of control variable on the level of procyclicality even though it is weak or insignificant becausethe two-step analysis could suffer from small sample bias since our sample includes only 7 countries.This paper employs the one-step approach to check the extent to which WAEMU's PCSCS could help authorities to implement countercyclical fiscal policy.

4.2- Econometric treatment of estimation models

The specification of the selected econometric model[27]implies two sources of endogeneity: the dynamic specification and simultaneity between the dependent and one of the independent variables, i.e. fiscal outcomes and the contemporaneous real GDP. Therefore, the use of pooled ordinary least squares (OLS) or random effects with generalized least squares would be inappropriate, since endogeneity would bias the results. Further, numerous studies in this area use least squares dummy variables (LSDV), although it has long been recognized that in dynamic models with a finite time dimension LSDV yields biased coefficients (also known as "the Nickell bias" following Nickell, 1981).

Related to this, several recent studies tend to treat the Nickell bias more seriously by employing a bias-corrected LSDV estimator, which was proposed by Kiviet (1995), and extended by Bun and Kiviet (2003) and Bun and Carree (2006). However, this correction rests on the assumption of strict exogeneity of regressors and is hence inapplicable in our model with a contemporaneous real GDP, which is endogenous to fiscal outcomes.Therefore, we decided to use the generalized method of moments (GMM), which is being increasingly used in the empirical literature, including cyclicality studies. In particular, we use the "system GMM" estimator (Arellano and Bover, 1995; Blundell and Bond, 1998). One of the advantages of system GMM is that it utilizes a bigger subset of instruments, thus using more information. System GMM is a lot more efficient than difference GMM, particularly with a higher persistence of the dependent variable and a lower time dimension (Blundell and Bond, 1998), which are typical features of macroeconomic data. The improvement in efficiency is enhanced by the ability of system GMM to use more information by generating more instruments not only for the lagged dependent variable, but for other regressors as well, which might themselves exhibit high inertia.

However, GMM estimators are not without their drawbacks. While additional moment conditions are useful in exploiting additional information, they can cause a rapid growth of the instrument count with the time dimension. This problem of too many instruments may result in overfitting endogenous variables, thus failing to remove their endogenous components, which can yield biased coefficients (Roodman, 2009b). In addition, a high number of instruments can severely weaken the Sargan/Hansen test of overidentifying restrictions (Bowsher, 2002). Another potential problem of GMM estimators is the fact that they were originally designed

[25] In the WAEMU, capital expenditure was financed on average 49% by external financing, in particular Official Development Assistance (ODA) during the period 2005-2016. In addition, ODA is very important for the WAEMU countries in general and especially for the Sahelian countries of the Union.

[26]The idea is that good fiscal institutions and processes combined with multilateral fiscal rules provide a mechanism that significantly reduces fiscal procyclicality.

[27] i.e equations (1 ; 2 ; 3 and 4)

and are mostly used for microeconomic panels with a large cross-section and short time dimensions, while their small sample properties may be problematic. Several recent studies nonetheless tend to prefer GMM over alternative estimators even in small samples. Bun and Kiviet (2006) apply higher-order asymptotic methods and Monte Carlo simulations in analyzing the properties of a range of alternative least squares and GMM estimators. They conclude that there is no straightforward advice on what estimator to use in small samples, but system GMM is a relatively safe choice with inertia in the dependent variable and effect stationarity.Hayakawa (2007) also suggests that system GMM is less biased than both difference and level GMM. Finally, on the basis of detailed Monte Carlo simulations, Soto (2010) concludes that, in small samples with high inertia in the dependent variable, system GMM outperforms a wide range of alternative estimators in terms of bias and efficiency, and that it is highly reliable in terms of the power of statistical significance tests.

Bearing all this in mind, we proceed with system GMM as our estimation method. In doing so, we will be careful to avoid the problems of system GMM and follow best practice from the literature, particularly as summarised by Roodman (2009a) and Roodman (2009b). We pay particular attention to implementing and reporting the comprehensive diagnostic checks related to instrument validity and the use of system GMM as the estimation method. Regarding the 'steady state' assumption, we follow Blundell and Bond (1998) and check that the size of the autoregressive coefficient is lower than one, and that the difference-in-Hansen test does not reject the validity of additional instruments for system GMM. In line with the dominant practice in the literature using GMM estimation, we use internal instruments for the two endogenous variables (the lagged dependent variable and the real GDP) in order to utilise one of the main strengths of the method and avoid the difficulty of finding valid external instruments. In order to deal with instrument proliferation, we follow the advice by Roodman (2009b) for lag limiting and collapsing the instruments.

