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Fiscal Convergence in Africa: What Role for Regional Economic Communities?

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Abstract

The literature on Optimal Currency Areas (OCA) has identified several channels for the ex post justification of common monetary areas based on the synchronicity criterion. These include trade, cross-border investments, mobility of factors, mobility of goods and services, and fiscal convergence of member countries. We focus on the later for the African continent. We analyze the role of African regional economic communities (RECs) in convergence of fiscal policies from 1990 to 2015. Our estimates show that African RECs reduce significantly fiscal divergence between countries. We further find that common monetary areas are more effective in fostering fiscal convergence. This result is in line with the argument of self-validation of monetary arrangements in Africa, despite low levels of cycle synchronization and trade intensity.

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Introduction

According to the theory of optimum currency areas (OCA), business cycle synchronicity is a key criterion for creating a common monetary area.[1] The OCA theory outlines that the key requirement for suitable monetary zones is the symmetry of shocks. Such similarity of shocks offsets the costs induced by the delegation of the monetary policy a regional central bank, the unilateral pegging of currency to a foreign one, or the adoption of foreign currency as a legal tender. Under such cases, monetary policy is no longer targeted to country specific objectives.

Business cycle synchronicity is relatively low in existing or envisaged African monetary zones (Tapsoba, 2009). However, this finding is not irreversible because synchronization may be endogenous to the integration process. It is possible that entering in a monetary zone arrangement fosters the synchronization of shocks among countries. This is the argument defended by Frankel and Rose (1997, 1998) for the countries of Europe. They suggested that the traditional OCA paradigm does not provide the full picture of the (a)symmetry of shocks within a monetary zone since some parameters such as the trade integration and the business cycle synchronicity are not irrevocably fixed and maybe endogenous to the integration process itself. On the one hand, business cycle synchronicity creates appropriate conditions for monetary zones which, in turn, increase internal trade and, on the other hand, the degree of trade integration may increase the synchronicity of business cycles. In these matters, the literature focused mainly on the role of trade, specialization, and financial integration (Baxter and Kouparitsas 2005, Rose and Engel 2002, Imbs 2004).

In a seminal article, Darvas *et al.* (2005) show for OECD (Organization for Economic Co-operation and Development) that the similarity of fiscal stances could lead to the synchronization of economic shocks, and from there promotes a framework in line the OCA theory. The authors explain that idiosyncratic shocks may be the result of irresponsible fiscal policies, *i.e.* high and persistent fiscal deficits. Fiscal divergence due to the existence of excessive and persistent fiscal deficits in some countries compared to others may also explain the macroeconomic volatility observed in the OECD countries.

Macroeconomic convergence programs are often used to bring domestic politics closer and foster the monetary integration process. This is a characteristic of existing or future monetary zones. Before an economic or a monetary zone can exist, a series of criteria are usually established, and observance of these criteria are sometimes a requirement for joining the monetary zone. Usually, the creation of a monetary zone or union is predicated to the compliance of monetary and fiscal convergence programs, which at first glance have no direct connection to the theory of OCAs (Darvas *et al.* (2005).[2] Such programs intend to align domestic policies regarding fiscal deficits, public debt, inflation, interest rates, and exchange rates. The criterion on the fiscal deficit is probably the most basic

[1] In this paper, we use interchangeably common monetary area and monetary zone to refer to a zone with implicit similar monetary policy for member countries (see section II).

[2] The adoption of such programs follows the logic of the Treaty of Maastricht (1992) and the European Union Stability and Growth Pact (1997).

condition in various macroeconomic convergence programs which has the objective to bring fiscal stances close to a given norm (usually set as a ceiling in percent of GDP). As an example, Darvas *et al.* (2005) take the case of the Treaty of Maastricht. Because of its numerical criteria on public deficit and public debt levels, the Treaty has defined eligibility conditions for countries joining the euro zone. Darvas *et al.* (2005) give the example of Italy which, to comply with the Maastricht criteria, lowered its fiscal deficit significantly (it surpassed 10 percent of GDP in 1992), to less than 2 percent in 1999. This shows the great extent to which joining an economic or monetary integration provides incentives for countries to embark on fiscal convergence.

This article focuses on the role of African RECs through their convergence programs on the similarity of fiscal stances in Africa. In Africa, several integration arrangements (WAEMU, CAEMC, ECOWAS, COMESA, EAC and SADC) have adopted coordination mechanisms to help the convergence of fiscal stances (see Table 1). If fiscal convergence facilitates the synchronization of economic cycles, a key question is whether there are strategies for policy makers to foster fiscal convergence. More specifically, because of the coordination mechanisms often embedded in their setup, *do RECs promote fiscal convergence?* RECs have different levels of coordination. They generally start with customs unions (free trade agreement), then mutate to economic unions (when economic policies are coordinated), and the economic unions progress to common monetary areas (monetary zones i.e. similar implicit monetary policies) and ultimately to currency unions (monetary unions i.e. a single monetary policy from a common central bank).[3] We therefore investigate which type of RECs is more effective in fostering fiscal convergence. *Are RECs enough to ensure fiscal convergence? Is the creation of monetary zones (usually accompanied with macroeconomic convergence program) a necessary step? Are African monetary zones self-validating over time through the coordination of fiscal policies?* In light of these questions, we investigate the main determinants of fiscal divergence among African countries using an empirical approach and a panel data approach that control for unobservable country characteristics. We explore which type of RECs brings more convergence of fiscal stances. To the best of our knowledge, there is no study that analyzes the drivers of fiscal convergence in Africa. This paper proposes to close the gap.

