Fiscal divergence and monetary integration in West Africa: what to draw from Darvas et al. (2005)?

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Abstract

Fiscally undisciplined and divergent, West African countries are in transition for establishing a monetary union that must be effective by 2020 with the introduction of a single currency named "ECO". From the economic literature, it is argued that business cycles desynchronization is counterproductive to the viability of a monetary union. In addition, in the famous paper of Darvas et al. (*Fiscal divergence and business cycle synchronization: irresponsibility is idiosyncratic*, 2015), it is argued that the existence of fiscal divergences among countries despite the definition of fiscal convergence criteria is counterproductive to business cycles coherence. Using a gravity model based on 2SLS strategy, the author tests this theory by analyzing the effect of the fiscal divergences among the West African countries on their business cycles synchronization. To obtain robust results, the author uses two different business cycle series. The results underscore that a 1% increase in fiscal divergence is associated on average with reduced business cycle coherence by 0.105%, or a 1% decrease in fiscal divergence is associated on average with a better coherence of the business cycle by 0.105%. Because of the existing fiscal divergences among the West African area, this paper proposes some indirect and direct fiscal mechanisms need to significantly reduce them. Indeed, these fiscal divergences could be harmful to the viability of the future regional monetary union.

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1 Introduction

Context

Since its creation in 1975, the Economic Community of West African States (ECOWAS), composed of the fifteen West African countries, pursues the objective of a perfect and successful regional integration. By "perfect and successful regional integration", the fifteen countries want to build an integrated area that respects the five (05) steps of regional integration of Balassa (1961) with the goal to introduce the single currency in 2020. After properly achieving the two first steps (free trade area and custom union) of regional integration proposed by Balassa (1961), the west African economic community has decided to accelerate the integration process by forming an economic and monetary union in 2020 and then dropping the steps of common market and economic union. Indeed, according to Balassa (1961) and Meyer (1962), the economic and monetary union is the last stage of regional integration that we can have.

Countries want to benefit from the introduction of a single currency such as (1) increasing the level of intra-regional trade (Frankel and Rose, 2002; Micco et al., 2003; Bergin and Lin, 2012), (2) reducing financial and banking divergences (Lama and Rabanal, 2014; Gorea and Radev, 2014), (3) the formation of an economic and political bloc on the world stage, and (4) a common space promoting the mobility of factors of production (Gorea and Radev, 2014; Ca'Zorzi et al., 2005).

To accelerate the process of the formation of their regional monetary union, West African countries have proposed two convergence criteria. The first limits the public deficit to 3%[1] of GDP and the second limits inflation rate to 5%[2]. Currently, no fiscal convergence criterion has been defined for government or public debt[3]. According to Buti et al. (2002), Darvas et al. (2005), and Tapsoba et al. (2019), the limitation of the public deficit is the most fundamental norm of the various convergence pacts existing and concluded throughout the world. It remains also the most important convergence criterion for the formation and the viability of a monetary union. It allows to enhance the fiscal discipline and support economic growth.

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[1]Kebalo and Amadou (2019) find that this convergence criterion is pro-growth and valid as convergence criterion for the future regional monetary union in West Africa.

[2]Barcola and Kebalo (2018) showed that the 5% inflation threshold was not sufficient to create and directly support economic growth. However, it could help to achieve more price stability within ECOWAS.

[3]Agbékponou and Kebalo (2019) have estimated a debt threshold not to be exceeded in West Africa.

Problematic and purpose

With the recent economic developments and the painful experiences of euro area with the debt crisis, it is argued and demonstrated that convergence criteria, especially the fiscal ones, are no longer sufficient for ensuring the viability and strengthening the credibility of a monetary union (Le Cacheux, 2017; Artus, 2017; Bénassy-Quéré et al., 2016). Fiscal convergence criteria certainly allow enhancing more fiscal discipline (Creel et al., 2002; Darvas et al., 2005). But the national management of fiscal policies constitutes a risk to the viability of a monetary union through the increase in the fiscal divergences between countries. Indeed, a country can use its fiscal policy to take more benefit within a region or a monetary union. This can create crowding-out effects on the economic activity of other countries. The induced effect of this unilateral management of fiscal policies is the increase in the fiscal divergence among countries which can create a desynchronization of business cycles or reduce the business cycles coherence within the region or a monetary union.