4.3- Dataset

Regarding the data, we constructed a balanced panel of annual data running from 1980 to 2016 including all the WAEMU countries except Guinea Bissau. The selection of countries was dictated by the requirement of having continuous data records over the period 1980-2016. Guinea Bissau has been removed from the sample for reasons relating to the availability and reliability of data.The macroeconomic data for the seven WAEMU countries come from the World Bank's database (World Development Indicators, 2018).However, if necessary, they can be supplemented by the database of BCEAO (Central Bank of West African States). Further details on data sources, description and construction are provided in the appendix 4. Fiscal data and explanatory variables are converted into real terms using the GDP deflator. The quality of fiscal governance is measured by the International Country Risk Guide (ICRG, 2017)[28] index (Corruption and the quality of the bureaucracy)[29].

V. ResultsandDiscussions

5.1- Results

-Results of stationarity tests on panel data

As we mentioned earlier, our model specification was estimated by GMM system. However, a few precautions were necessary before the regression. Like many studies, before estimating our models, we firstly performed the panel unit root test on the variables used in this study. From table 1, we can conclude that our variables are not stationary in level with the exception of official development assistance and the public debt-to-GDP ratio. However, all the variables become stationary in first difference. We therefore included the first difference of the variables in our models to proceed with the estimation by the GMM method[30].

[28] Due to data constraints, we estimated our model over the period 1984-2016 when the ICRG index is used as political instability variable.

[29] Further details on each component of PRS index See appendix 3.

[30]In the literature, equations (1, 2 or 3) are estimated either in level (see Gali and Perotti, 2003; Cimadomo, 2005;) or in first difference (See Catão and Sutton, 2002; Wyplosz, 2005; Alesina et al. , 2008; Bénétrix and Lane 2013). We opt for the one in difference because of the results of our stationarity tests. Further, by this specification: First, the explanatory power of the model and the statistical significance of the coefficient of the lagged government expenditure variable are not artificially inflated by the component due to inertia (which, in turn, is largely part an unexplained phenomenon).Second, the extent of government actions captured by the dependent variable public expenditure is measured with some approximation. Assuming that policy makers are more or less aware of these effects at budget time seems relatively little questionable. The model specification in level implicitly requires that policymakers are able to adjust the level of public spending as real GDP changes direction, an assumption we consider too strong.

Table 1: Results of the unit root tests on the variables des tests

	LLC	IPS	ADF	Decision
level				
model specification: constant and trend				
GC	-2.0895 (0.0183) **	-1.2165 (0.1119)	-1.3294 (0.09191) *	Non-stationary
GI	-1.9888 (0.0234) **	-0.6371 (0.2620)	-0.6285 (0.2648))	Non-stationary
GT	1.2303 (0.8907)	3.4140 (0.9997)	2.2166 (0.9867)	Non-stationary
RGDP	-1.1480 (0.1255)	0.3680 (0.6436)	-0.4640 (0.6787)	Non-stationary
DEBTRT	-2.4083 (0.0080) ***	-1.6468 (0.0498) **	-1.8028 (0.0357) **	Stationary
ODA	-1.3098 (0.0951) *	-1.72469 (0.0423) **	-2.4294 (0.0094) ***	Stationary
GDPPC	-2. 3464 (0.0095) ***	-0.2463 (0.4038)	-0.2417 (0.4045)	Non-stationary
First difference				
model specification : constant and trend				
ΔGC	-8.1756 (0.0000) ***	-8.6852 (0.0000) ***	-8.8386 (0.0000) ***	Stationary
ΔGI	-8.8650 (0.0000) ***	-0.4165 (0.0000) ***	-7.9677 (0.0000) ***	Stationary
ΔGT	-6.0011 (0.0000) ***	-8.4316 (0.0000) ***	-8.7618 (0.0000) ***	Stationary
ΔRGDP	-7.0801 (0.0000) ***	-8.4716 (0.0000) ***	-8.8531 (0.0000) ***	Stationary
ΔDEBTRT	-6.3072 (0.0000) ***	-6.0129 (0.0000) ***	-1.1261 (0.0000) ***	Stationary
ΔODA	-8.0611 (0.0000) ***	-9.6248 (0.0000) ***	-6.5325 (0.0000) ***	Stationary
ΔGDPPC	-8.0241 (0.0000) ***	-9.4166 (0.0000) ***	-9.7705 (0.0000) ***	Stationary

Source: *Author' estimates*

Notes: numbers in parentheses are the p-values; others are the t-statistics. If the p-values are less than 1%, 5% or 10%, The null hypothesis of unit roots was rejected. LLC, IPS, and MW stand respectively for the Levin et al. (2002), Im et al. (2003)), ADF-Fisher test (Choi, 2001) unit root tests. All the tests posit the null hypothesis of unit root.

