

Current Account Sustainability in the West African Economic and Monetary Union Countries

By

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List of acronyms

ADF	Augmented Dickey-Fuller
AERC	African Economic Research Consortium
CGER	Consultative Group on Exchange Rate Issues
DOT	Direction of Trade
ERPI	Effective Real Price Index
GDP	Gross domestic product
GMM	Generalized Method of Moment
HIPC	Heavily indebted poor countries
IMF	International Monetary Fund
IPS	Im, Pesaran and Sim
KPSS	Kwiatkowski, Phillips, Schmidt and Shin
LLC	Levin, Lin and Chou
LSDV	Least Square Dummy Variables
LSDVC	Least Square Dummy Variables-Corrected
NEER	Nominal effective exchange rate
NFA	Net Foreign Asset
ODA	Official development assistance
OLS	Ordinary least squares
PP	Philip-Peron
PPP	Purchase Power Parity
REER	Real Effective Exchange Rate
VAR	Vector Autoregressive
VECM	Vector Error Correction Model
WAEMU	West African Economic and Monetary Union
WDI	World Development Indicators

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Abstract

This paper assesses the external sustainability of member countries of the West African Economic and Monetary Union (WAEMU) over the period 1980–2008. A least square dummy variable corrected estimation first identifies over the 1980–2004 period, the lagged current account, unrequited transfer flows and government final consumption expenditures as the fundamentals of the current account balance. On grounds of the fitted values of these explanatory variables, the projected medium-term—2005–2008 period—current account deficits drift apart from the stabilizing current account deficits at external debt benchmarks, suggesting an increase of external debts over the medium term. The magnitude of adjustments in government final consumption expenditures to achieve the current account sustainability shows that the extent of adjustments is more important when the external debt benchmark is less than the WAEMU convergence norm. This finding calls for fiscal consolidation within the union.

1. Introduction

Before the early 1980s, the economies of the countries in the West African Economic and Monetary Union (WAEMU) had been recording large current account deficits. This situation raised concerns—in academic circles, amongst policy makers and public authorities—about its sustainability due to the excessive external debt it generates. Indeed, protracted current account deficits of a domestic economy undermine the achievement of its external equilibrium if the external debt it generates increases over time. In other words, when a domestic economy records current account deficits over a long period of time, it generates negative net international investment positions which indicate the reliance of the domestic economy on foreign assets for its development process.

Whether the withdrawal of these financial flows from the economies of the union is prone to a currency crisis remains an empirical issue in the literature. Conventional wisdom going back to Summers (1996) points out that when the funding of the current account deficit is based on foreign capital flows composed essentially of short-term debts or exchange reserves exceeding 5% of gross domestic product (GDP), and when they reflect high consumption spending, this current account deficit may be unsustainable. Fisher (2003) contends that large current account deficits represent the primary indicator of a potential currency crisis when their funding relied on portfolio investments. Contrary to the two authors, Frankel and Rose (1996) argue that current account deficits do not inevitably represent the sources of currency crisis; they should reflect investment in capital in the perspective of a higher economic growth (Roubini and Wachtel, 1998). However, evidence from the management of exchange rate crises during the 1990s and 2000s in Asian countries highlighted the role of large current account deficits in the run-up to exchange rate crises (Aristovnik, 2006). Therefore, asking as to which current account deficit levels the external stability of WAEMU countries does not raise concerns, is one way to further the debate on current account sustainability.

WAEMU member countries offer an appropriate setting to address the issue of external sustainability. These economies are outward-oriented and the occurrence of both external and internal shocks has sometimes generated low macroeconomic performances. For example, over the 1996–2002 period the current account deficit-GDP ratio valued at the market price for all the member countries averaged 5%¹. At the level of each member country, the current account deficit is still large. In Senegal, for example, it was estimated at 6.9% in 2003 and 6.5% of GDP in 2004 (MEF² of Senegal, 2005). It results in substantial inflows of capital registered as the member countries' external liabilities. The short-term inflows averaged 13.69% from 1994 to 1999. Additionally, the long-term capital inflows stood at more than 2.5% of GDP in 1997 (World Bank, 2008). Besides, over the period 2001–2006 the strong variability in the prices of raw materials³ and the nominal appreciation of the CFA franc relative

to the US dollar resulted in an overvaluation of the real exchange rate of about 11% (Ramirez and Tsangarides, 2007). Such trends raise two specific questions despite the implementation of institutional reforms⁴ to achieve the external sustainability: 1) Are WAEMU member countries solvent? and 2) Is their current account deficit sustainable? These two questions, surrounding most of the external sustainability literature, have not yet been addressed for the WAEMU zone.

There exists a set of diversified surveys⁵ relating to WAEMU member countries. However, only Sarr (2005) and Sie Tioye (2006) address the issues of sustainability. In his survey, the overriding objective of Sarr (2005) was to theoretically and empirically assess fiscal policy sustainability of the member countries over the 1970–2002 period. To that end, he uses the intertemporal optimization setting and econometric approach, namely the use of stationarity tests⁶ to show the unsustainability of fiscal policy of the union. In a nutshell, Sarr (2005) deals with a linear analysis of sustainability (see, Holmes and Panagiotidis, 2009). Sie Tioye (2006) analysed the current account deficit sustainability of Burkina Faso. His survey was descriptive, as was that of Summers (1996). Sie Tioye (2006) compares the macroeconomic performances of Burkina Faso with the convergence criteria of WAEMU in terms of debts and deficits. These two studies and many others devoted to the search for the external equilibrium of the member countries failed to address our approach. The first contribution of our paper is to fill this gap. Moreover, this paper contributes to the literature on the external sustainability through the use of fiscal policy to achieve sustainability. This policy option is contrary to that of previous papers in this field—Lee et al (2008) (a survey which may be considered as pioneering the external sustainability analysis of the Consultative Group on Exchange Rate — CGER — issues), Choueiri et al (2009) and Aydin (2010)—where the extent of adjustments derives from changes in exchange rate policies.

The main objective of this paper is to analyse the external sustainability of WAEMU member countries. Specifically, this paper seeks to:

- Identify the basic determinants of the current account deficit.
- Determine the likely gap between the projected medium-term current account deficit and the stabilizing external debt current account deficit.
- Determine the magnitude of fiscal policy adjustment to close the gap between the two current account positions.

This study used the data from the International Monetary Fund (IMF) and the World Bank to determine the percentage point changes in fiscal policy to reach the current account deficit sustainability. Indeed, having pegged the nominal exchange rate of the union, this policy option is more appropriate than that of the real effective exchange rate. Following the methodology of the external sustainability, and due to the lack of appropriate data for WAEMU countries, the study first identified the determinants of the current account balance with the estimator of the Least Square Dummy Variable-Corrected (LSDVC) over the 1980–2004 period. The choice of this period for the regression is aimed at using the data from 2005–2008 to calculate the deviations of the current account from its sustainable level. Secondly, the study compared the projected medium-term (2005–2008) current account and the external debt-stabilizing current account balances. We ended up with the determination of the extent of adjustments

required to close the gap between the two current account positions. Additionally, the regressors did not include the terms of trade. The data for this variable were unavailable for WAEMU countries.

The estimated results show the persistence of the current account deficit in the WAEMU area. Moreover, government final consumption expenditure and unrequited transfer are significant determinants of the current account balance. Additionally, the simulations—built on the fitted values of significant determinants of the current account balance—show that the projected medium-term current account balance drifts apart from the external debt-stabilizing current account balance over the medium-term; suggesting the increase of external debt-GDP ratios in the member countries to sustain the projected current account deficit levels. This increasing trend in the external debt-GDP ratios, due to the inflows of foreign capitals, leads to the calculation of the extent of adjustments to sustain the current account deficit. On average, the magnitude of adjustments is higher when the benchmark level for the external debt is lower than the WAEMU convergence norm.

The rest of this paper is organized as follows. Section 2 presents the external sector of WAEMU countries. Section 3 deals with the literature review. Section 4 addresses the methodology and Section 5 concludes.

2. External sector in the WAEMU zone: An overview

The WAEMU zone was created in 1994 on the eve of the first devaluation of its currency. Initially, the zone comprised seven Francophone member countries⁷. Guinea Bissau joined the union in 1997. The member countries formed a monetary union with a currency—the CFA franc—pegged to the Euro since 1999. The eight states had a combined population of around 84.3 million inhabitants in 2007 (UEMOA, 2007). The proportion of youth younger than 25 years old is high and varies between 45% and 60%. The population growth rate is estimated at 3% per year (UEMOA, 2007). Agriculture engages 65% of the population in the union and represents the most important sector in economy of each country. The union is therefore a potential producer of exportable raw materials from agriculture⁸ and from livestock breeding and fishing products. Besides these agricultural endowments, the member countries export mining products, oil and gas. These economies depend to a large extent on international markets, and the variations in terms of trade jeopardize the external stability. Additionally, many shocks, relating to the occurrence of droughts, floods, coup d'états and socio-political crises have narrowed export flows and resulted in problems in balance of payments which spill over into the economy. Therefore, the underlying current account is no longer in line with its equilibrium level, and both capital and financial accounts are prone to abrupt shifts in capital flows (Khan, 2009).

Current account deficit

A nation has a current account deficit if the sum of its net exports, foreign income and current transfers is negative (Kaupartisas, 2005). According to Heakal (2003), and Sodersten and Reed (1994), the current account balance⁹ identity can be expressed as follows:

$$CA = X - M + NY + NCT \quad (1)$$

where CA denotes the current account balance; $X - M$ denotes the balance of goods and services; NY denotes net incomes; and NCT denotes net current transfers.