In their famous paper, Darvas et al. (2005) showed on a sample of 21 OECD countries that, despite the compliance with the fiscal convergence criterion (public deficit), the existence of fiscal divergences among countries is associated with reduced business cycles coherence. According to Darvas et al. (2005), countries with similar fiscal positions tend to have synchronous business cycles and are better candidates for a viable and successful monetary union. Indeed, when countries have the same fiscal position, their economic cycles tend to be affected by the same way, and therefore be synchronous. This feature, in the context of monetary integration, is necessary for the viability of the future monetary union. Thus, all economies wishing to form a monetary union should seek to reduce, despite the compliance of the public deficit limit, their fiscal divergences.

Less fiscally disciplined as shown in figure 1, West African countries present difficulties to comply with the fiscal rules limiting the public deficit to 3 percent of GDP. Structurally, these countries present public deficits and are featured by fiscal divergences (figure 3 in Appendix). And this constitutes a real problem to facilitate economic convergence in the area and an obstacle to regional monetary integration. This paper seeks to test the theory of Darvas et al. (2005) on the West African context. This paper seeks to analyze through an empirical inves-

tigation, the effect of the fiscal divergence between West African countries on the business cycle synchronization. The assumption tested in this paper is that "an increase in fiscal divergence between West African countries tends to deteriorate the level of the business cycles coherence". To achieve our main objective and test our assumption, the paper adopts the gravitational and correlation approach similar to that of Darvas et al. (2005) and uses the instrumental variables method for controlling any endogeneity and simultaneity bias. If this assumption is validated, then the paper cans conclude that the existence of fiscal divergence among West African countries is counterproductive and detrimental for the viability of the future monetary union. Hence, the paper could propose some indirect and direct fiscal mechanisms allowing to reduce significantly the fiscal divergence within ECOWAS.

Figure 1: Cross-sectional evolution of the fiscal balance (% of GDP) of ECOWAS countries
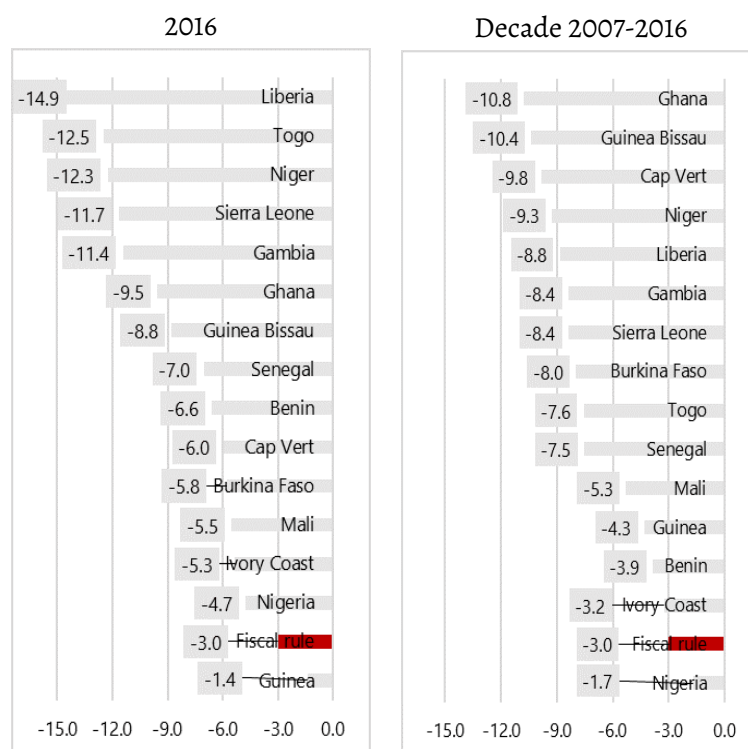
Note: The fiscal rule is the fiscal norm not to be exceeded. During the decade 2007-2016, Guinea has made significant efforts to consolidate its fiscal balance.
Source: Author with IMF data on public finance.

3

Contribution to literature

Through this study, this paper makes two major contributions to the existing literature. First, to our knowledge, no study has been carried out in this sense for the West Africa countries in transition for forming a monetary union. Secondly, our study proposes some concrete fiscal mechanisms need to reduce the fiscal divergence and therefore avoid to form a less credible and viable monetary union.