-Nature of the fiscal cyclicality in the WAEMU zone

Before commenting on the results, it should be noted that diagnostic tests indicate no serious problem with specification or estimation method. Indeed, the Arellano-Bond tests always indicate that there is first-order but not second-order autocorrelation, which is consistent with the identifying assumption of no serial correlation of the underlying error terms in equations 1 and 2.Further, p-values of the Hansen test of over-identifying restrictions lie within the range suggested by Roodman (2009b) and do not approach unity, which would be a warning for instrument proliferation to the point where the test becomes too weak to reject the null of exogeneity. In addition, in all cases the various estimated models are globally significant with regard to the Fisher statistic (p-value <5%). In addition, the explanatory variables are statistically significant.the difference-in-Hansen tests of exogeneity of instrument subsets.

Table2:The cyclical properties of fiscal policy of the WAEMU countries (Sys-GMM)

Dependent Variable : **Difference in log of real government spending**

	(1)	(2)	(3)	(4)	(5)	(6)
	Consumption	Consumption	Investment	Investment	Total expenditure	Total expenditure
$RGDP_t$	1.027***		4.720***		3.587***	
	(0.123)		(1.07)		(0.586)	
$RGDP_{t-1}$		0.313**		4.793**		1.656***
		(0.098)		(1.73)		(0.445)
$Dependent_{t-1}$	-0.184**	-0.095**	-0.023	0.079	-0.448**	-0.379**
	(0.036)	(0.031)	(0.185)	(0.184)	(0.152)	(0.135)
Hansentest	0.437	0.630	0.652	0.189	0.548	0.154
Arrelano-Bond test for AR(1)	0.026	0.018	0.051	0.078	0.052	0.054
Arrelano-Bond test for AR(2)	0.785	0.557	0.930	0.332	0.267	0.894
Number of Observations	245	245	245	245	245	245
Numberof Countries, n	7	7	7	7	7	7
Number of Instruments, i	7	7	7	5	7	7
Fisher test	(0.000)***	(0.040)**	(0.004)***	(0.003)***	(0.000)***	(0.012)**

Source: *Author' estimates*

Hansen J test: Ho: No correlation of instruments with residuals (instrument validity test);

Arellano & Bond test: Ho: Lack of an AR2 effect for residues.

T-statistics are in parentheses. *, **, *** indicate significance at the 10%, 5%, 1% level respectively. The sample period is 1980–2016 (Annual data).

The positive sign of the coefficient assigned to real GDP is consistent with the work devoted to the study of the effects of fiscal policies carried out by African countries in general and of their behavior with

regard to the direction of activity economic in particular. In addition, the positive sign of the coefficient shows that once again, African fiscal policies are generally pro-cyclical. (Thornton, 2008; Diallo, 2009; Guillaumont-Jeanneney and Tapsoba, 2011 ; Llédo *et al.*, 2011, *etc*.). In other words, for the WAEMU countries studied, any improvement in economic activity results in a substantial increase in public consumption, investment and total expenditure in the WAEMU zone and any decrease in economic activity also leads to a reduction in public spending.

The results in Table 2 tell us that public consumption expenditure and total expenditure increase on average by 1.03 and 3.6 percentage points, respectively, when growth increases by one point. We can also observe that past rates of real GDP generally positively influence the growth of public spending (rate varying from 0.31 to 1.66). This result is reasonable given the fact that current fiscal policy is affected by past economic growth, as a considerable part of tax revenue is determined by past economic performance. Then, this result empirically confirms that the theoretical model of Ilzetzki and Végh (2008) which postulates both a contemporary government reaction to variations in the real GDP and a delayed government fiscal reaction is verified for the countries of the WAEMU zone.

Moreover, we can formulate that public investment expenditure is more pro-cyclical (*investment increases by 4.72 percentage point when growth increases by one point*) than consumption expenditure and total public expenditure. This means that in times of boom or bust, government spending adjustments focus on investment spending.

This can slow down the implementation of major reforms (*creation of social infrastructure*) necessary for the eradication of poverty which affects all the countries of the Zone.This reflects the influence of the initial budgetary conditions on the budgetary decisions of a given period, in particular the inertia observed in the evolution of budgetary policy variables due to implementation delays or measures which are on average difficult to reverse in the functioning of the fiscal policy of the countries of the WAEMU zone (Table 2).However, its negative and significant coefficient is of some concern. Indeed this could have negative consequences on the accumulation of public debt because of the inertia found and the possible fluctuations in public spending.

After concluding on the baseline specification, in other sections we introduce additional factors that might affect fiscal policy, i.e. X_{it}. This will enable us to answer two questions: whether the baseline results on cyclicality from this section are robust, and what, if any, are the effect of numerous political, institutional and other factors on fiscal policy. We use system GMM as our estimation method.

Thus, to check the robustness of these results, we include additional control variables in our basic specification. These variables are proxies that can affect the ability of the countries of the Union to implement a counter-cyclical fiscal policy. We can cite, for example, the common exogenous shocks on public expenditure and the heterogeneity of the countries in our sample.