The current account position has a bearing on some of the macroeconomic variables. When it records deficits, the real exchange rate is overvalued and dampens

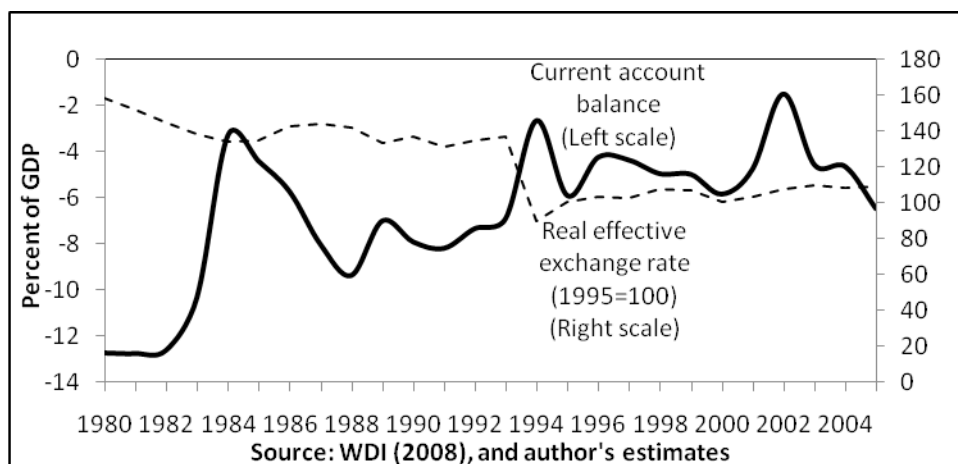
the international competitiveness of the economy. In addition, from the standpoint of Keynesian macroeconomics, a current account balance represents a saving gap—the difference between saving and investment (Higgins and Klitgaard, 1998). Therefore a protracted current account deficit leads to a readily decrease in saving, a surge in investment, or a combination of both. Contrary to this trend, when the current account records a surplus, the reverse of the analysis holds.

Figure A.1 in the appendix presents the different patterns of the current account deficit and its major components. Overall, the information in Figure A.1 exhibits two essential features. Net transfers are positive for all the member countries except for Côte d'Ivoire, which records a positive trade balance. Consequently, the overall net transfers and trade balance are positive. Moreover, the extent of the overall deficit recorded as net services and incomes exceeds that of the overall net transfers and trade balance. The overall current account balance is then in deficit. Figure A.2 presents an overview of investment and saving patterns. Over the period surveyed, the saving-GDP ratio readily increased—going from 2% to a peak of 13%. A surge in saving occurred after the 1994 devaluation. The rate of investment always remained above 10% of GDP but rarely exceeded 20% except for rates observed over the 1980–1983 period. All in all, the saving and investment trends exhibited are suggestive of the reliance of the member countries on foreign capital flows. To some extent, the stock of WAEMU-owned assets abroad had long exceeded the foreign-owned assets in the WAEMU zone. This difference—the international investment position—has a bearing on the real exchange rate. Standard inter-temporal macroeconomic models predict that debtor countries will need a more depreciated real exchange rate to generate trade surpluses necessary to service their external liabilities (Lee et al, 2008).

Real effective exchange rate

A multilateral or effective real exchange rate is a weighted external real exchange rate index (Hinkle and Montiel, 1999). According to the literature on the exchange rate, it is the component of the external exchange rate mostly used as a political tool in a domestic economy where a fix anchor prevails. Indeed, when it is defined in terms of the domestic currency, its increase (decrease) is referred to as depreciation (appreciation) of the local currency relative to its trading partners. As such, the real effective exchange rate is a helpful economic index in the analysis of competitiveness, and thereby of sustainability. Therefore, analysing the real effective exchange rate in the case of WAEMU countries as part of the current account sustainability analysis makes sense, and consequently requires its calculation (see Appendix B for more details on this issue).

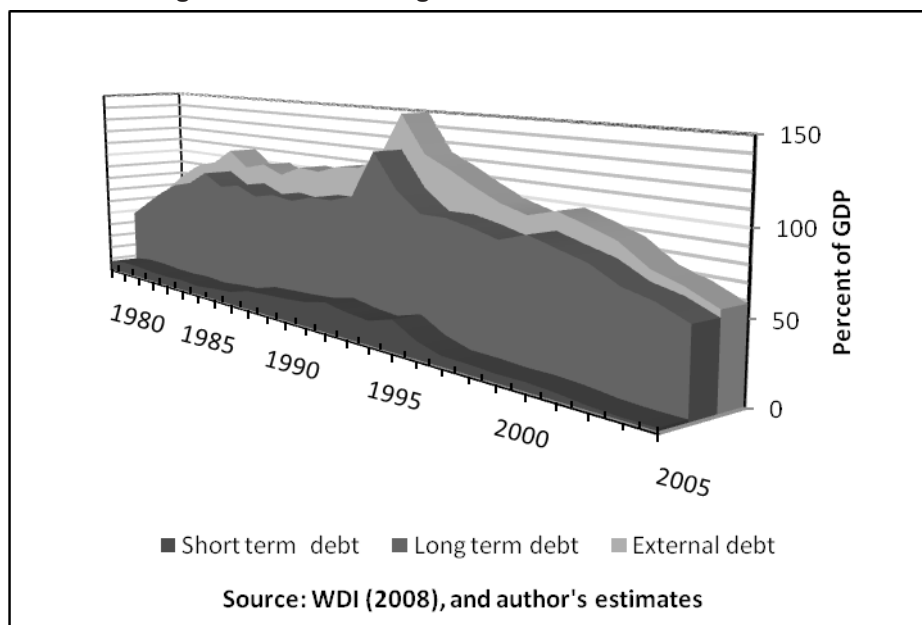
Figure B.1 presents the trends of the multilateral real exchange rate. On average, the persistence of the current account deficit has always been associated with an overvaluation of the real effective exchange rate (REER). The major change occurred in 1994 after the devaluation of the CFA franc. Additionally, the magnitude of overvaluation was higher before the devaluation. The more the current account deficit widens, the more the real effective exchange rate appreciates. This evidence is clear from Figure 2.1.

Figure 2. 1: Current account and REER trends in WAEMU countries

Following the reference benchmark of Summers (1996), Figure A.1—especially the graph relating to the whole WAEMU countries—Figure A.2 and Figure 2.1 exhibit four important episodes¹⁰ in which the current account balance exhibits different patterns. Overall, over the 1980–2004 period the current account deficit sometimes exceeded the conventional threshold of 5% of GDP, but did not always result in a sudden stop of capital flows—except in 1994 where it recorded a negative trade balance. In addition, the sustainability of the current account deficit never raised concerns as long as both trade balance and unrequited net transfers remained in credit. This finding matches the conclusion of Banque de France (2004) and particularly Milesi-Ferretti and Razin (1998) who argued that economies benefitting from official transfer of capital flows in the presence of shocks assure the sustainability of their current account deficit.

External indebtedness

A current account deficit leads to increases in interest rates to attract capital flows for its funding. As the member countries are financially repressed, the flows of capital to finance the deficit generally originate from foreign sources. As such, a surge in foreign capital flows owing to protracted current account deficits gave rise to the problem of the external indebtedness. Figure 2.2 exhibits the trend of the external debt. Basically, its major components remain the short- and long-term debts. With reference to episodes of current account deficits, the long-term debts sometimes exceeded the conventional threshold of 70% of GDP—known as the convergence norm for the external debt within the union. The short-term debts sharply increased over the second episode and led to a change in the CFA franc anchor.

Figure 2. 2: Foreign debt outstanding in WAEMU countries

In 2007 the ratio of external debt to GDP was assessed at 40.2% (BCEAO, 2007). Such a decreasing trend results from the highly indebted poor countries (HIPC) initiatives which cut the debt amount of five member countries. At the time, these countries did not benefit from the multilateral debt initiative as evidenced in Table 2.1.

Table 2.1: External debt indicators in of GDP (%)

Years	1999	2000	2001	2002
Total external debt/Export of goods and services	280.1	288	263.1	224
Debt services/Export of goods and services	17.80	18.8	16.8	18
Interest rate payment/Export of goods and services	6.90	7.2	6	5.4
Multilateral debt/Total external debt	52.70	52.9	55.5	55.5
Interest rate payment/Total external Debt	2.46	2.5	2.28	2.41

Source: BCEAO (2007) and author estimates

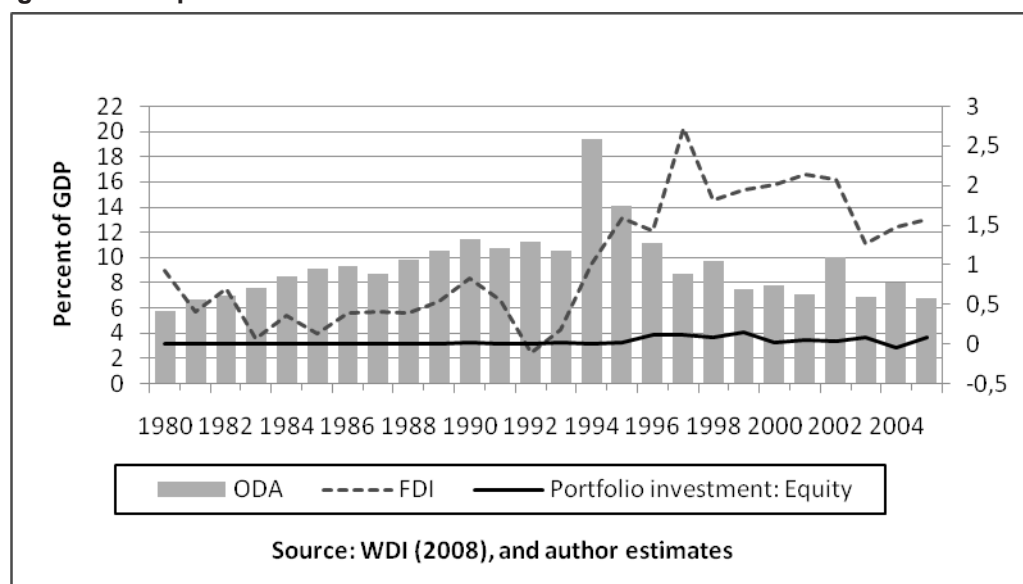
The multilateral debt-total external debt ratio rose slightly. The ratio of debt services and interest rate payment with respect to exports of goods and services remain high. Such trends figure out the problem of the external sustainability. Moreover, interest rate payments on the total external debt show the inability of the member countries to attract significant private capital flows. To some extent, the low level of these interest rates points out the nature of capital flows available within the union.