Our key results are as follows. In Africa, RECs in general and monetary zones reduce significantly fiscal divergence between countries. The study contributes to the literature by providing a strong argument in favor of auto-validation of African monetary zones, despite the current low levels of synchronicity and trade intensity. The study also shows that, monetary zone is the most effective type of RECs in reducing fiscal divergence.

The remainder of this article is structured as follows. Section 2 presents a background section including a brief literature review. Section 3 discusses the methodology and the data used. The

[3] A currency union (or a monetary union) entails a single currency issued by a common central bank and single monetary policy. A common monetary area (or a monetary zone) is defined as agreement between country to irrevocably fixed their exchange rate. A common monetary area has the features of a currency union but does not involves a single currency nor a single central bank. Currency unions represent narrow versions of monetary zones (Mancera, 1991). Figure 1 in the Appendix B shows that a currency union is a subset of a monetary zones.

results are described in Section 4. Section 5 is the conclusion.

I. Background

1. Overview of African RECs

The adoption of a currency union is the overarching objective for most RECs in Africa. Since the early days of independence, Several RECs have emerged in Africa help the regional economic integration. Regional integration is considered by African policymakers to raise the low level of intra-regional trade, promote economic growth, and integrate the global economy.

The landscape of economic and monetary integration in Africa is quite diversified (Table 1). There are two monetary zones on the continent: the CFA Franc zone and the Common Monetary Area (Rand Zone). The CFA Franc Zone is an economic and monetary area and includes fifteen countries. The countries in this zone are mostly former French colonies that, after independence, signed monetary cooperation agreements with France. The agreements have two main implications: They guaranteed the convertibility of the CFA to the French franc (the euro since 1999) and pegged the CFA Franc to the French Franc, and later to the euro. In return for the CFA Franc members must deposit at least 65 percent (recently renegotiated to 50 percent) of their external reserves into special accounts held by the French treasury. The CFA Franc is further organized in two separate currency unions: the West African Economic and Currency union (WAEMU) and the Central African Economic and Monetary Community (CEMAC). Comoros has different pegging rate with the Euro. The Common Monetary Area (CMA) is currency agreement in which South African Rand links South Africa, Namibia, Lesotho and Swaziland. In the CMA, each country has the right to issue their own national currencies. These currencies are only legal tender in their own countries. However, the South African Rand is tender throughout the CMA. *De facto*, all member countries follow South Africa's monetary policy. In the recent decades, several regional monetary integration projects have been initiated in some existing RECs: the ECOWAS (Economic Community of West African States), the COMESA (Common Market of Eastern and Southern Africa), the SADC (South African Development Community), and the EAC (East African Community).[4] In the context of future monetary integration projects, the ECOWAS, the COMESA, the SADC and the EAC have adopted convergence criteria inspired by the Maastricht Treaty and the Stability and Growth Pact of the Eurozone.

[4] The Arab Maghreb Union (UMA) between North African countries (Algeria, Libya, Mauritania, Morocco and Tunisia) is the only the African RECs with no formal macroeconomic cooperation and currency union project.

Table 1: main regional economic communities (RECs) in Africa

Arrangements	Type	Member countries	Year	Macroeconomic convergence program
CFA Franc Zone	MZ	Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Gabon, Cote d'Ivoire, Equatorial Guinea, Guinea-Bissau (1997), Mali, Mauritania, Niger, Senegal, and Togo.	1948	No
West African Economic Monetary Union (WAEMU)	REC, CU	Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau (1997), Mali, Mauritania, Niger, Senegal, Togo	1962	Macroeconomic convergence program since 1994 and formally since 1999 • Basic fiscal balance/GDP ≥ 0 • Inflation ≤ 3 percent • Public debt/GDP ≤ 70 percent • No accumulation of domestic and foreign arrears
Central African Economic and Monetary Community (CEMAC)	REC, CU,	Cameroon, Congo, Gabon, Central African Republic, Chad, Equatorial Guinea	1964	Macroeconomic convergence program since 1994 and formally since 2002 • Inflation ≤ 3 percent • Basic fiscal balance/GDP ≥ 0 percent • Public debt/ GDP ≤ 70 percent • No accumulation of domestic and foreign arrears
Rand zone / Common Monetary Area (CMA)	REC, MZ	South Africa, Lesotho, Namibia (1990), Swaziland.	1974	No
Economic Community of West African States (ECOWAS)	REC, CU (project)	Benin, Burkina Faso, Cabo Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo.	1975	Macroeconomic convergence program since 1999 and revision since 2012 • Fiscal deficit ratio, including grants (commitments basis) to nominal GDP ≤ 3 percent • Average Inflation ≤ 5 percent • Central Bank financing of the fiscal deficit ≤ 10 percent of the previous year's fiscal revenue • Gross reserves ≥ 6 months of imports
West African Monetary Zone (WAMZ)	CU (project)	Ghana, Guinea, Gambia, Nigeria, Sierra Leone.	2000	Macroeconomic convergence program since 1999 • Inflation ≤ 5 percent • Fiscal deficit/GDP ≤ 4 percent before 2002 • Central Bank financing of the fiscal deficit ≤ 10 percent after 2002 • Gross reserves ≥ 6 months of imports after 2003
East African Community (EAC)	REC, CU (project)	Burundi, Kenya, Uganda, Rwanda, South Sudan, Tanzania	1967	Macroeconomic convergence program since 1997 • Inflation < 8 percent • Fiscal deficit/GDP < 3 percent • Public debt/GDP < 50 percent • Gross reserves ≥ 4.5 months of imports
Common Market for Eastern and Southern Africa (COMESA)	REC, CU (project)	Burundi, Comoros, Djibouti, Egypt, Eritrea (1994), Ethiopia, Kenya, Libya (2005), Madagascar, Malawi, Mauritius, Uganda, Democratic Republic of the Congo, Rwanda, Seychelles (2001), Sudan, Swaziland, Zambia, Zimbabwe.	1994	Macroeconomic convergence program since 1992 and revision since 2012 • Fiscal deficit/GDP < 5 percent • Inflation < 5 percent • Central Bank financing of the fiscal deficit limited to 0 • Gross reserves ≥ 4 months of imports
Southern Africa Development Community (SADC)	REC, CU (project)	South Africa (1994), Angola, Botswana, Lesotho, Madagascar (2005), Malawi, Mozambique, Mauritius (1995), Namibia, Democratic Republic of the Congo (1997), Seychelles, Swaziland, Tanzania, Zambia, Zimbabwe.	1992	Macroeconomic convergence program since 2004 • Inflation < 10 percent • Fiscal deficit /GDP < 5 percent • Public debt/GDP < 60 percent
Arab Maghreb Union (UMA)	REC	Morocco, Tunisia, Algeria, Mauritania, Libya.	1989	No formal macroeconomic cooperation