-Robustness analysis of the results on the budget cyclicality of the basic model

To test the robustness of the results of the basic model of equation (1)[31], we conducted two types of analyzes: the sensitivity of our results to common exogenous shocks affecting public spending in the WAEMU countries and that taking into account the heterogeneity of the countries making up our sample.

The tests were performed on equation(3)[32]. We control for common shocks affecting fiscal policy in our sample by including a dummy variable (DCFA) that takes the value 1 from 1994 to 2016 and 0 before.

The hypothesis is that the structural adjustments which accompanied the devaluation as well as the subsequent adoption of regional convergence criteria may have placed additional constraints on the political behavior of the fiscal authorities.In addition, we control for the heterogeneity of the countries in our sample, using an additional control variable which is real GDP per capita (indicator of the level of development of each country).

Before commenting on the results, it should be noted that Similar to previous sections, diagnostic tests in this section indicate no serious problem with specification or the estimation method. The Arellano-Bond tests consistently indicate that there is first-order but not second-order autocorrelation. Further, p-values of the Hansen test of over-identifying restrictions test for each estimate confirm the validation of the instruments.

[31]We only use equation (1) because it is the common specification adopted in the empirical literature on fiscal cyclicality. Furthermore, the specification adopted in equation (2) was to test empirically whether the hypothesis of the theoretical model of Ilzetzki and Végh (2008) on the fiscal reaction function was verified in the WAEMU.

[32]As a reminder, equation (3) is specified as follows:$\Delta FISCAL_{it} = \alpha_i + \beta \Delta RGDP_{it} + \gamma \Delta FISCAL_{it-1} + X_{it} + \varepsilon_{it}$

Table3:Results of the basic model taking into account the common shocks and the heterogeneity of the countries in our sample using the GMM system method (GMM-S)

Dependent Variable : **Difference in log of real government spending**									
	Consumption			Investment			Total Expenditure		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RGDP	0.753** (0.267)	4.845* (2.28)	16.383 (17.113)	3.172** (1.106)	40.893** (13.152)	37.176* (17.851)	3.97* (1.642)	3.296** (1.212)	2.456 (1.062)
$FISCAL_{t-1}$	-0.168*** (0.041)	-0.141** (0.056)	-0.06 (0.133)	-0.101** (0.035)	-0.134*** (0.017)	-0.138*** (0.027)	-0.587* (0.289)	-0.209** (0.071)	-0.221 (0.081)
DCFA	0.060 (0.033)		-0.144 (0.182)	0.302** (0.122)		0.208 (0.166)	0.134*** (0.028)		0.035 (0.114)
GDPPC		-3.764 (2.3)	-14.288 (15.736)		-41.207* (14.169)	-37.428* (18.783)		-3.228** (1.221)	-2.615 (2.40)
Hansen Test	0.460	0.453	0.317	0.357	0.976	0.926	0.403	0.852	0.714
Arrelano-Bond test for AR (1)	0.025	0.022	0.059	0.061	0.049	0.053	0.041	0.013	0.011
Arrelano-Bond test for AR (2)	0.617	0.644	0.946	0.763	0.236	0.265	0.221	0.718	0.727
Number of observations	245	245	245	245	245	245	245	245	245
Number of countries, n	7	7	7	7	7	7	7	7	7
Number of instruments, i	7	7	7	7	7	7	7	7	7
Fisher test	(0.000)***	(0.000)***	(0.004)***	(0.001)***	(0.000)***	(0.000)***	(0.000)** *	(0.000)***	(0.000)***

Source: *Author' estimates*

Hansen J test: Ho: No correlation of instruments with residuals (instrument validity test);

Arellano & Bond test: Ho: Lack of an AR2 effect for residues.

T-statistics are in parentheses. *, **, *** indicate significance at the 10%, 5%, 1% level respectively.The sample period is 1980–2016 (Annual data).

Table 3 presents the results obtained on the cyclical nature of fiscal policies by controlling for heterogeneity accross countries using GDP per capita as proxy. This variable is defined as the log of GDP per capita as included to check whether the cyclical properties of fiscal policy found it in basic model are different whether we control coutries heterogeneity (GDPPC). We also control common shocks on the cyclicality of fiscal policies in WAEMU. We introduce a dummy variable for the period after the 1994 devaluation of the CFA franc, with a value of 1 in the post-1994 period (devaluation of the FCFA noted DCFA). The coefficient of the GDPPC variable has the expected sign and is statistically significant when the total public expenditure variable is used as a proxy for fiscal policy. This reflects the fact that increasing GDPPC should reduce the procyclicality of fiscal policy in the countries in our sample.Moreover, this result corroborates those found in previous studies [Talvi and Végh (2005); Alesina et al. (2008) and Ilzetzki et al (2008) who conclude that developing countries have a procyclical fiscal policy].