2.4. Capital flows

Several authors, including Callen and Cashin (2006), pointed out the composition of capital flows in the analysis of the external sustainability. For example, a current account deficit largely financed with short-term inflows—such as equity flows—is more prone to reversals compared with long-term foreign direct investment inflows (ABSA, 2007).

External capital flows can be broken down into official development assistance (ODA), export credits, and foreign private flows (Obadan, 2004). Official flows include the ODA and other official development flows. Export credits are designed to finance specific purchases of goods or services. Such claims are mostly short-lived. Foreign private flows comprise international bank loans and bond issues, private export credits, foreign private direct and portfolio investments. Figure 2.3 depicts the major components of capital flows within the union. On average, the current account deficit has mainly been funded by ODA and official flows which accounted for 7% of GDP during the first episode. The short-term debts, namely the liability stemming from portfolio investments, marginally contributed to the funding. Equity flows did not reach 0.3% of GDP. Conversely, foreign direct investment flows contributed more than 1% of GDP before 1994, and even exceeded 2.5% of GDP in 1997. This latter trend (2.5% of GDP) is attributable to reforms on trade, fiscal and exchange rate policies.

Figure 2. 3: Capital flows in WAEMU countries



All in all, the analysis of the stylized facts of the external sector of the WAEMU suggests the adjustment of the current account. How does this perform in the current case? We discuss this issue following the literature and stylized facts in what follows. In fact, after benefitting from sizeable amounts of unrequited transfer flows, the private component of domestic saving gradually improved and cleared the gap between domestic saving and investment. Moreover, assuming that the unrequited transfer inflows are

not allocated to domestic investments, the domestic demand in foreign goods has to decrease, leading to increases in exports. In both cases, the external equilibrium is restored. However, further to a sharp decrease in these flows coupled with a trade deficit in 1993, the sharp fall in macroeconomic performance that ensued led to a devaluation of the CFA franc. The change brought into the fixed anchor resulted in depreciations of the real effective exchange rate, rises in exports and domestic saving, and ended up with the reduction of the saving gap.

The last channel to perform the external adjustment is the consolidation of fiscal policy. According to Brook et al (2004), the specific impact of a tight fiscal policy on the current account deficit depends on the extent to which increases in government saving offset decline in private saving. Several channels may lead to this offset. However, in this study fiscal consolidation¹¹ prompted a decline in the ratio of private saving thereby offsetting much of the initial gain in public saving.

3. Literature review

The economic literature identified several methodologies to assess current account sustainability. IMF developed a method which draws comparisons between the long term levels of the current account—determined from the current exchange rate stripped of temporary fluctuation effects due to the past levels of economic activities—to a level expected to be sustainable. This approach is grounded in the hypotheses that the domestic economy and its trading partners have both low rates of inflation and operate at a reasonable rate of capacity utilization. In addition, it requires a level of the exchange rate which equates the two levels of the current account. However, these restrictive hypotheses limited its wide implementation.

A public finance based-method is also used to examine whether the current account follows a stationary process. The use of either stationarity¹² tests (see Trehan and Walsh, 1991; Coakley et al, 1996; Liu and Tanner, 1996; Apergis et al, 2000; Kalyoncu, 2006), cointegration tests (Wu et al, 2001) or both (Wu et al, 1996), constituted the cornerstone of the empirical analysis of sustainability. Overall, this second methodology only underscores the solvency condition; to wit, it assesses whether the inter-temporal budget constraint holds.

Attempting to reduce the shortcomings of the sustainability based-solvency approach, Milesi-Ferretti and Razin (1996) suggest a short-run descriptive one which includes, besides the solvency condition, the willingness of the countries to service all their outstanding external liabilities. Reisen (1998) incorporates foreign capital flows into this latter methodology to determine the indicator of the current account deficit sustainability in both the medium and the long terms. This approach, though different from its methodological perspective, remains in the tradition of empirical surveys which address the external sustainability issues through the analysis of fundamentals of the current account balance. In that respect, the inter-temporal approach to current account (see Sachs, 1981, 1982; Obstfeld and Rogoff, 1994) appeared as the appropriate grounding for these analyses. As such, several empirical studies identified correlations between the current account deficit and its determinants with different econometric models. For example, Saqib et al (2007) used a Vector Autoregressive (VAR) model and a Vector Error Correction Model (VECM) to show, in the case of Pakistan, the positive relationship between the trade balance, domestic saving and workers' remittances, and the negative correlation between consumption and the current account balance. Likewise, Bannaga (2004) determined the persistence of trade deficit in Sudan over the 1960–2000 period as originating from the lack of competitiveness of the export sector with VECM.

Panel data models emerged as a tool to establish the persistence and identify the basic determinants of the current account balance. Khan and Knight (1983) used a

panel of 32 non-oil developing countries. They showed that over the 1973–1980 period, both external and internal economic factors such as increase in interest rate, low growth rate of industrialized countries, terms of trade deterioration, fiscal deficit and the real exchange rate appreciation explain the current account position. Aristovnik and Zajc (2001) and Aristovnik (2002) estimated the determinants of the current account deficit of the Central and Eastern transition economies of Europe. They pointed out that investment, real exchange rate, real interest rate, economic growth rate and money supply-GDP ratio, determine the current account. Debelle and Faruquee (1996) showed from both cross-section data and the Generalized Method of Moment (GMM) that over the period 1973–1993, the real exchange rate, business cycle and terms of trade had a short-run effect on the current account while the stage of development and demography affected the current account over the long run in 21 industrialized countries. Several empirical studies (see for example, Chinn and Prasad, 2003; Calderón et al, 1999; Calderón et al, 2007) identified the determinants of the current account deficit. For example, Calderón et al (1999) analysed the link between the current account deficit and a broad set of explanatory variables through 44 countries over the 1966–1995 period. Calderón et al (2007) also identified several determinants of the current account deficit in 64 countries including 30 African countries over the 1975–1995 period. They concluded that the current account deficits are persistent. All these panel studies fail to clearly state how to achieve the current account sustainability. Additionally, as evidenced in the above review, the current account sustainability analysis is still inconclusive from its methodological perspective. This paper assesses the current account deficit sustainability following Lee et al (2008), Choueiri et al (2009) and Aydin (2010). Contrary to these authors, the current account sustainability in this case stems from a fiscal policy adjustment. This policy option was previously implemented within the union as part of the structural adjustment policy of the 1980s and 1990s. The aim of these reforms was public spending retrenchments. Therefore despite the extensive and diversified literature on fiscal policy adjustments, the study reviewed some of the demand side investigations which shed light on this analysis.

Fiscal policy adjustments are able to reduce the extent of public debt and deficits. The literature on the demand side of fiscal policy adjustment illustrates this evidence through Giavazzi and Pagano (1990), who argue that fiscal policy destined to reduce deficits can be large, decisive and on the spending side, expansionary. Alesina and Ardagna (2009) pointed out through an investigation of the Organisation for Economic Co-operation and Development (OECD) countries that spending cuts are more effective than tax increases in stabilizing the economy. Therefore to the idea—known as the convention wisdom about political economy of fiscal adjustments—that deficit reduction policies cause recessions and political turmoil for incumbent government, this finding provides additional evidence that fiscal adjustment on the spending side is more prone to higher growth than fiscal expansion on the spending side. In line with the two authors, Alesina and Perotti (1995) pointed out that the successful adjustment which reduces the public debt over the long term should be grounded in cutting primary expenditure such as government wages, transfers and over tax increases. This finding is underscored in empirical surveys including those of McDermott and Wescott (1996) and Tsibouris et al (2006). In sum, the greater the extent of fiscal adjustment, the more likely it is to reduce the public debt ratio, thereby achieving sustainability.

4. Methodology

The empirical analysis of the external sustainability is grounded either in solvency or in sustainability conditions. The issue of solvency is referred to as the inter-temporal budget constraint. Once this constraint holds, the economy is able to yield future trade surpluses to repay all its external liabilities. Sustainability concerns are then raised if lenders perceive that the fall in the inter-temporal consumption path due to deficits casts doubt on the willingness of the country to meet its obligations (Callen and Cashin, 1999). They require, besides the solvency condition, the willingness to service the external debts (Milesi-Ferretti and Razin, 1996). Therefore, the external sustainability—going back to Lee et al (2008)—first identifies the determinants of the current account balance which are used to compare the projected medium-term current account and the external debt-stabilizing current account balances. It ends up with the determination of the extent of adjustments required to close the gap between the two current account positions.

Determinants of the current account

The determinants of the current account balance are not usually theoretically derived in the literature. However, the non-structural approach to current account has widely been used to identify the determinants of the current account balance. This approach has been used recently by several authors (for example, Obstfeld and Roggoff, 2004; Blanchard et al, 2005; Edwards, 2005) in the current account analysis of USA. Consequently, the study used a simple model to fix the idea.