Notes: REC stands for Regional Economic Community, CU for currency union (or monetary union), MZ.

2. Macroeconomic convergence programs in Africa

There are two main arguments supporting the adoption of fiscal convergence programs in monetary zones. First, imposing limits on the fiscal deficit and debt ratios prevents volatile and unstable public finances of one country from negatively affecting other members of the monetary zone. It could do so by putting pressures on the common central bank to monetize public spending (Buti and Guidice (2002), Beetsma (2001) and Dixit (2001)). For instance, when a member country is faced with an adverse shock, it can run excessive deficits to fully stabilize its economy and neutralize the impacts on production. However, other member countries will be affected by the externalities of the deficit (spillover effect) from that country through a negative shock (production losses) due to the increase in the common interest rate if they do not increase their public spending in response to this shock. Second, implementing fiscal policy rules in a monetary zone is supposed to strengthen the credibility of fiscal policy (Creel *et al.* (2001)). The need for coordinating the economic policies of member countries is also an argument in favor of adopting fiscal rules in a monetary zone. They are supposed to ease the task of the common central bank by preventing conflicts of objectives, such as higher public deficits and lower policy interest rates (Besancenot *et al.* 2003).[5]

In the literature, there is no consensus about the positive impact of fiscal convergence programs once countries enter a monetary zone. In the case of the European Currency union for instance, many critics consider that the Stability and Growth Pact (SGP) – which is supposed to ensure better fiscal performances of the member states – is unsustainable because of strategic debt accumulation of member states (McKay (1999), Ferguson and Kotlikoff (2000)). The loss of monetary sovereignty could encourage countries to use fiscal policy to dampen asymmetrical shocks they are facing. Under these conditions, the monetary zone could well promote fiscal divergence, notwithstanding the pre-established rules and enforcement mechanisms. On the empirical grounds, Kocenda *et al.* (2008) for instance empirically examine the fiscal convergence of ten European Union (EU) recent members using the Maastricht fiscal convergence criteria. They relied on beta and sigma-convergence tests of the new members in comparison to the Maastricht benchmarks, as well as the EU-15 figures. The results show poor fiscal performances in the European Union in general, suggesting that currency unions do not necessarily encourage fiscal convergence for its members. However, the work of Busemeyer (2004) has shown that the process of European monetary integration and the Stability and Growth Pact have had a positive impact on budgetary performance. In a recent work, Bertarelli *et al.* (2014) evaluate the impact of the Euro on the process of fiscal convergence. Their results show a fast convergence of public deficits over the nineties, replaced by a divergence trend in the following decade. Moreover, their findings give some support to the view that the common currency encouraged convergence of total expenditure and revenue. Limited to government spending, this conclusion is confirmed by Ferreiro, Garcia-Del-Valle,

[5] Several authors have theorized this argument: (Barrell and Sefton (1997), Beetsma and Bovenberg (1998), Hughes-Hallet and Ma (1996), Jensen and Jensen (1995), or van der Ploeg (1995) and Leith and Wren-Lewis (2000)).

and Gomez (2009, 2013).

Most studies on macroeconomic convergence programs on African countries focused on the CFA Zones: the WAEMU and the CEMAC. Empirical studies show that the program led to a relative convergence of the fiscal stances in the two zones. For WAEMU, Bamba (2004) used the Kalman filter methodology for the 1980-2001 period. He concluded that there was an overall convergence of the tax intake$_2$ but the analysis of fiscal balances shows alternatively phases of divergence and convergence. Tanimoune and Plane (2005) used the sigma-convergence approach and focused on the 1994-2002 period. They found that since the 1994 devaluation and the adoption of a formal macroeconomic convergence program, the fiscal performance of this currency union has improved. The results showed that the primary fiscal balances and debt ratios have converged significantly. Sarr and Ndiaye (2011) found that there was a sigma-convergence in fiscal balances over the 1980-2005 period. For the primary balance and overall fiscal balance, the authors showed that the convergence process began before the implementation of the WAEMU macroeconomic convergence program and was connected to structural adjustment programs in member states with IMF and World Bank support in the 1980s (the programs aimed for better fiscal discipline). Cabrillac and Rocher (2013) obtained that, between 1994 and 2011, fiscal stances and debt levels have moved closer together. For CEMAC, N'Kodia (2011) found that there was a significant convergence of the main variables from 1989 to 2009. These dynamics can be explained by several factors: CFA Franc institutional mechanisms, the effects of the structural adjustment programs, and the devaluation of the CFA Franc. As for the WAEMU, Cabrillac and Rocher (2013) showed that the implementation of macroeconomic convergence programs in the CEMAC helped converge debt levels but fiscal deficits followed a dispersion trend.