However, the impact of structural changes on the cyclicality of regional fiscal policies is ambiguous. The dummy variable is not statistically significant as reported in Table 3. This finding is not consistent with suggestions from others (see for example, Lledó, et al., 2011) that after 1996 and during the recent global financial crisis, public spending has tended to be countercyclical across the SSA countries more generally. Nevertheless, in the case of WAEMU this can be explained by the fact that the additional constraints imposed following the devaluation were relatively applied in the area[33]. Likewise Frankel et al. (2013) show that developing countries which have conducted countercyclical fiscal policy over the period 2000-2009 instead of a previously procyclical one is due to the strengthening of the quality of their institutions.

Control of the level of development of countries and common shocks do not change the basic results (Table 2). These two control variables do not significantly affect fiscal policy, which remains procyclical regardless of the fiscal policy indicator[34].

[33]Thus, the sawtooth evolution contained in an interval varying between -5.8% and 2.7% experienced by the key criterion of the PCSCS. (See Annex 1, Table 1) illustrates repeated violations.

[34]We no longer include these two factors in the rest of our estimates because they are not statistically significant and their introduction does not alter our baseline results.

5.2- Results of the determinants of fiscal procyclicality in WAEMU zone

In this sub-section, we present the results of the factors that may constitute constraints for fiscal policy and that explain the procyclical fiscal behavior of the countries of the Union.We begin by analyzing the effect of fiscal governance on the cyclicality of public spending in the WAEMU zone. Then we present the other factors that can influence the fiscal cyclicality of the Member States.

- Quality of fiscal governance and fiscal cyclicality in the WAEMU zone

The results of Table 4 confirm the procyclical nature of the fiscal policy of the WAEMU countries as shown by the positive and significant coefficient associated with the RGDP variable. In addition, they also highlight the main role of the quality of fiscal governance in explaining fiscal cyclicality.In fact, the coefficient linked to the interaction variable between the RGDP and the quality of budgetary governance in WAEMU countries (QGB) is negative and significant.This reflects the fact that strengthening the quality of fiscal governance will reduce fiscal procyclicality.

Furthermore, it should be emphasized that whatever indicator measuring the quality of fiscal governance is used, it has the expected negative and significant sign. This result confirms the hypothesis that priority should be given to institutional variables measuring the quality of governance and fiscal processes in the analysis of the determinants of the cyclicality of fiscal policy in SSA rather than variables measuring political institutions. Indeed these variables as the type of budget system and fiscal transparency have more effect on fiscal stance than political variables. Indeed, Thornton (2008), Llédo et al. (2011) and Mpatswe et al. (2011) show that changes in political institutions have no impact on fiscal procyclicality in SSA. Similarly Guillaumont-Jeanneney and Tapsoba (2011) use several proxies to capture the political institutional framework of the WAEMU countries. They find no evidence that political institutions have any effect on the cyclical behavior of fiscal policy.

Table4: Nature of Fiscal cyclicality conditional on the quality of fiscal governance by system GMM method

	(1)	(2)	(3)
$RGDP_t$	6.353**	3.393***	7.546**
	(2.127)	(0.823)	(2.605)
RGDP*COR	-14.741**		
	(4.60)		
RGDP*QB		-11.515**	
		(3.539)	
RGDP*QGB			-15.571**
			(4.972)
Constant	0.007	0.021	0.018
	(0.031)	(0.021)	(0.036)
Hansentest	0.678	0.910	0.719
Arrelano-Bond test for AR(1)	0.041	0.080	0.033
Arrelano-Bond test for AR(2)	0.121	0.265	0.125
Number of Observations	192	192	192
Numberof Countries, n	6	6	6
Number of Instruments, i	5	5	5
Fisher test	0.061	0.022	0.065

Source: *Author' estimates*

Hansen J test: Ho: No correlation of instruments with residuals (instrument validity test);

Arellano & Bond test: Ho: Lack of an AR2 effect for residues.

T-statistics are in parentheses. *, **, *** indicate significance at the 10%, 5%, 1% level respectively.

The sample period is 1980–2016 (Annual data).

-Other factors explaining procyclical fiscal behavior in the WAEMU zone

In this subsection, we present the results of other factors that may explain the procyclical fiscal behavior of WAEMU countries. We analyze factors such as financing constraints, fiscal space, and the effects of fiscal rules on cyclical fiscal behavior of WAEMU member states.