2 Methodology

To achieve our objective, we consider a sample composed of the fifteen (15) West African countries candidates for the future regional monetary union. Our analysis covers the period 2007-2016, and the frequency of the data is annual. The choice of this period is justified by the fact that the paper is seeking to better understand the macroeconomic behaviour of West African countries since the 2007 financial crisis and also by the fact that the 2007 financial crisis caused a strong structural disruption/break in the macroeconomic behaviour of countries. To test our assumption, we adopt the methodologic approach proposed by Darvas et al. (2005). This methodology can be summarized in four (04) steps.

- Step 1: Calculation of the fiscal divergence indicator.

The indicator of fiscal divergence $FDiv_{ijt}$ is obtained by the absolute difference in the government fiscal balance FB (in percent of real GDP) between two (02) countries i and j at t:

$$FDiv_{ijt} = |FB_{it} - FB_{jt}|. \tag{1}$$

The fiscal balance FB (expressed in percent of GDP) of each country is obtained by the difference between public revenues and public expenditures. The data used are obtained from the database of IMF's Regional Economic outlook for Sub-Saharan Africa.

- Step 2: Correlation of business cycles

Before calculating the correlation of the business cycles, we first obtain the business cycles by applying the Hodrick and Prescott's (1997) filter to the log of the annual real GDP of each

West African country. We use two different smoothing parameters to obtain for each country, two series of business cycles. The first one is the HP filter default smoothing parameter (value = 100), and the second one is the Ravn and Uhlig's (2002) smoothing parameter (value = 6.25). We need the two series of business cycles for performing a robustness analysis. Once our business cycles obtained, we calculate the correlations of the business cycles.

- Step 3: Bilateral country-pairs

As our empirical investigation adopt a gravitational approach, we calculate therefore the number of country pairs. Our analysis focuses on $N = 15$ countries, therefore, the number of country pairs need in our case is $N(N-1)/2 = 105$.

- Step 4: The model

To achieve our objective, we adopt the model proposed by Darvas et al. (2005) and presented as follows:

$$Corr(x)_{ij}^k = \alpha + \beta FDiv_{ij} + \varepsilon_{ij} \tag{2}$$

with $Corr(x)_{ij}^k$, the correlation coefficient over a period of ten years between country i and country j for the variable x which is the business cycles obtained by the HP filter with the smoothing parameter k=(6.25 ; 100) ; $FDiv_{ij}$, is the fiscal divergence indicator; ε_{ij} represents the myriad influences on bilateral activity correlations above and beyond the influences of fiscal divergence (hopefully unrelated to our regressor), and α and β are the regression coefficients to be estimated. The object of interest to us is the slope coefficient β. A negative estimate of β indicates that an increase in fiscal divergence is associated with reduced business cycles coherence. That is why, as expected sign, we expect that β be negative and significantly different from zero.

To obtain consistent coefficients, we use instrumental variables with the 2SLS method. This method is used to avoid any endogeneity and simultaneity bias. This method is applied for all accurate or over-identifiable models. For our estimations, we avoid working with information-poor instruments. Therefore, we consider a set of economic and institutional instruments variables and we select those rich in information, i.e. significant.

3 Results

Table 1 below presents the results of our analysis. From the results, it appears that any increase in fiscal divergence among West African countries is associated with reduced business cycles coherence in West Africa. In other words, the reduction of fiscal divergence help enhancing the level of business cycles coherence.

Table 1: Results

Smoothing parameters	$\lambda = 100$	$\lambda = 6.25$
	Coef.	Coef.
Intercept	0,586*	0.367*
	[1,799]	[1.666]
FDiv	-0,128*	-0,080*
	[-1,826]	[-1,690]
IV_1	0,018*	0,018*
	[1,910]	[1,795]
IV_2	0,036***	0,036***
	[4,429]	[4,388]
IV_3	1,510***	1,572**
	[3,219]	[2,166]
IV_4	2,050***	2,060***
	[6,846]	[6,592]
F-stat	3,333*	2.854*
J-stat (P-value)	0,719	0,838
Prob (JB)	0,284	0,228
Obs.	105	105

Note: IV_1, IV_2, IV_3 and IV_4, respectively, represent the gaps (in the absolute term) in domestic saving (% of GDP), central government debt (% of GDP), the government effectiveness index, and finally the level of political stability, between countries i and j. ***, **, *, indicate significance at 1%, 5%, and 10%. JB for Jarque-Bera. J-Stat corresponds to the test for identifying instrumental variables.