Theoretical model of the current account

To pinpoint the determinants of the current account balance several empirical investigations including Hermann and Jochem, 2005; Calderón et al, 2007), used a simple model as the backbone of their analysis. Though not very robust this framework has the advantage of providing an overall behaviour of the current account (Calderón et al, 2007). Following these studies, the current account appears as a gap between saving and investment.

$$CA = S - I \quad (2)$$

where CA denotes the current account, I denotes investment and S denotes saving.

Assuming that the current account relates to factors deriving from both saving and

investment, we postulated with a wider view over the literature that the two factors are subject to the influence of internal and external economic conditions and the occurrence of shocks. Additionally, since the current account is also referred to as net exports, one of its major determinants remains the exchange rate which has a bearing on investment and saving. Following this non-structural approach to current account and guiding the choice of factors influencing the current account over the medium term through recent empirical surveys (for example, Debelle and Faruquee, 1996; Obstfeld and Rogoff, 2004; Blanchard et al, 2005; Edwards, 2005; Calderón et al, 2007; Lee et al, 2008), the reduced form of the current account model is as follows:

$$CA = f(GROWTH, REER, FISC, DRATIO, UTRANSFER, OPENNESS, MLI_{1984}) \quad (3)$$

The likely effects of these determinants on the current account balance are explained as follows:

GROWTH. In Debelle and Faruquee (1996) the stage of development is identified as an essential determinant of the current account. The current account varies according to the stage of development. Depending on whether the economy is in its earlier stages of development or embedded in its catching-up process, it is either borrower or lender *vis-à-vis* its trading partners. This dynamic has a bearing on the current account. The relative income and growth have sometimes been used to proxy the stage of development (Lee et al, 2008). However, due to the dearth of appropriate data, the rate of growth is only used to capture the stage of development. Further, assuming that WAEMU economies are in their first stages of development, the current account is expected to widen with the increase in the rate of growth.

REER. A real effective exchange rate is somehow a measure of the wealth of an economy. A multilateral real effective exchange rate has the potential to compare the domestic economy with its trading partners. Marshall (1923) and Lerner (1944) proposed a positive relationship between the current account and the real effective exchange rate. However, due to its everlasting overvaluation, the real effective exchange rate is expected to widen the current account within the union.

FISC. Fiscal policy determines the dynamic of the current account (Leiderman and Razin, 1991). According to Ahmed (1986) and Chinn (2005), in the absence of full Ricardian equivalence, an increase in government balance leads to a rise in national saving and thereby improves the current account balance. Government final consumption, government expenditure and government debt have been mostly used to capture the status of fiscal policy. We used the government final consumption expenditure as a proxy for fiscal policy. This choice has the advantage of avoiding a likely multi-collinearity problem stemming from the combined use of all proxies in a single estimation equation. Additionally, the current choice relates to data availability. Therefore, fiscal policy is expected to widen the current account.

DRATIO. The dependency ratio—the ratio of non-working age population to working age population—is used to measure the demographic effects. Higgins (1998) pointed out that a higher dependency ratio reduces national saving and decreases the current account balance. And yet, the dependency ratio is expected to widen the current account.

UTRANSFER. With reference to the saving-gap literature, the unrequited capital inflows increase the private components of domestic saving which increases national saving—thus reducing the gap between domestic saving and investment. Assuming that the unrequited transfer inflows are not destined to increase domestic investment, the domestic demand addressed in foreign goods has to decrease further to a surge of aid inflows, and exports are likely to subsequently increase. Additionally, as evidenced in Milesi-Ferretti and Razin (1996), the unrequited transfer inflows are likely to improve the current account balance of the union.

OPENNESS. Openness stands for trade openness. It is the ratio of average exports and imports to GDP. This ratio captures the effect of trade liberalization. More liberalized economies have the potential to increase national saving, thereby reducing the current account deficit. However, the mixture of trade liberalization reforms—such as the common external tariff—and some measures of protectionism within the union are expected to lower export growth and widen the current account.

MLI₁₉₈₄. Shocks are identified as having an important bearing on current accounts. Some shocks embody positive effects in contrast to others. The entry of Mali to the union is assumed to be a positive shock. As such, it is expected to narrow the current account deficit.

Empirical methodology

One of the striking features of the WAEMU external sector is the persistence of the current account deficit over the 1980–2004 period. As such, given the limited length of our sample in terms of observations (25 years), estimating a current account deficit model for each individual country would result in unreliable estimates which may not reflect the reality of the economic situation within the union. This shortcoming may be reduced if the data are pooled. Moreover, as current account data are often plagued by autocorrelation, a robust solution is to introduce the lagged current account in the estimation model. Following the empirical works of Debelle and Faruquee (1996), Calderón et al (1999), Chinn and Prasad (2003), we estimated a model of the following form:

$$y_{i,t} = \gamma_t + \delta y_{i,t-1} + x_{it}'\beta + u_{i,t}, \quad i = 1, \dots, N \quad t = 1, \dots, T \quad (4)$$

where y denotes the dependant variable assimilated to the current account

balance-GDP ratio (CA); x denotes the vector of explanatory variables; u denotes the error term; $\hat{\alpha}$ and $\hat{\beta}$ represent the parameters of the model γ_i denotes a time-specific effects—specifically a time dummy to capture the entry of Mali in 1984 in the WAEMU; and i and t respectively denote country and time. Assuming that the model is one way error component, we have $u_{it} = \mu_i + v_{it}$ with μ being the unobservable specific effects; and v the stochastic error term. We further assume that $\mu_i \square IID(0; \sigma_\mu^2)$ and $v_{it} \square IID(0; \sigma_v^2)$.

Equation 4 refers to a dynamic current account model, and yet could not be estimated with the ordinary least square (OLS) owing to the presence of the lagged current account which violates the exogeneity condition within the model. Besides, the strong variability of current account flows from one country to another in the WAEMU zone predicts the presence of heteroskedasticity. As such, the estimated coefficients would be biased and inconsistent. A robust solution has been to take first differences as suggested in the literature (see Hansen and West, 2002). Equation 4 can then be rewritten as:

$$\Delta y_{it} = \alpha \Delta y_{it-1} + \Delta x_{it}' \beta + \Delta v_{it} \quad (5)$$

Since $E(\Delta y_{it-1} \Delta v_{it}) \neq 0$ in Equation 5, OLS could no longer estimate it. Anderson and Hsiao (1981, 1982) noticed that the lags of the variables such as Δy_{it-2} and y_{it-2} are valid instruments, justifying the estimation of Equation 5 using instrumental variables. Arellano and Bond (1991) and Arellano and Bover (1995) analysed the optimal number of lagged variables to be used as valid instruments. Their approach is referred to as the difference GMM and is grounded in the following conditions of moment:

$$\begin{aligned} E\left[\left(y_{i,t-s} \Delta v_{it}\right)\right] &= 0 \quad \text{for } s \geq 2; \quad t = 3, \dots, T \\ E\left[\left(x_{i,t-s} \Delta v_{it}\right)\right] &= 0 \quad \text{for } s \geq 2; \quad t = 3, \dots, T \end{aligned} \quad (6)$$

Equation 6 has two important implications. Firstly, it states that the errors must not be serially correlated and secondly, the explanatory variables are weakly exogenous. These type-models have many individuals N for a short time-period T . However, evidence from the empirical literatures relating to the dynamic panel data show that with short T and persistent series such as GDP growth, the first-differenced GMM of Arellano and Bond (1991) leads to a low precision and higher finite sample bias (Baltagi, 2008). The system-GMM of Blundell and Bond (1998) gives reasonable and more precise estimates. Its specification involves additional conditions of moment:

$$\begin{aligned}
 E\left[\left(y_{i,t-1} - y_{i,t-s-1}\right)\left(\mu_i + \varepsilon_{it}\right)\right] &= 0 \text{ for } s = 1 \\
 E\left[\left(x_{i,t-1} - x_{i,t-s-1}\right)\left(\mu_i + \varepsilon_{it}\right)\right] &= 0 \text{ for } s = 1
 \end{aligned} \tag{7}$$

The system-GMM performs well for large N and short T . It may be severely biased and imprecise in panel data with a small number of cross-sectional units and longer T , as evidenced in the analysis of macro panels. An alternative approach suggested in the literature to overcome OLS, instrument variables, and first and system GMM estimation biases gave rise to the use of least squared dummy variables (LSDV) or fixed effects' method. However, the dynamic LSDV estimator is not consistent for large N and finite T (Bruno, 2005). Nickel (1981) derives an expression for the inconsistency when N is large. Kiviet (1995) used asymptotic expansion techniques to approximate the small sample bias of the LSDV estimator. This last estimator is referred to as the LSDV-corrected bias (LSDVC). By so doing, Nickel (1981) offers a method to correct the LSDV estimator for samples where N is small or only moderately large. The LSDVC has a high degree of precision (Bun and Kiviet, 2003). Judson and Owen (1999) provided evidence from a Monte-Carlo experiment that the corrected-LSDV outperforms GMM models in unbalanced panels for which T is 30 years. Hausmann and Kuersteiner (2001) further analysed the temporal horizon for which the LSDVC performs well. They stated that when $T > 5$, the LSDVC estimator performs well with a reduced bias compared to all other estimators. Conversely when $T < 5$, the LSDVC estimator does not have a solution in the vicinity of unit circle. The LSDVC estimation method is suitable for our data. However, to check the robustness of the LSDVC estimates, we compared them with those of the dynamic LSDV. The statistical significance of LSDVC coefficients is tested with a bootstrap procedure. The model to be estimated is as follows:

$$\begin{aligned}
 CA_{i,t} = & \delta CA_{i,t-1} + \beta_1 DOGR_{i,t} + \beta_2 REER_{i,t} + \beta_3 UTRF_{i,t} + \beta_4 FISP_{i,t} + \beta_5 DRAT_{i,t} + \beta_6 OPEN_{i,t} \\
 & + \beta_7 MLI_{1984} + \mu_i + v_{i,t}
 \end{aligned} \tag{8}$$

Data source

The data used to perform the regressions were from different sources. Domestic growth rate data are drawn from the World Economic Outlook (WEO). Government final consumption expenditure, unrequited transfers and dependency ratio are from the World Development Indicators (WDI). The data for the real effective exchange rate are the author's own construct. This variable is derived as the ratio of nominal effective exchange rate (NEER) to Effective Real Price Index (ERPI). Trade openness is constructed with the data from WDI. The regressors also included a dummy variable which depicts the entry of Mali into the union in 1984. Table 4.1 gives an overview of the data sources.