The results of Table 5 show that the effect of financing constraints (proxied by the foreign aid-to-GDP ratio) on the budgetary procyclicality of total public expenditure in WAEMU is positive and significant (column 1).This implies that the assertion that foreign aid is itself procyclical and triggers the procyclicality of public spending in developing countries is verified for the WAEMU zone. This result converges with that of Thornton (2008) and Mpatswe et al. (2011). Because, these authors found that there is a positive and statistically significant relationship between aid flows and the procyclicality of fiscal policies in SSA and CEMAC[35] respectively.

[35]CEMAC member countries (Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon, and the Republic of Congo)

Table: 5 : Other determinants of fiscal cyclicality with total public expenditure as dependent variable

	(1)	(2)	(3)	(4)
RGDP	3.664**	0.621	-0.886	-1.302**
	(1.237)	(0.699)	(0.488)	(0.471)
All variables below are interacted with RGDP				
ODA_{t-1}	0.442**			
	(0.180)			
$DEBTRT_{t-1}$		0.226**		
		(0.091)		
PCSCS			2.198***	
			(0.221)	
PCSCS_QGB				-6.205**
				(2.154)
Hansentest	0.477	0.464	0.299	0.539
Arrelano-Bond test for AR(1)	0.019	0.015	0.038	0.061
Arrelano-Bond test for AR(2)	0.519	0.899	0.112	0.429
Number of Observations	245	245	245	192
Numberof Countries, n	7	7	7	6
Number of Instruments, i	7	7	7	5
Fisher test	0.067	0.008	0.000	0.029

Source: *Author' estimates*

Hansen J test: Ho: No correlation of instruments with residuals (instrument validity test);

Arellano & Bond test: Ho: Lack of an AR2 effect for residues.

T-statistics are in parentheses. *, **, *** indicate significance at the 10%, 5%, 1% level respectively. The sample period is 1980–2016 (Annual data).

Then, the variable (**$DEBTRT_{t-1}$*ΔRGDP**) which measures the budget space has a positive and significant coefficient (column 2). This reflects the fact that reducing the level of external debt will reduce the procyclicality of total public spending.Because, a high level of debt reduces the fiscal room for maneuver necessary to combat the slowdown in economic activity. Since this could reduce the incentive to increase spending by raising concerns about fiscal sustainability in reality (Huart, 2011). In addition, the studies by Lledó et al. (2011), World Bank (2015), Combes et al. (2017) underline that sufficient fiscal space (proxy by the debt ratio) helps to reduce the procyclicality of public spending. Therefore, the PCSCS rules on the level of indebtedness play the role of fiscal stabilization.

The coefficient of the variable (**PCSCS*ΔRGDP**) has a positive and significant sign (column 3). This argues for a relaxation of the rigidity of the PCSCS's rules. On the pretext that the criterion of a positive or zero basic budget balance does not encourage States to conduct a counter-cyclical fiscal policy. Thus, governments are tempted to reduce their investments during recessions or to increase them during expansions. Moreover, this result is consistent with those found in Table 2 which showed that procyclicality was very high for public investment spending. Moreover, these results partially support Carmignani's theoretical predictions (2010)[36].

Finally, the coefficient of the interaction term (**RGDP_PCSCS_QGB**) negative and significant (column 4) proves that fiscal rules are effective in reducing procyclicality if they are applied in countries with good fiscal governance.Indeed, the multilateral fiscal rules of the PCSCS mitigate the procyclicality of public spending in WAEMU countries if they are implemented through good quality fiscal governance. This result also confirms that it is better to analyze fiscal cyclicity conditional on the quality of fiscal governance than political institutions as a whole.

VI. Conclusion and Policy recommendations

In this study on a reexamen of fiscal cyclicality in the WAEMU zone, we analyze and explain the nature of the fiscal behavior of the WAEMU countries from a disaggregated approach to public spending.Various robustness tests were also performed on our base specification to ensure the validity of the model results. The results obtained show that fiscal policy is procyclical in the WAEMU zone.Procyclicality is very strong for public investment spending. This procyclicality is explained by the debt ratio, the institutional framework of the national budget process and the multilateral regional surveillance rules (PCSCS).

The very sensitive behavior of public investment to fluctuations in the real GDP suggests weaknesses in the management of public finances in the WAEMU countries. In fact, the Member States, by choosing to respect discipline in order to consolidate their public finances, leads them to make cuts in public spending (social spending and infrastructure spending) in times of economic downturn.However, these cuts can hamper long-term development processes, especially since the countries of the Union have a low level of human

[36]Indeed, Carmignani (2010) argues that supernational fiscal rules by Central African Economic and Monetary Community (CEMAC), and West African Economic and Monetary Union (WAEMU) could prevent governments from implementing countercyclical fiscal policy.

development[37]. In addition, the recent reform of the PCSCS is naturally not sufficient to meet the challenge of countercyclical fiscal policies and sustainable economic growth.Of course, with a view to strengthening economic integration, the PCSCS criteria revised and adopted by the heads of state in January 2015 aim to ensure greater consistency between national budgetary policies and monetary policy.