There a few studies for other RECs. only Carmignani (2005) focused on the COMESA region between 1980 and 2002. He found a succession of convergence and divergence phases of the key macroeconomic variables. Regarding fiscal indicators, the regional dispersion of fiscal deficits was substantial. Deficit levels remain generally high compared to established criteria despite progress observed in the 1990s. The next section discusses the empirical section.

II. Empirical Strategy

1. Methodology

In this section, we describe the methodology and the data used in the study. The empirical methodology follows a bilateral approach. We form a large dyadic panel dataset. The panel data allows controlling for country-specific and time-specific factors. We assume two countries i and j which are members of a regional economic community or monetary zone. We estimate the impact of RECs on the divergence of fiscal stances though the following model:

$$FD_{ijt} = \alpha_0 + \alpha_1 REC_{ijt} + \alpha_2 X_{ijt} + \theta_i + \theta_j + \lambda_t + \varepsilon_{ijt} \quad (1)$$

FD_{ijt} is a measure of fiscal divergence between countries i and j at a period t. Formally, the divergence is computed as the absolute difference between the levels of this variables in the two countries $FD_{ijt} = \left| F_{it} - F_{jt} \right|$. Two countries become "fiscally divergent" when as the previous difference calculated (in absolute value) increases and "converge fiscally" when the difference calculated (in absolute value) is close to zero. It is worth noting that fiscal convergence is observed between two countries when, over a long period, their budget surpluses or deficits relative to GDP remain close to each other. A fiscal divergence due to a short-term asymmetric shock experienced by a country does not put fiscal convergence with another country into question. REC_{ijt} is a dummy variable taking the value one if both countries in the pair belongs to a same regional economic community (REC) and zero otherwise.

X_{ijt} is a vector of control variables based on the literature on fiscal reaction functions. We include three types of control variables: economic and institutional variables.

- The first economic control variable is a measure of fiscal divergence between debt ratios in percent of GDP ($divdebt_{ijt}$). An increase in the debt ratio leads to an improvement in the budget because of the need for adjustment it creates. Tujula and Wolswijk (2004) found for OECD countries from 1970 to 2002 that countries which experience rapid increases in debt ratios make greater efforts to improve their fiscal deficits. Crespo-Cuaresma et al. (2011) obtained a similar result for the countries of the euro zone by showing that countries with disparate debt-to-GDP ratios tend to have divergent fiscal stances. When debt levels in percent of GDP are close, countries might face similar adjustment needs and incentives to run similar fiscal stances. More divergent debt levels may lead to divergent fiscal policies. The expected sign for this variable is positive.
- We include the divergence of growth rates ($divgdpg_{ijt}$) and the divergence inflation rates ($divinfl_{ijt}$) of the countries. Based on tax smoothing models developed by Barro (1979) and Lucas and Stokey (1983), the similarity of growth rates between countries could explain the convergence of fiscal deficits. These models suggest that negative shocks on production or temporary positive shocks on spending may be fully reflected in deficits. More divergent growth levels may lead to divergent fiscal policies. The expected signs of these variables are positive.

Following the twin deficits theory, as suggested by Checherita-Westphal *et al.* (2017), we also consider the divergence current account balances ($divca_{ijt}$) as potential determinant of the divergence of fiscal balances between countries in the pair. We expect a positive coefficient associated with the current account balance divergence according to the twin-deficit hypothesis.
$divdebt_{ijt}$, $divgdpg_{ijt}$, $divinfl_{ijt}$, and $divca_{ijt}$ are computed using the same strategy for the dependent variable FD_{ijt}.

For institutional variables, the literature[6] highlights the role of political stability, the level of democracy, rule of law, and fiscal rules. These institutional variables were transformed into divergence indicators following the approach described above: the role of political stability ($divstab_{ijt}$) for the divergence in terms of political stability, the level of democracy ($divdem_{ijt}$) for the divergence in terms of degree of democratization, $divrlaw_{ijt}$ for the divergence in the rule of law scores, and $frules_{ijt}$ a dummy variable taking one the value of 1 when the countries in the pair adopt a fiscal rule and 0 otherwise. We also control for the participation in IMF programs (imf_{ijt}). imf_{ijt} is a binary variable that takes the value of 1 if the two countries in the pair have IMF programs and 0 otherwise. We expect positive coefficients associated with the institutional variables. Negative signs are expected for fiscal rule adoption and the participation in IMF programs.