Table 4.1: Definition of variables

Variable	Description	Sources
Current account deficit (CA)	Current account deficit as a percentage of gross domestic product (GDP)	World Bank (2008) and author's construct
Economic output growth rate (DOGR)	Domestic growth rate (DOGR)	IMF(2009)
Real effective exchange rate (REER)	REER is obtained from the Hinkel and Montiel (1999) formula	Direction of Trade (DOT), author's computation
Fiscal policy (FISP)	Government final consumption expenditure-GDP ratio as a proxy for fiscal policy	World Bank (2008)
Degree of openness (OPEN)	Export plus import-GDP ratio	World Bank (2008)
Unrequited transfer (UTRF)	Unilateral transfer-GDP ratio	World Bank (2008)
Dependency ratio (DRAT)	Age dependency ratio (dependents to working-age population)	World Bank (2008)
Mali (MLI ₁₉₈₄)	Dummy variable taking the value of 1 if the year is 1984 for the entry of Mali into the WAEMU, and 0 if no	Author's construct

Testing for unit roots

The literature on panel data identifies several methodologies to test the stationarity of variables. However, since the survey of Levin and Lin (1992) and the critics (see Maddala and Wu, 1999) that subsequently ensued, it is usual to perform several type-tests to determine the integration order of variables. For example, Faruquee (2004) used the unit root tests of Hadri (2000), Levin et al (2002) and Im et al (2003) to test the stationarity of variables when he analysed the impact of the European monetary union on the trade of 22 industrialized economies. Following this literature, we used three type-tests, namely those of Levin et al (2002), Im et al (2003) and a Fisher type-test of Maddala and Wu (1999)—to diagnose the stationarity of variables.

Following Combes et al (2000), the following equation sheds light on the three type-tests:

$$y_{it} = a_i + b_i t + c_i y_{it-1} + \varepsilon_{it} \quad (9)$$

where y_{it} stands for the variable to be tested, $i = 1, \dots, N$ indexes panels, and

$t = 1, \dots, T$ indexes time.

Assuming that Equation 9 follows an autoregressive process of order one, unit roots are either constant across individuals or countries ($c_i = c$), or vary across them. The Levin et al (2002) panel unit root test assumes that all panels share the same parameter, c , while the stationarity Fisher-based tests¹³ view unit root processes as varying across individuals or countries.

Panel data unit root tests often test the null hypothesis— $H_0 : \phi_i = 1$ for all i —versus the alternative— $H_a : \phi_i < 1$ —following the first-order autoregressive component:

$$\Delta y_{it} = \phi_i y_{i,t-1} + z'_{it} \gamma_i + u_{it} \quad (10)$$

Under the null, y_{it} is non-stationary.

Current account data are often plagued by autocorrelation, and the risk of running regressions with serially correlated variables remains high, especially within a monetary union. To control for autocorrelation, we followed the method of Levin et al (2002) using lags of tested variables, mitigating the cross-sectional dependence of series. Indeed, we chose one lag expected to minimize the Bayesian information criterion. Table 4.2 presents the results of the three-type tests. Overall, the Levin, Lin and Chu (LLC) bias-adjusted test statistics are less than 0 at the 1% significance level for all the variables. Otherwise, we rejected the null of unit roots in favour of the alternative. The variables are then stationary in level. This result holds for the Im, Pesaran and Sim (IPS) test in view of the W_{t-bar} statistic at the 5% significance level after controlling for cross-section dependence and minimizing the Bayesian information criterion. As for the Fisher-ADF unit root test result, assuming that the mean values for the variables are non-zero in each member country, it confirms the unit root test results of both LLC and IPS at the 5% significance level according to *inverse logit t* statistics subject to one lag and having controlled for cross section dependence.

Table 4.2: Unit root test results

	IPS	LLC	Fisher-ADF
	Level	Level	Level
CA	-3.6042 (0.0002)***	-4.1566 (0.0000)***	-6.8840 (0.0000)***
DOGR	-11.9234 (0.0000)***	-11.7862 (0.0000)***	-12.2409 (0.0000)***
REER	-1.9425 (0.0260)**	-2.9266 (0.0017)***	-5.6736 (0.0000)***

FISP	-2.6673 (0.0038)***	-4.2237 (0.0000)***	-7.4155 (0.0000)***
DRAT	-5.0462 (0.0000)***	-6.0658 (0.0000)***	-9.7005 (0.0000)***
UTRF	-1.6370 (0.0508)**	-1.8986 (0.0288)**	-4.2058 (0.0001)***
OPEN	-1.7425 (0.0407)**	-2.3742 (0.0088)***	-4.8113 (0.0000)***

IPS = Im, Pesaran and Sim.

LLC = Levin, Lin and Chou.

Both the Levin et al (2002) and the Im et al (2003) tests assume asymptotic normality. Maddala and Wu (1999) and Choi (2001) assumed an individual unit root process. For both tests, unit root exists under the null hypothesis. Additionally, for p-values less than 10%, the alternative hypothesis holds. Probabilities for Fisher test are computed using an asymptotic chi-square distribution

***significant at 1%; **significant at 5%; *significant at 10%.

Source: World Bank (2008), and author estimates.

Analysis of the descriptive statistics

From Table 4.3, the overall and within variations are calculated over 175 observations while between values are calculated across the member countries. The mean current account deficit over the period surveyed was about 0.12, and the deviation from this value was assessed at 0.13 within the member countries. In other words, the current account deficit had disruptive effects, and these are likely to originate from a set of “within elements” including growth performances, exchange rate regime, fiscal policy and the shock variable MLI_{84} . However, the disturbing effects of the shock variable (0.96) and exchange rate policy (0.65) are more important than those of domestic growth rate (0.13) and fiscal policy (0.08).

“Between deviations” also explain the disruptive effects of the current account deficit. These are mainly due to trade openness (0.25), dependency ratio (0.95) and the unrequited transfer flows (0.08). Overall, the extent of disruptive effects points out that the protractedness of the current account deficit mainly derives from exchange rate policy, dependency ratio and the shock variable which do not further free trade and subsequently the domestic growth performance. Meanwhile, the sustainability of the current account will be satisfied if more effort is undertaken to consolidate fiscal policy and erect a macroeconomic environment more prone to the inflows of the unrequited transfers.

Table 4.3: Descriptive statistics of the variables

Variables	Mean	Standard-deviation	Minimum	Maximum	
CA	Overall	-0.12306	0.06328	-0.38159	0.10709
	Between		0.04957	-0.17090	-0.02297
	Within		0.04343	-0.37820	0.00700

DOGR	Overall	0.02672	0.04793	-0.16825	0.14982
	Between		0.01358	0.00758	0.04579
	Within		0.04624	-0.15412	0.15205
REER	Overall	1.22631	0.22213	0.85799	2.06972
	Between		0.09910	1.12000	1.41635
	Within		0.20217	0.71251	1.87968
FISP	Overall	0.14212	0.04228	0.06484	0.26065
	Between		0.02883	0.11755	0.19714
	Within		0.03273	0.03727	0.22740
DRAT	Overall	0.05835	0.80775	1.04770	0.05070
	Between		0.05070	0.87307	1.03186
	Within		0.03450	0.83447	1.00586
MLI ₈₄	Overall	0.00571	0.07560	0	1
	Between		0.01512	0	0.04
	Within		0.07428	-0.03429	0.96571
UTRF	Overall	0.05314	0.05134	-0.06936	0.19509
	Between		0.04612	-0.03234	0.11340
	Within		0.02832	-0.04439	0.13482
OPEN	Overall	0.45696	0.14889	0.23485	0.9164456
	Between		0.13677	0.27935	0.6963536
	Within		0.07773	0.27890	0.70908

Source: World Bank (2008), and author estimates.

Estimation results

The sample comprised seven WAEMU countries. The data spanned the period 1980 to 2004; say, 25 years in the time dimension. Overall, the dynamic LSDV estimates reject the null of no fixed effects; and hence the fitness of the fixed effects' model. This was followed by analysing LSDVC estimates in the light of the following hypotheses:

- The current account deficit is persistent in the WAEMU zone.
- Macroeconomic policies such as fiscal, trade and exchange rate policies in the one hand, and the unilateral transfer flows in the other hand reduce the

magnitude of the current account deficit.

- The dependency ratio worsens the current account deficit.

All in all, three main factors determine the current account balance. They are the lagged current account deficit, unilateral transfer flows and general government final consumption expenditure. The positive parameter of the lagged explanatory variable (0.53) confirms the persistence of the current account deficit in the WAEMU zone. Edwards (2004) pointed out a similar result. However, the size of the coefficient reveals slightly strong persistence of the current account deficit. The second determinant of the current account deficit is the unilateral transfer flows. The correlation between this regressor and the current account deficit is about -0.37. It follows that a one-percentage point increase in the amount of unilateral transfers' flows is expected to reduce the current account deficit of about 0.37%. This finding matches the simulations of Banque de France (2004) according to which the unilateral flows are relevant for the external stability of WAEMU countries. The current account deficit has been sustained during the last years by these flows.