However, even better designed rules will not necessarily work well if they are not applied as they should.It is therefore the place to encourage the UEMOA Commission to take measures to strengthen country ownership of the new criteria by encouraging them to transpose regional rules into national laws and strengthen monitoring and surveillance. Moreover, in the light of the empirical results obtained, it is desirable that each country work to strengthen its macroeconomic governance (improve the quality of institutions and budgetary processes)This could go through the efficient management of public resources (promising investments, reduction of operating expenses, etc.), transparency in the management of public resources.

Finally, our results suggest that the governments of the countries of the Union need to pay more attention to debt sustainability.On the one hand, a high level of indebtedness reduces the fiscal room for maneuver necessary for the implementation of a countercyclical fiscal policy.On the other hand, the cancellation of the external debt of all the countries of the Union within the framework of the Initiative for the Heavily Indebted Poor Countries (HIPC), then of the Multilateral Debt Cancellation Initiative (MDRI) indicates that the attention given to this issue has been insufficient in the past.

Three main directions for future research on this topic can be identified at this stage:

- First, an immediate extension of our analysis would be to assess how the variations in the level of procyclicality affect the volatility of production and economic growth in the Zone.
- Second, our study deliberately ignored the effects of speedy budget adjustments. In this context, speed designates the sensitivity of the various budgetary instruments to the dynamics of public debt.
- Finally, our study purposely does not consider the other side of the relationship between fiscal policy and growth: the role of fiscal multipliers. Indeed, an analysis of the size and effects of fiscal multipliers in the WAEMU zone will provide us with more information on the impact of fiscal policy on real economic activity in the countries of the Union.

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[37]According to the 2018 Human Development Index ranking, the UEMOA countries have a low HDI. Indeed, here are the ranks occupied by the countries of the Union: Benin 163rd, Senegal 164th, Togo 165th, Ivory Coast 170th, Guinea Bissau 177th, Mali 182nd, Burkina Faso 183rd, Niger 189th.

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APPENDICES

Appendix 1

Table 1Evolution of the Ratio of fiscal balance to nominal GDP in the WAEMU[38] countries, 2000-2013

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
The Ratio of fiscal balance to nominal GDP(≥ 0 %)														
Benin	1.7	-3.0	-2.8	-0.1	-0.5	-1.4	0.1	1.5	-1.1	-1.5	1.5	-0.2	0.4	0.4
Burkina Faso	-1.1	-2.5	-3.7	-2.9	-3.2	-3.5	-4.5	-5.8	-4.9	-1.9	0.4	1.2	-0.8	0.2
Côte d'Ivoire	-0.1	1.1	-0.4	-1.7	-1.3	-1.6	-1.6	-0.6	-1.6	-1.0	-1.6	-4.0	-3.8	-0.6
Guinea-Bissau	-16.9	-6.9	-5.8	-7.0	-12.0	-7.2	-6.2	-7.7	-6.7	3.2	1.0	2.9	1.5	-1.0
Mali	-0.8	-1.7	-1.3	-0.3	-0.7	-1.2	-0.4	-1.2	-1.2	0.4	0.2	-1.1	-1.1	-0.4
Niger	-3.4	-3.7	-1.9	-2.1	-2.2	-1.5	1.1	-0.2	1.9	-2.8	-1.0	-0.1	0.9	1.3
Senegal	1.3	-1.2	1.2	0.2	-0.5	-1.2	-4.7	-2.6	-2.4	-2.1	-1.8	-4.2	-3.0	-2.4
Togo	-2.8	1.5	0.3	2.7	1.4	-2.0	-2.8	-2.7	-0.7	-1.4	1.3	-1.7	-4.2	0.7
WAEMU (average)[39]	-0.3	-0.8	-0.9	-1.1	-1.3	-1.8	-2.1	-1.6	-1.8	-1.3	-0.6	-2.1	-2.0	-0.5
Number of countries in violation	**6**	**6**	**6**	**6**	**7**	**8**	**6**	**7**	**7**	**6**	**3**	**6**	**5**	**4**

Source : Semi-annual multilateral surveillance reports from 2000 to 2013 (WAEMU's Commission)

[38] .Total budget revenue, excluding grants, less total expenditure, excluding investment expenditure financed from external resources. From 2009, total budget revenue plus grants for budget support plus HIPC / MDRI expenditure counterpart for current and capital expenditure minus current and capital expenditure financed from own resources.
[39] WAEMU's average basic budget balance is obtained from the budget balances of the various countries weighted by the nominal GDP of the States in the nominal GDP of the Union