Admittedly, estimating equation (1) is challenging because of the potential endogeneity. The first challenge is the reverse causality between fiscal divergence and the participation in a REC since coordination of policies in a REC may affect the similarity of fiscal stances of member countries. It is plausible that countries that form RECs and monetary zones are those that fiscally converge. Countries that fiscally converge in a given zone are more suitable to join a REC or a monetary zone. To address this endogeneity issue, the literature recommends making use of external instruments that would be related to the participation in REC without affecting similarity of fiscal stances. However, an appropriate instrument for a REC is hard to find, which is further complicated by the fact that the REC variable is a dummy variable. Moreover, there is little evidence in the political economy literature that countries join RECs or monetary zones to reduce their levels of fiscal divergence (Tsangarides *et al.* (2006) and Masson and Pattillo 2004). Based on the arguments above, in our analysis we choose to treat RECs or monetary zones as an exogenous variable with respect to fiscal divergence. Equation (1) is estimated using the panel LSDV method including country fixed effects and temporal effects. In addition, controlling for countries and year fixed effects should limit the potential endogeneity problem by controlling for (i) unobserved time-invariant factors that affect both fiscal divergence and REC and (ii) time-varying factors that affect both fiscal divergence commonly across pairs of countries. Time fixed effects (λ_t) are introduced in the empirical model as dummy variables for each year and θ_i and θ_j stand for country fixed effects. The hypothesis of country fixed effects that do not vary in time can also be used to check the unobservable variables that are specific to each country. The introduction of time-invariant fixed country effects allows to control for the unobservable variables specific to each country. Another technique often used in the literature is the generalized method of moments (GMM), which is particularly suitable for dynamic panels. We use this methodology to check the robustness of our estimate). The term ε_{ijt} represents the common error. All estimates are corrected for the autocorrelation and the heteroskedasticity.

[6] See Alesina and Perotti (1995), Woo (2003), Roubini and Sachs (1989), Corsetti and Roubini (1991) and De Haan et al, Crespo-Cuaresma et al (2011) for a detailed review of the institutional determinants of budget deficits.

2. Dataset

The primary data source for this paper is the *World Economic Outlook*. From this database, we extract fiscal indicators (public spending and primary fiscal balance, public debt), GDP deflator to capture inflation rate, current account balance in percent of GDP, Gross Domestic Product (GDP). The remaining variables are taken from various sources. Institutional variables are drawn from the World Governance Indicators. Fiscal rules adoption variables and the participation in an IMF program are from the *IMF Fiscal Rules Dataset*. We compute two different fiscal divergence indicators: FD1 based on the primary spending and FD2 based on the primary fiscal balance. Following Reinhart, Kaminsky and Végh (2004) and for the remainder of the analysis, we focus mostly on the expenditure based indicator to capture the true stance of fiscal policies in African counties.[7] The fiscal divergence indicator was calculated using public spending (FD1). Fiscal divergence indicator based on balances (FD2) will be used in robustness checks. Overall, the dataset covers 54 African countries from 1990 to 2015. Because of data availability, we are left with a panel dataset with a maximum possible sample size of 37,206 observations; 1,431 bilateral country-pairs with 26 annual observations per country-pair. Descriptive statistics are presented in tables 2 and 3.

Table 2 reports the averages of the fiscal divergence indicators (expressed in percent of GDP) discussed above. These descriptive statistics reveal that, on average, pairs of countries that belong to a same REC have more convergent fiscal stances than the ones without a REC arrangement. This performance is statistically significant (at the 1 percent level) for the divergence indicator based on fiscal balance. In the same vein, Table 2 shows that fiscal convergence deepens with the degree of monetary integration. Across the two fiscal indicators examined, monetary zones have lower fiscal divergence compared to RECs as well as currency unions relative to monetary zones. These differences are all statistically significant (at least at the 10 percent level). The next section discusses the key results.

[7] Reinhart, Kaminsky and Végh (2004) among others have questioned the accuracy of fiscal balance indicators in assessing of fiscal policies, mainly on two grounds. First, the fiscal balances (generally determined as a percentage of GDP) reflect the outcomes of policy, and are affected only endogenously by the actions of policymakers. For this reason, the direction of comovements between these fiscal indicators and economic cycles might be ambiguous. Second, expressing fiscal variables as proportions of output could yield misleading results because the cyclical fiscal stance may be dominated by the cyclical behavior of output. Reinhart, Kaminsky, and Végh (2004) advocate an approach that involves judging fiscal cyclicality by assessing the direction of co-movements between fiscal policy instruments, such as tax rates and government spending. For many developing countries, including African countries, the lack of comprehensive and systematic data on tax rate implies that government spending is probably the most reliable indicator for judging fiscal policy (Mpatswe, Tapsoba and York 2011).

Table 2: Comparison tests for fiscal divergence averages between groups

Non-REC vs REC	Non-REC	REC	Difference	Total sample
Div. prim. spending (FD1)	8.0791	7.9711	0.1080	8.0469
Div. prim. fiscal balance (FD2)	5.7309	5.0301	0.7008***	5.5216
REC Non-MZ vs MZ	**REC Non-MZ**	**MZ**	**Difference**	**Sample of RECs**
Div. prim. spending (FD1)	8.6284	3.9223	4.7060***	7.9711
Div. prim. fiscal balance (FD2)	5.0994	4.6035	0.4959*	5.0301
MZ Non-CU vs CU	**MZ Non-CU**	**CU**	**Difference**	**Sample of MZs**
Div. prim. spending (FD1)	4.8130	3.9057	0.9073***	4.3493
Div. prim. fiscal balance (FD2)	9.0105	4.6788	4.3317***	6.7970

Source: Authors' calculations using WEO data. REC: Regional Economic Communities; MZ: Monetary Zone; and CU: Currency union. (***), (**), (*) are 1 percent, 5 percent and 10 percent respectively.

III. Results

1. Baseline

In this section, we discuss key results based on the estimation of the Equation (1) using the divergence between public expenditures expressed in percent of GDP. Results are reported in Table 4, columns [1] and [2].