When we consider the business cycles obtained by the smoothing parameters of 6.25, it results that, a 1% increase in fiscal divergence is associated with reduced business cycles coherence by 0.08% in West Africa. But, when we consider the series of business cycles obtained by the smoothing parameter of 100, a 1% increase in of fiscal divergence is associated with reduced business cycles coherence by 0.13%. From our analysis, it appears that the theory of

Darvas et al. (2005) is verified on West African countries. Thus, we can conclude that each increase in fiscal divergence could be counterproductive to the viability of the future monetary union. The reduction of fiscal divergences within the region would be an important policy for ensuring credible and successful monetary integration.

However, what remains important is the definition of the mechanisms to be put in place for reducing these fiscal divergences. Regarding mechanisms, we define those indirect and those direct.

Indirect mechanisms

To reduce fiscal divergences within the West African area, first, (*i*) it is imperative that countries individually comply with the convergence criterion on public deficit (3% of GDP) which is the most important norm for a monetary union. To encourage countries to comply with this norm or the limit, it would be necessary to define some incentive mechanisms. The incentive mechanisms that we propose are financial sanctions against countries that do not comply with the fiscal norm. For instance, a tax can be defined and apply on regional goods exported from West African countries which do not respect the fiscal norm.

Secondly (*ii*), on one side, there is a need for countries to improve the public revenues mobilization. On the other side, countries need also to rationalize their public investment spending. To streamline public expenditures, public investments must be assessed for determining the most effective and efficient. In addition, it will be necessary to encourage private investment to be the relay for the public investment.

Thirdly (*iii*), there is a need for the harmonization of the tax system (VAT, corporate tax, personal income tax) within West Africa. Indeed, Figure 2 below shows that there is a heterogeneity of the taxation system within ECOWAS. This harmonization will allow countries to mobilize revenues with the same taxation system without generating tensions between countries. Indeed, with different taxation systems within a currency union or region, companies are more likely to migrate to countries with a more favourable taxation system. This would create and strengthen fiscal divergences between countries, and therefore reduce the business cycles coherence.

Figure 2: Heterogeneity of the taxation system within ECOWAS (year, 2015)

Value-Added tax	Corporate tax rate	Personal income tax rate
NER 19	GIN 35	CIV
TGO 18	GMB 31	BEN 45
SEN 18	SLE 30	SEN 40
MLI 18	SEN 30	MLI 40
GIN 18	NGA 30	GIN 40
CIV 18	NER 30	TGO 35
BFA 18	MLI 30	NER 35
BEN 18	BEN 30	SLE 30
SLE 15	TGO 29	GMB 30
GNB 15	BFA 27.5	LBR 25
GMB 15	LBR 25	GHA 25
GHA 15	GNB 25	BFA 25
CPV 15	GHA 25	NGA 24
LBR 7	CPV 25	CPV 20
NGA 5	CIV 25	GNB 12

Note: for the definition of the countries acronyms, see Table 2 in the Appendix
Source: Author with IMF estimates.

Direct mechanisms

Regarding the direct mechanisms, we first propose the establishment of a regional institution in charge of the fiscal policies coordination. This independent regional institution first, must be in charge of the rigorous monitor of the fiscal divergences and for proposing economic policies need to reduce them. Then, this institution should ensure that there are a convergence of fiscal policies. It should ensure that the phases of fiscal expansion are coordinated, and also that the phases of fiscal contraction are coordinated. In addition, these fiscal policies should be counter-cyclical. These conditions will allow reducing the fiscal divergences, the risk of asymmetric shocks, and therefore would improve the level of business cycles coherence.

The application of these two types of mechanisms (indirect and direct) would allow to significantly reduce the fiscal divergences within the West African region. This is necessary and productive for the viability of the future monetary union in West Africa.

4 Conclusion

In conclusion, this paper tests on a sample of fifteen West African countries in transition for a regional monetary union, the theory of Darvas et al. (2005) that the increase in fiscal divergences is associated with reduced business cycles coherence. The validity of this assumption in our study means that the existing fiscal divergence among West African countries, which are fiscally undisciplined, would be counterproductive to the viability of the future monetary union. Using a gravity model and the 2SLS strategy, our analysis reveals that a 1% increase in fiscal divergence is associated with reduced business cycles coherence on average by 0.105%. In other words, a 1% decrease in fiscal divergence is associated on average with a better coherence of the business cycles by 0.105%. Fiscally undisciplined, the existence of fiscal divergence in ECOWAS will be counterproductive to the future monetary union that countries want credible and viable. For reducing the fiscal divergences in West Africa, we defined mechanisms ranging from the individual mandatory compliance by country with the fiscal convergence criterion (public deficit), a more effective revenue mobilization and rationalization of public spending in favour of private investment, to the establishment of a regional institution in charge of the fiscal coordination.