Appendix 2

Table 2: State of convergence in the Union in 2017

		ETAT DE REALISATION DES CRITERES EN 2017 PAR ETAT ET RAPPEL DES PERFORMANCES EN 2015 ET 2016								Nombre de pays ayant respecté le critère		
		Bénin	Burkina Faso	Côte d'Ivoire	Guinée Bissau	Mali	Niger	Sénégal	Togo	2017	2016	2015
1	Solde budgétaire global, dons compris, sur PIB nominal (norme >=-3%)	-5,9	-7,5	-4,2	-1,5	-2,8	-5,1	-2,9	-0,3	4	0	3
2	Taux d'inflation annuel moyen (norme <=3%)	0,1	0,4	0,7	1,1	1,8	2,4	1,3	-0,8	8	8	8
3	Encours de la dette publique totale rapporté au PIB nominal (norme <=70%)	54,5	36,2	42,7	50,1	35,3	42,0	47,7	73,0	7	7	8
4	Masse salariale sur recettes fiscales (norme <= 35%)	47,3	49,9	41,5	41,6	32,0	43,5	32,5	34,2	3	3	3
5	Taux de pression fiscale (norme >=20%)	13,3	16,5	15,5	10,4	15,1	13,1	15,0	20,6	1	1	1
	2017	2	2	2	3	4	2	4	4			
	2016	2	3	3	2	3	2	3	3			
	2015	3	3	3	3	4	2	3	2			

Note: In shaded areas, the criteria are met.
Source: WAEMU's Commission, June 201

Appendix°3 :

Table 3 : Componentsof political risk published by the PRS group ICRG's database

Components of political risk	Maximum score
Government stability	12
Socioeconomic conditions	12
Investment profile	12
Internal conflict	12
External conflict	12
Corruption	6
Military in politics,	6
Religious tensions,	6
Rule of law	6
Ethnic tensions,	6
Democratic accountability	6
Quality of the bureaucracy.	4

Source: *International Country Risk Guide*

Table4 : Descriptive statistics of main variables for WAEMU countries, 1980-2016

Variables	Number of Observations	Mean	Standard deviation	Minimum	Maximum
RGDP	259	23.85195	0.7958845	22.49652	25.8571
GC	259	21. 94767	0.8509096	20.41538	23.95011
GI	259	21.23291	0.9956573	16.99772	23.46668
GT	259	22.44203	0.8453819	20.94641	24.55118
ODA	259	11.36789	5.009875	0.5338624	28.8235
DEBTRT	259	63.29705	38.92016	10.47641	226.9132
GDPPC	259	7.821909	0.510326	7.063035	9.14574
QB	192	0.248698	0.2365455	0	0.75
COR	192	0.382812	0.1399005	0	0.666667
QGB	192	0.432440	0.0840159	0.2	0.7

Source: Our calculations are based on data from the BCEAO and the World Bank. These variables are expressed in log, except the debt ratio and public assistance which are expressed as a percentage of GDP. Institutional variables are normalized so their values are between 0 and 1.

Appendix 4Definitions and Sources of Variables

Table 5: Variable Description and Source

Variables	Definitions	Sources/data calculation
Government Consumption (GC) Government Investment (GI) Government total expenditure (GT)	These different public expenditure variables are used as a proxy for the action of the government's fiscal policy on economic activity. They are collected in nominal value and then deflated by the GDP deflator to make them in real terms.	BCEAO's database
Real GDP (RGDP)	GDP is the indicator of economic activity transformed into real terms by the GDP deflator to obtain the RGDP	World Bank Indicators (WDI, 2018), World Bank
Income per capita (GDPPC)	GDPPC is the proxy used to measure the level of economic development. It allows us to control the heterogeneity of the countries in our sample.	WDI, 2018
Lagged Debt-to-GDP ratio ($DEBTRT_{it-1}$)	$DEBTRT_{it-1}$makes it possible to capture the sustainability of fiscal policy	WDI, 2018
Official development assistance (ODA)		WDI, 2018
The quality of fiscal governance (QGB)	Index measuring the quality of the budget process close to the value 1 for a good quality budget process and close to 0 for bad qualities	Our calculations are based on political risk data from the International Country Risk Guide database (ICRG, 2016). ICRG collects a wide range of political information and financial and economic data, using these underlying data to construct risk ratings for a large number of countries. The index we use is constructed using two different features (sub-indices) of the quality of government, corruption and bureaucracy quality.
Dummy for PCSCS	PCSCS allows us to understand the influence of multilateral rules on the budgetary behavior of states of the union	
Lagged dependent variables ($FISCAL_{it-1}$)	$FISCAL_{it-1}$makes it possible to capture the sustainability of fiscal policy	Our calculations
Devaluation of the FCFA (DCFA) Dummy 1994	(DCFA) allows us to capture the influence of common shocks affecting fiscal policy in our sample by including a dummy variable that takes the value 1 from 1994 to 2016 and 0 otherwise.	

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