The first column reports baseline results without the variable for REC. This helps highlight the classical determinants of fiscal convergence. The R-squared is 0.49 implying that the drivers selected explains about half of the variance of the fiscal divergence indicator. As expected, there is strong evidence that countries divergent in terms of debt to GDP ratios, inflation rates, and growth rates are also fiscally divergent. The associated coefficients are positive (0.005, 0.039 and 0.00005) and statistically significant at the 1 percent level. A one standard deviation (SD) decrease in the divergence of public debt to GDP ratios, inflation rates, and growth rates respectively would reduce the divergence of fiscal stances by 0.071, 0.118, and 0.082 respectively. Surprisingly, the divergence of the current account balances reduces the divergence of fiscal stances. The associated coefficient is negative (-0.023) and statistically significant at the 1 percent level. A one standard deviation (SD) decrease in the divergence of the current account balances would increase the divergence of fiscal stances by 0.035. The negative coefficient (-0.023) and significant sign at 1 percent of the parameter of this variable seems to invalidate the hypothesis of twin deficits. However, the indicator considered in this regression is the divergence of public expenditure, instead of the divergence of fiscal balances.

Regarding institutional variables, the estimates show that political stability plays a significant role in the similarity of fiscal policies. Divergence in political stability translates into divergent fiscal stances. The estimated coefficient is positive (0.281) and statistically significant at the 1 percent level. A one standard deviation (SD) increase in the divergence of political stability scores would increase the divergence of

fiscal stances by 0.046. When countries adopt simultaneously fiscal rules, fiscal stances tend to become similar. The associated coefficient is negative (-0.351) and statistically significant at the 10 percent level. The presence of fiscal rules in countries would reduce the divergence of fiscal stances by 0.351. The implementation of an IMF program simultaneously seems to accelerate fiscal convergence in African countries. The coefficients associated with the imf_{ijt} dummy is negative (-0.267) but not significant at the conventional levels.

In the second column, we introduce the variable REC. As expected, we found that being a member of a same REC reduces significantly bilateral fiscal divergence. The associated coefficient is negative (-0.74) and statistically significant at the 1 percent level. Being a member of a same REC reduces the divergence of fiscal stances by 9.20 percent. These results show that countries organized in regional economic communities have positive influences on their fiscal.

If being member of a REC improves the convergence of fiscal stances, a relevant question is what type of REC is more effective in accelerating fiscal convergence. In this paper, we consider three forms of REC: simple REC, a monetary zone, and a currency union. To address this question, we consider two sub-samples: sample of RECs and sample of monetary zones (MZ). Once again, the divergence in public spending is the preferred indicator for this test.

The first sample includes pairs of countries belonging to a REC (see Figure 1 of Appendix B). With this sample, equation 1 is re-estimated by replacing the variable REC_{ijt} by a dummy variable MZ_{ijt} which takes the value 1 when a pair of countries belongs to a monetary zone and 0 if not. Country pairs that are not members of a REC but not a monetary zone constitute the control group. The results are presented in Table 4, column [3]. They show that when the overall sample is reduced to pairs of countries belonging to a REC, monetary zone arrangements make the difference. The associated coefficient is negative (-1.539) at the 5 percent level. Relative to simple RECs, the presence of MZs in countries reduces the divergence of fiscal stances by 1.539. Countries belonging to a REC would gain in fiscal convergence by joining a monetary zone, all other things being equal.

The second sample includes monetary zones. Monetary zones cover countries whose local currency is pegged to an external reference currency by a fixed exchange rate and currency unions. In Africa, these are countries belonging to the CFA Franc Zone and the Rand Zone. With this sample, equation 1 is re-estimated by replacing the variable REC_{ijt} by a dummy variable CU_{ijt} which takes the value 1 when a pair of countries belongs to a currency union and 0 if not. Results are presented in the fourth column. When the sample is again restricted to a sub-sample of monetary zones, the existence of a currency union does not increase the odd for convergent fiscal stances. The corresponding coefficient is positive (0.127) but not statistically significant.

Monetary zones proved to be the most effective forms of integration in fostering fiscal convergence between countries. There are several reasons explaining the effectiveness of monetary zones for fiscal convergence compared to RECs. The first is related to the intrinsic nature of monetary zones. Under

monetary zones, member countries relinquish *de facto* their monetary sovereignty by agreeing on an exchange rate regime. This loss of monetary sovereignty also implies that each country loses the instrument for monetizing public deficits, which lays the initial groundwork for the fiscal convergence process. The second reason is lined to establishing convergence criteria in monetary zones as part of efforts to coordinate economic policies at the regional level to prevent conflicting objectives between conducting the common monetary policy and pursuing active domestic fiscal policies. To be effective, monetary policy in a monetary zone requires more rigorous management of public finances than in other RECs. More than just decorative, the adoption of convergence criteria in a monetary zone is the second phase for the convergence of fiscal balances of member countries.[8]

In sum, in line with the argument of the endogeneity of OCA criteria, the results above show that the existence of RECs help converge fiscal stances. This is explained by the macroeconomic convergence program often embedded in the policy coordination mechanisms of REC. The convergence strengthens even further when monetary zones are in place. These results call for further discussions in line with the theory of endogeneity of the OCA criteria and regarding the monetary integration projects on the continent.

[8] In the context of African currency unions, in which compliance with convergence criteria is problematic, these criteria serve as an incentive to limit excessive deficits.