Fiscal policy is negatively correlated with the current account deficit. Dornbusch et al (2004) reached a similar finding. Like the unilateral transfer flows, fiscal policy improves the current account deficit. This finding supports the view that fiscal policy performs well in a fixed exchange rate regime. The coefficient of this correlation is assessed at -0.31. Table 4.4 gives an overview of all fitted values of the parameters.

Table 4.4: Estimation results

Base sample, 1980–2004		
	LSDV coefficients	LSDVC coefficients
The dependant variable is the current account deficit-GDP ratio		
Regressors		
CA (-1)	0.4341 (0.000)***	0.5271 (0.000)***
DOGR	-0.0629 (0.346)	-0.0610 (0.291)
REER	-0.0213 (0.190)	-0.0178 (0.282)
UTRF	-0.4094 (0.001)***	-0.3725 (0.002)***
FISC	-0.3126 (0.013)**	-0.3114 (0.018)**
DRAT	0.1432 (0.187)	0.1665 (0.139)
OPEN	-0.0347 (0.366)	-0.0320 (0.438)
MLI ₁₉₈₄	0.0061 (0.858)	0.0082 (0.846)
Constant	-0.0940 (0.301)	
Number of observations	168	168
Number of country	7	7
R ² within	0.3768	
R ² between	0.8931	
R ² overall	0.6527	
F test that all u _i =0	0.0159	

p-values are in parentheses.

***significant at 1%; **significant at 5%; *significant at 1%.

For LSDVC, bootstrapped standard errors are based on 100 replications and the coefficients from the Blundell and Bond (1998) approach are used as initial parameter estimates.

Sources: World Bank (2008), IMF (2009) and author estimates.

External sustainability

The external sustainability analysis aims to determine the likely gap between the projected medium-term current account deficit and the stabilizing external debt current account deficit. Following Lee et al (2008), this specific objective was achieved using a three-step process. First, we identified the current account balance-GDP ratio that would stabilize the external debt-GDP ratio at some benchmark levels. The second step determined the projected medium-term current account deficits as forecasts of current account deficit levels over the medium term. The last step compared the two current account positions with the expected goal of identifying a likely gap between them.

4.2.1 Theoretical background of sustainability

Lee et al (2008) have set out a theoretical framework to analyse external sustainability. To determine trade or current account balance-GDP ratios that would stabilize net foreign assets positions or external debt-GDP ratios, let B_t/Y_t denote the share of net foreign assets accumulated in the economy. In line with Lee et al (2008), we assumed that changes in this proportion of net foreign assets stem either from net financial flows-GDP ratio or outstanding foreign assets and liabilities-GDP ratios. We then write the following equation:

$$\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_{t-1}} = \frac{CA_t}{Y_t} + \frac{KG_t}{Y_t} + \frac{E_t}{Y_t} \quad (11)$$

where CA_t is the current account, KG_t are capital gains due to valuation changes, and E_t represents a set of factors including capital account transfers and errors and omissions. Further, assuming $E_t = 0$ and lower-case letters denote ratios to GDP leads to the following equation:

$$b_t - b_{t-1} = ca_t + kg_t - \frac{g_t + \delta_t}{(\delta + g_t)(1 + \delta_t)} b_{t-1} \quad (12)$$

where g_t is the growth rate of real GDP and δ_t is the inflation rate.

Moreover, further assuming that capital gains are null and b^s denotes the benchmark level of net foreign assets (NFA), the current account that stabilizes NFA at b^s is as follows:

$$ca^s = \frac{g + \delta}{(\delta + g)(1 + r)} b^s \quad (13)$$

Assuming that the real rates of return on external assets and liabilities are the same and denoted by r , the level of trade balance inclusive of services and transfers ($bgst$) compatible with stabilizing NFA at the b^s level is as follows:

$$bgst^s = - \frac{r - g}{1 + g} b^s \quad (14)$$

Following Equation 13, we computed the external debt-stabilizing current account deficit compatible with b^s . This choice is relative to unavailability of interest rate data on future borrowings for WAEMU countries.

Benchmark level for the external debt

The choice of b^s is critical when we determine the external debt-stabilizing current account deficit. It is likely to be estimated from cross-section and time-series regressions which relate the external asset positions to basic determinants including the level of development, demography and fiscal policy (Lee et al, 2008). This threshold can also be arbitrarily derived. What levels of NFA or external debt can we use as a benchmark? However, in this paper, we value an arbitrary choice. The convergence norm for the external debt of the WAEMU area is used as the threshold for b^s . The choice of this convergence norm results from the idea that at this threshold, the member countries are expected to achieve both internal and external equilibriums. However, for robustness checks, we additionally used an external debt-GDP ratio of 50% as a benchmark. We pegged GDP-growth and inflation rates at their average value over the 2000–2004 period. Table 4.5 gives an overview of the external sustainability analysis.

Table 4.5: Current account deficit stabilizing foreign debt at the 2000–2004 level in per cent of GDP

	External debt	Current account	
		Medium term (Fitted values for 2008)	Stabilizing-external debt at the 2000–2004 level Benchmark levels
	2004		50 70
Countries			
Benin	47.35	-11.62	-3.29 -4.61
Burkina Faso	40.02	-13.51	-3.21 -4.50

Côte d'Ivoire	85.45	-2.80	-0.95	-1.34
Mali	68.11	-10.08	-3.20	-4.48
Niger	67.06	-10.47	-1.98	-2.79
Senegal	49.58	-13.54	-2.61	-3.65
Togo	89.10	-12.56	-1.66	-2.32

Source: World Bank (2010), IMF (2009) and author calculations.

Table 4.5 sheds light on an essential hypothesis of this paper, that is, the current account deficit is sustainable in the WAEMU zone. In sum, the table highlights the relationship between the external debt-stabilizing current account balance and the projected medium-term current account. In all the member countries the projected medium-term current account deficit exceeds the external debt-stabilizing current account deficit whatever the external debt benchmarks. This finding indicates that the external debt-GDP ratios must increase over the medium term so as to sustain the projected current account deficit levels. As such, the external positions of the member countries will deteriorate over the medium term, that is, the current account deficit will widen owing to inflows of foreign capitals. This increase of foreign capital flows is likely to stem from an expansionary fiscal policy, namely through the increase of government final consumption expenditure. Therefore, achieving external sustainability, leads to calculate the magnitude of changes in fiscal policy destined to stabilize the external debt at its convergence level.

Fiscal policy adjustment

Milesi-Ferretti and Razin (1996) put forward several policy options to reach the current account sustainability. For example, the willingness of domestic governments to service their foreign liabilities may result in changes in the stance of macroeconomic policy. Public authorities can either increase the domestic interest rates so as to attract foreign capital flows or adjust the exchange rate policy to further competitiveness of the economy. And yet, several other policy options can hold. For example, Lee et al (2008) determined the magnitude of changes in the real effective exchange rate aimed to achieve the current account deficit sustainability. Nevertheless, we focus on the adjustment of fiscal policy to guarantee the external sustainability. To that end, we computed the percentage point changes in government final consumption expenditure necessary to close the gap between the two current account positions. The magnitude of this adjustment is derived following Aydin (2010) who determined that of the exchange rate in the case of sub-Saharan African countries. Accordingly, the magnitude of government final consumption expenditure change is as follows:

$$\Delta FISP = \frac{CA^U - CA^N}{\varepsilon_{FISP}^{CA}} \quad (15)$$

where:

- $\Delta FISP$ denotes the percentage point change in real government final consumption expenditure.
- $CA^U - CA^N$ denotes the gaps between the medium-term current account deficit and the stabilizing-external debt current account deficit.
- \mathcal{E}_{FISP}^{CA} denotes the elasticity of the current account deficit to the government final consumption expenditure. This elasticity is the estimated value of β_4 . It remains constant and unchanged for all the countries. Moreover, if we assume it was unchanged over the 2005–2008 period, the magnitude of fiscal adjustment is shown in Table 4.6.

Table 4.6: Fiscal policy assessment for external debt-GDP ratio pegged at 70%

$\Delta FISP$	Benin	Burkina Faso	Côte d'Ivoire	Mali	Niger	Senegal	Togo
2005–2008	0.2249	0.2893	0.0469	0.1800	0.2471	0.3176	0.3285

Source: World Bank (2010) and author estimates.

Pegging the external debt-GDP ratio at 70% results in different percentage point changes amongst the member countries. At this threshold, Togo records the highest rate of change in fiscal policy. Therefore to sustain the current account deficit in this country, the authorities must reduce the extent of government final consumption expenditure of about 0.33%. Likewise, the extent of this reform in Senegal is estimated at 0.32% over the 2005–2008 period. Côte d'Ivoire records the lowest rate of fiscal reform assessed at 0.05%. When the external debt-GDP ratio is pegged at 50%, the highest rate of reform should be carried out in Burkina Faso, then in Senegal and Togo at 0.43%, 0.35% and 0.35% respectively. The low percentage point change in government expenditure is registered in Côte d'Ivoire. Table 4.7 provides more information on the extent of reforms in the member countries.

Table 4.7: Fiscal policy assessment for external debt-GDP ratio pegged at 50%

$\Delta FISP$	Benin	Burkina Faso	Côte d'Ivoire	Mali	Niger	Senegal	Togo
2005–2008	0.2672	0.4328	0.0591	0.2211	0.2726	0.3511	0.3499

Source: World Bank (2010) and author estimates.