References

Agbékponou, M. K. and Kebalo, L. (2019). Relation dette – croissance économique dans la CEDEAO : Analyse à travers une approche non-linéaire. *Revue Economique et Monétaire, BCEAO*, forthcoming.

Artus, P. (2017). Quelles sont les difficultés essentielles de la zone euro? *Revue de l'OFCE*, (4):345–363.

Balassa, B. (1961). *The Theory of Economic Integration*. Greenwood Press, Greenwood Publishing Group.

Barcola, M. and Kebalo, L. (2018). Inflation-growth nexus and regional integration in West Africa. *Journal of Economics and Development Studies*, 6(4):54–66.

Bénassy-Quéré, A., Ragot, X., and Wolff, G. (2016). Which fiscal union for the euro area? *Notes du conseil d'analyse économique*, (2):1–12.

Bergin, P. R. and Lin, C.-Y. (2012). The dynamic effects of currency union on trade. *Journal of International Economics*, 87:191–204.

Buti, M., Brunila, A., and Franco, D. (2002). *The Stability and Growth Pact*. Basingstoke: Palgrave.

Ca'Zorzi, M., Santis, R. A. D., and Zampolli, F. (2005). Welfare implications of joining a common currency. *ECB Working paper series*, (445).

Creel, J., Latreille, T., and Le Cacheux, J. (2002). Le pacte de stabilité et les politiques budgétaires dans l'union européenne. *Revue de l'OFCE*, (5):245–297.

Darvas, Z., Rose, A. K., and Szapáry, G. (2005). Fiscal divergence and business cycle synchronization: irresponsibility is idiosyncratic. Technical report, National Bureau of Economic Research.

Frankel, J. and Rose, A. (2002). An estimate of the effect of common currencies on trade and income. *Quaterly Journal of Economics*, 117:437–466.

Gorea, D. and Radev, D. (2014). The euro area sovereign debt crisis: Can contagion spread from the periphery to the core? *International Review of Economics & Finance*, 30:78–100.

Hodrick, J. and Prescott, E. (1997). Postwar US business cycles: An empirical investigation. *Journal of Money, Credit, and Banking*, 29.

Kebalo, L. and Amadou, A. (2019). Single currency in ECOWAS: Is the proposed fiscal convergence criterion pro-growth? *African Development Review*, Forthcoming.

Lama, R. and Rabanal, P. (2014). Deciding to enter a monetary union: The role of trade and financial linkages. *European Economic Review*, 72:138–165.

Le Cacheux, J. (2017). Divergences au sein de la zone euro: la centrifugeuse? Technical report, CATT-UPPA-Université de Pau et des Pays de l'Adour.

Meyer, F. V. (1962). Balassa : The theory of economic integration. *The Economic Journal*, 72(286):389–391.

Micco, A., Stein, E., and Ordonez, G. (2003). The currency union effect on trade: early evidence from emu. *Economic Policy*, 18:315–56.

Ravn, M. O. and Uhlig, H. (2002). On adjusting the hodrick-prescott filter for the frequency of observations. *Review of economics and statistics*, 84(2):371–376.

Tapsoba, S. J.-A., Gammadigbe, V., Issifou, I., and Sembene, D. (2019). Fiscal convergence in africa. *Journal of Economic Integration*, 34(2):214–235.

Appendix

Table 2: List of countries in the sample and corresponding acronyms

List 1	Acronym	List 2	Acronym
Benin	BEN	Liberia	LBR
Burkina Faso	BKF	Mali	MLI
Cap-Vert	CPV	Niger	NER
Ivory Coast	CIV	Nigeria	NGA
Gambia, The	GMB	Senegal	SEN
Ghana	GHA	Sierra Leone	SLN
Guinea	GIN	Togo	TGO
Guinea-Bissau	GNB		

Source: Author.

Figure 3: Fiscal divergence and business cycles synchronization in West Africa

Note: Nigeria is the lead country in West Africa
Source: Author, WDI, IMF data on public finance.

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