Table 4: Effect of RECs, MZs, and CUs on fiscal divergence in Africa

Sample	[1] All sample	[2] All sample	[3] Sample of RECs	[4] Sample of MZs
Dependent variable	FD1: Divergence of General Government Expenditure (in percent of GDP)			
Economic variables				
$divdebt_{ijt}$	0.00515***	0.00518***	0.00163	-0.00670
	(0.001)	(0.001)	(0.001)	(0.004)
$divinfl_{ijt}$	0.03961***	0.03927***	0.05888***	0.05699
	(0.005)	(0.005)	(0.012)	(0.181)
$divca_{ijt}$	-0.02304***	-0.02327***	-0.02512*	-0.02123
	(0.008)	(0.008)	(0.015)	(0.023)
$divgdpg_{ijt}$	0.00005***	0.00005***	0.00003*	0.00005
	(0.000)	(0.000)	(0.000)	(0.000)
Institutional variables				
$divrlaw_{ijt}$	0.21032**	0.19933**	0.90118***	0.40651
	(0.084)	(0.084)	(0.208)	(0.324)
$divdem_{ijt}$	0.05569	0.05893	0.15061	0.10382
	(0.064)	(0.064)	(0.121)	(0.179)
$divstab_{ijt}$	0.28125***	0.27637***	0.39370***	0.09691
	(0.056)	(0.056)	(0.113)	(0.120)
$frules_{ijt}$	-0.35179*	-0.13140	0.90377*	0.78968
	(0.208)	(0.209)	(0.520)	(0.743)
imf_{ijt}	-0.26790	-0.22793	0.22696	-0.80903**
	(0.166)	(0.166)	(0.323)	(0.396)
Regional economic community variables				
CER_{ijt}		-0.73818***		
		(0.144)		
MZ_{ijt}			-1.53904**	
			(0.612)	
CU_{ijt}				0.12722
				(0.837)
Observations	8,105	8,105	2,420	636
Country dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
R^2	0.492	0.493	0.559	0.338

Source: Authors' estimates. Results of estimates based on public spending, net of interest on the debt (*FD1*). (***), (**), (*) stand for significant at 1 percent, 5 percent and 10 percent respectively. The robust standard deviations are in parentheses.

IV. Robustness checks

We investigate the robustness of our baseline findings by using an alternative measure of fiscal stance, changing the timeframe for computing fiscal divergence, and applying the GMM methodology to account for potential endogeneity biases.

Alternative measure of fiscal stance. We explore the robustness of our findings using an alternative measure of fiscal stance: the primary fiscal balance ($FD2$). This fiscal indicator includes the effects of revenues. Equation (1) is re-estimated and reported in Table 5 columns [1]. Including revenue in the measurement of the divergence of fiscal stances does not alter the baseline results. The membership in a same REC reduces fiscal divergence between countries at the significance levels of 10 percent.

Timeframe for computing fiscal divergence. We re-estimate equation (1) using 3 and 5-year averages for fiscal divergence indicators. With this transformation, we expect to smoothen out potential short-term fluctuations and focused on the long-term relationship between our variables of interest. The results, provided in Table 5 columns [2] and [3], show that effect of African RECs on fiscal divergence of member countries remains unaffected when short term fluctuations are accounted for.

GMM methodology. We further check whether our findings are robust when potential endogeneity is tentatively corrected for. To this end, we re-estimate equation (1) with the GMM- system methodology. The GMM- system methodology allows addressing potential endogeneity biases arising between some explanatory variables and fiscal indicators and it does not require external instruments. Table 5 (column [4]) reports the main results suggests that our baseline finding showing the beneficial effect of REC in helping converge fiscal stances after accounting for potential endogeneity biases.

Table 5: Robustness checks

Sample	[1] All sample	[2] All sample	[3] All sample	[4] All sample
Dependent variable	FD2: Divergence of General Government Primary balance (in percent of GDP)	FD1: Divergence of General Government Expenditure (in percent of GDP), 3-year average	FD1: Divergence of General Government Expenditure (in percent of GDP), 5-year average	FD1: Divergence of General Government Expenditure (in percent of GDP), GMM
Economic variables				
$divdebt_{ijt}$	-0.00079	0.00594***	0.00267	0.00398*
	(0.001)	(0.002)	(0.002)	(0.002)
$divinfl_{ijt}$	0.02322***	0.02427***	0.02279	0.04864***
	(0.003)	(0.003)	(0.014)	(0.005)
$divca_{ijt}$	0.13155***	0.02365	0.06648***	-0.11207***
	(0.009)	(0.016)	(0.023)	(0.017)
$divgdpg_{ijt}$	-0.00000	0.00005***	0.00005***	0.00005***
	(0.000)	(0.000)	(0.000)	(0.000)
Institutional variables				
$divrlaw_{ijt}$	0.00781	0.19427	0.15503	0.21231
	(0.074)	(0.133)	(0.180)	(0.146)
$divdem_{ijt}$	-0.03090	-0.01029	-0.03315	0.05033
	(0.059)	(0.104)	(0.144)	(0.090)
$divstab_{ijt}$	0.14762***	0.31602***	0.53406***	0.21576***
	(0.052)	(0.095)	(0.130)	(0.055)
$frules_{ijt}$	0.04161	0.01725	-0.04226	0.87705
	(0.250)	(0.327)	(0.441)	(0.572)
imf_{ijt}	1.09276***	0.51304	-0.10439	0.46473
	(0.194)	(0.313)	(0.460)	(0.314)
Regional economic community variables				
$\boldsymbol{CER_{ijt}}$	**-0.22121***	**-0.78747*****	**-0.69017****	**-0.88258****
	(0.130)	**(0.216)**	**(0.276)**	**(0.385)**
Observations	8,103	3,091	1,987	8,105
Country dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
R^2	0.426	0.560	0.571	

Source: Authors' estimates. (***), (**), (*) stand for significant at 1 percent, 5 percent and 10 percent respectively. The robust standard deviations are in parentheses.