Overall, the magnitude of adjustments in government final consumption expenditure largely relies on macroeconomic “fundamentals” such as rates of growth and inflation used to calculate the current account norm. If the benchmark levels for these variables are those of 2004 instead of the average values of the 2000–2004 period, the magnitude of adjustments differs from those recorded above.

5. Conclusion and policy recommendations

The current account sustainability of WAEMU member countries relied on official development capital flows often charged with low interest rates less prone to further a reversal. As a result, the current account deficit and the external debt sometimes respectively outpaced the conventional benchmark and the convergence norm of the union—with the rare exception of 1994 where the decline of both unrequited transfer flows and trade balance led to the devaluation.

The methodology of the external sustainability put forward to highlight this evidence, first identified the lagged current account balance, unrequited transfer flows and government final consumption expenditure as the fundamentals of the current account balance. These determinants were calculated over the period 1980–2004 owing to the use of data from the 2005–2008 period to calculate the deviations of the current account balance from its sustainable level. The comparison drawn with the projected current account deficit over the medium term and the stabilizing current account deficit pointed out a discrepancy between the two current account positions, suggesting the increase over the medium term of external debt-GDP ratios to sustain the current account deficit in the union. Sustaining the current account deficit results in changes in the extent of government final consumption expenditures. To that end, the public authorities of the union should strengthen fiscal consolidations. For example, they should reinforce the austerity measures implemented in 1999 to harmonize the extent of fiscal policy amongst the member countries. With a fiscal policy convergence norm, they should sustain their current account by reducing the increasing need for capital flows stemming from an expansionary fiscal policy. Additionally, because of the importance of unrequited transfer flows, a stable macroeconomic environment prone to attract these flows should prevail within the member countries. This policy option is aimed to reduce the reliance of the union on private capital flows more inclined to reversals in contrast to unilateral transfer flows made essentially with concessional flows.

However, the foregoing policy recommendations would be improved if the regressors included the commodity terms of trade. The absence of this variable constitutes a likely limit to this study. Additionally, the member countries lack of an appropriate database expected to include the 2015 forecasts of the significant variables of the model, limiting the scope of the survey. Moreover, the interpretation of the finding related to adjustments of government final consumption expenditures should be taken with caution. The extent of these adjustments is relative to the methodology of the external sustainability which considerably varies when the underpinning

macroeconomic fundamentals such as the rates of growth and inflation incur a sizeable change over the short run. Future research should be extended to 2015 and compare the results of at least two methodologies so as to obtain a more precise estimate of fiscal policy adjustments. Despite the above shortcomings, this study relied on a trusted scientific background with resulting findings which could guide decision makers.

Notes

1. The ratios are derived from the data from information notes and statistics of the Central Bank of West African States (BCEAO, 2003).
2. Senegal Ministry of Economy and Finance.
3. For example, in 2004 raw materials price index (hors-energy) in dollars recorded a decrease of about 8%. The cotton rate dropped by 2%, while cocoa rate dropped of about -13% over the same period (UEMOA, 2004). In 2006, both cotton and cashew nut rates dropped by 1.2% and 8.0% respectively. Over the same period the prices of some oil-yielding products, notably groundnut and cabbage palm oils also registered declines (BCEAO, 2007).
4. In fact, by 1999 the member countries had adopted the “*Pact of Convergence, Stability, Growth, and Solidarity*” to harmonize their fiscal policy. Moreover, the countries introduced the common external tariff to further their international trade so as to achieve the Millennium Development Goals. These reforms and many others implemented in the union on behalf of the Bretton Woods institutions led to substantial foreign debt reliefs for some of the countries as part of the HIPC initiatives.
5. These surveys include Sarr (2005), Sie Tioye (2006), Wane (2004) and Masaki (2009).
6. They concern the use of Augmented Dickey Fuller (ADF), Phillips-Peron (PP) and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) stationarity tests to give decisions on sustainability.
7. The countries were Benin, Burkina Faso, Côte d’Ivoire, Mali, Niger, Senegal and Togo.
8. Such as coffee, cocoa, rubber, palm oil, cotton, groundnut etc.
9. Measurement issues have given rise to two basic types of data for the current account position. First, the data generated without unrequited transfer flows. The second data type of the current account position includes the unilateral transfer flows. The two data types are used in our analysis. We represent the current account deficit patterns with all its basic components with the second data type, while the regression model uses a current account balance data that does not include transfer flows.
10. The first episode covers the period from 1980 to 1985. During this episode, the macroeconomic performance remained low. The current account deficit widened up on average to more than 12%. Saving-GDP ratio was estimated at 6%. Net service and income record deficit was about 5%. Contrary to those trends, the trade balance

and net transfer slightly improved. As a result, the member countries implemented their first reforms. The second episode spanned the 1985–1993 period. Its major characteristic was devaluation owing to the low macroeconomic performance coupled with a decrease in both trade balance and unrequited transfer flows. During the third episode—from 1995 to 2002—the current account deficit narrowed though net service and income remained in deficit. The ratios of saving and investment to GDP slightly increased while the unrequited transfers sharply decreased. The major feature of the last episode remained the loss in competitiveness due to overvaluation of the real effective exchange rate. Consequently, the current account deficit started to widen.

11. In the WAEMU zone, fiscal consolidation led to a convergence criterion which states that the ratio of primary fiscal balance to gross national product is greater or less than 0% (Banque de France, 2004).
12. It concerns the use of ADF, PP and KPSS stationarity tests to give decisions on sustainability.
13. Fisher-type tests in panel include that of Maddala and Wu (1999), Choi (2001) and Im et al (2003).
14. These trading partners include France, USA, Japan, Italy, Holland, Spain, England and Canada.