V. Concluding remarks

This paper studied the role of African integration in the fiscal convergence of between countries. Using a broad sample of African countries and a broad range of estimates. The results show that the existence of REC lowers fiscal divergence of member countries significantly. Monetary zones proved to be the most effective form of integration in fostering fiscal convergence between countries. The traditional

theory of Optimal Currency Areas has postulated a certain number of criteria to be observed before a monetary zone is formed. These criteria include strong trade intensity and high synchronization of the economic cycles of member countries. The endogeneity thesis of OCA criteria, initiated by Frankel and Rose (1997), showed that a monetary zone generates structural changes that mitigate the results of the standard theory of monetary zones to a very great extent. Countries with very strong trade ties have more correlated business cycles (Frankel and Rose (1998)). In addition to the channel of trade integration, the work by Darvas *et al.* (2005) also points out a second channel of endogeneity for the cycle synchronization criterion. The authors showed a significantly negative relation between fiscal divergence and cycle synchronization. Countries with relatively similar fiscal deficits tend to be in the same phases of economic cycles. For African countries, several papers including Tapsoba (2009) illustrated the phenomenon of endogeneity in the manner of Frankel and Rose (2009), in other words, through trade: countries that trade more have more synchronous business cycles. In this paper, we show that monetary zones in African create the conditions for them to be sustainable by fostering the convergence of fiscal stances. This paper is the first step of the exploration of the OCA endogeneity argument through the fiscal channel. Future studies could focus on the relationship between fiscal convergence and business cycle synchronicity.

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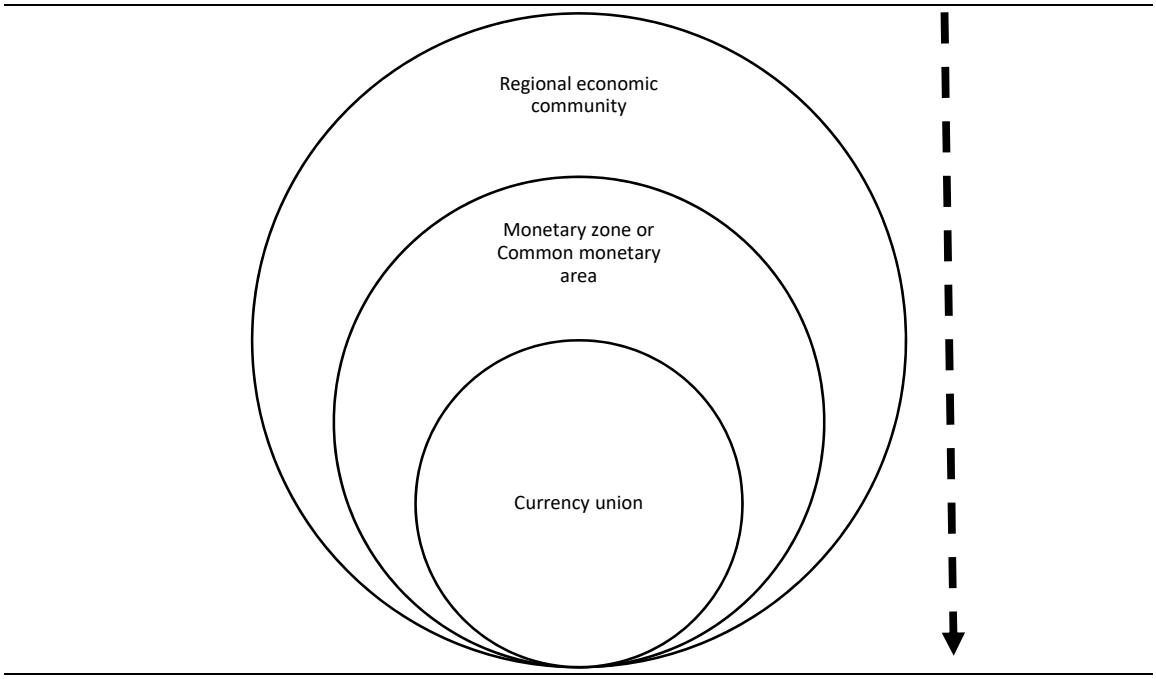
Table 3: descriptive statistics

Variables	Observations	Mean	Std, Dev	Min	Max
Economic variables					
Div. prim. spending	8105	8.046942	7.093079	0.003937	51.50191
Div. prim. fiscal balance	8105	5.525282	6.416613	0.000152	44.55577
Div. debt to GDP ratios	8105	58.52944	97.63922	0	765.9124
Div. inflation	8105	3.886772	21.19624	0.0000745	523.5405
Div. GDP growth	8105	7570.507	11210.57	0.153502	72597.88
Div. current account balance	8105	10.82672	10.79674	0	89.156
Institutional variables					
Div. rule of law scores	8105	1.233662	0.992512	0	5
Div. level of democracy	8105	1.359572	0.981746	0	5
Div. level of government stability	8105	1.479688	1.163765	0	7.75
Fiscal rules adoption	8105	0.107341	0.309566	0	1
Participation in IMF programs	8105	0.222579	0.416003	0	1

Source: Authors' calculations using WEO data.

Appendix

Figure 1: Regional economic communities (RECs) structure



Source: Authors.

"Sur quoi la fondera-t-il l'économie du monde qu'il veut gouverner? Sera-ce sur le caprice de chaque particulier? Quelle confusion! Sera-ce sur la justice? Il l'ignore."

Pascal

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