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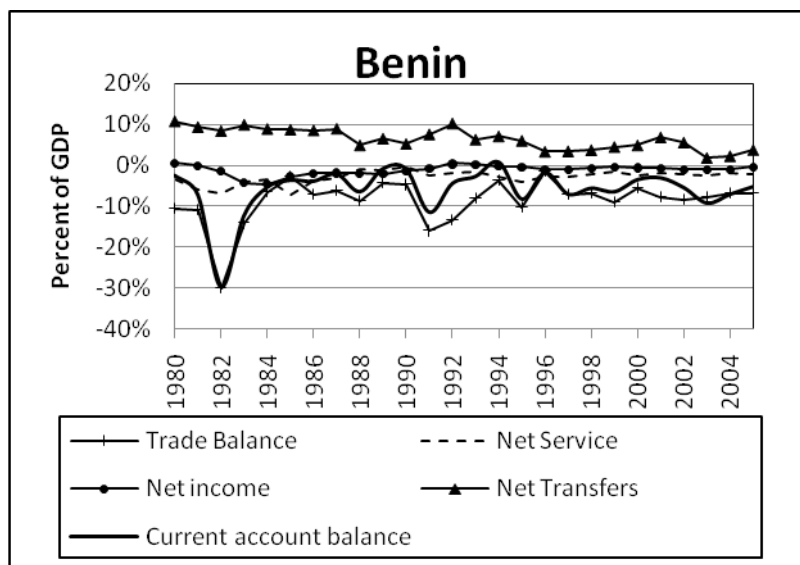
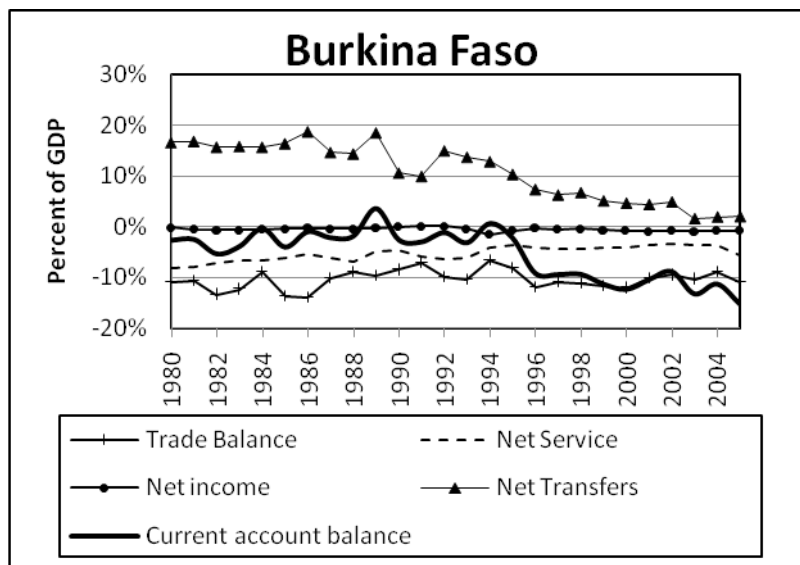
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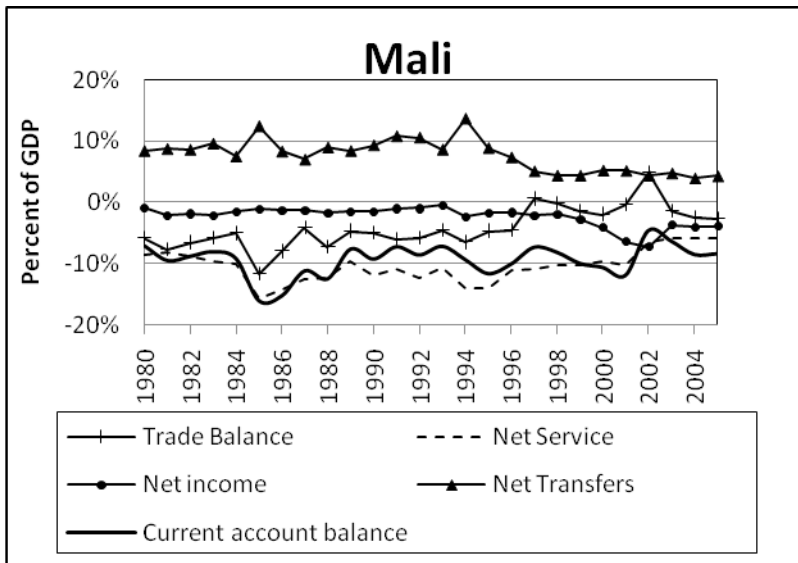
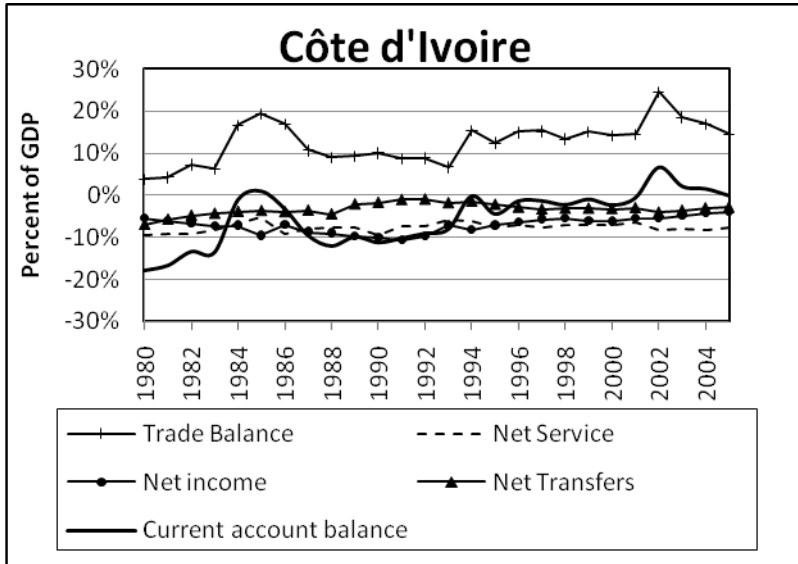
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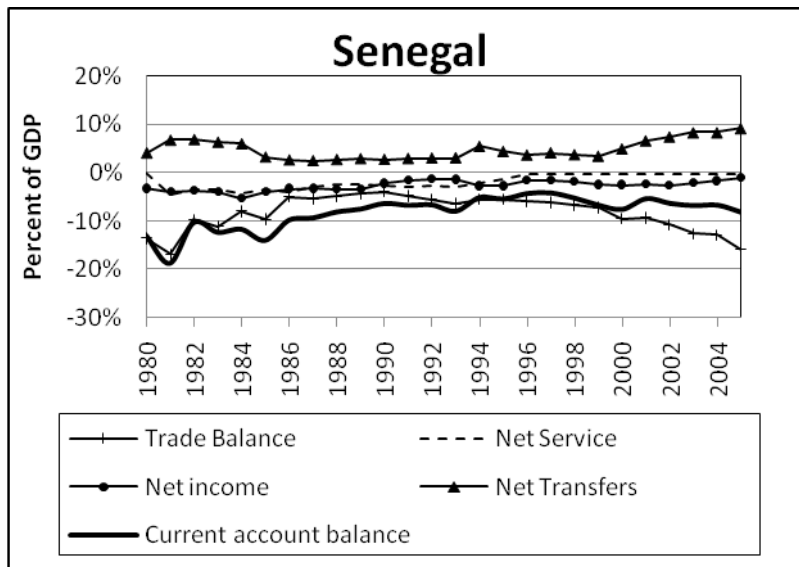
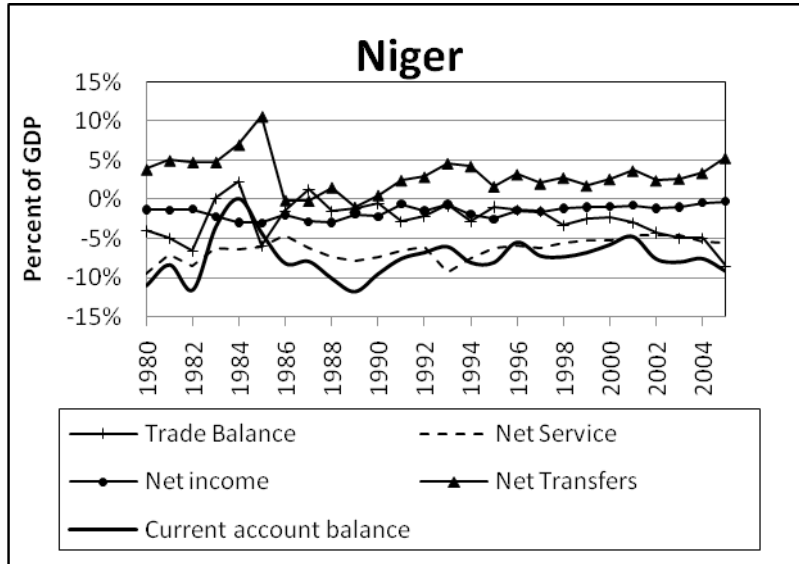
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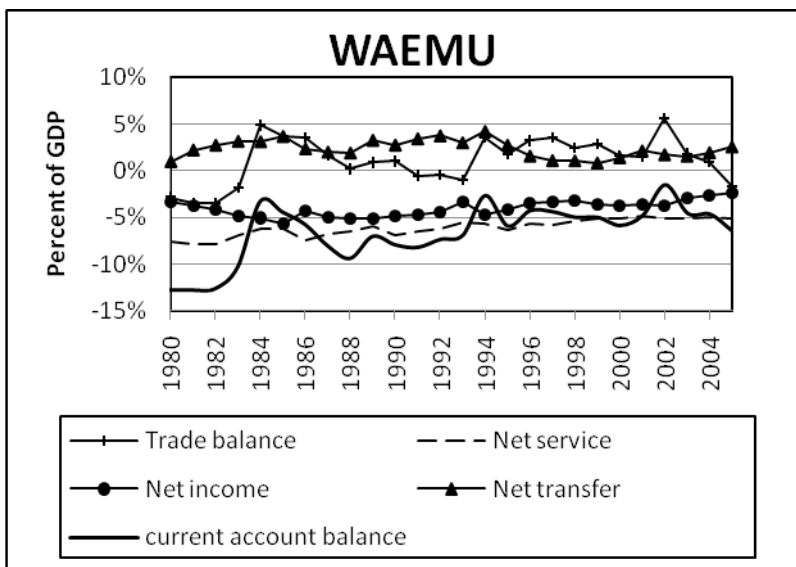
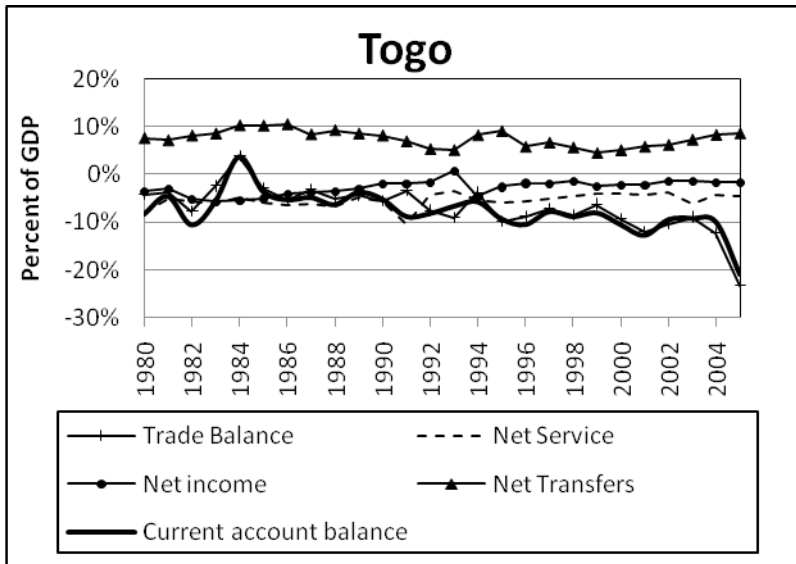
Appendix A: Current account balance and saving-investment gap

Figure A.1: Current account balance of WAEMU countries and its major components

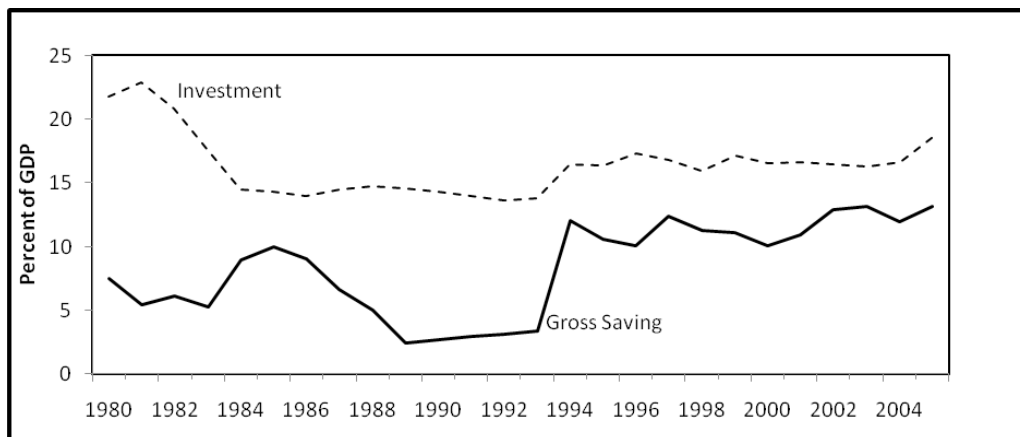








Source: World Bank (2010), BCEAO (1997, 2003) and author estimates.

Figure A.2: Saving and investment trends in WAEMU countries

Source: World Bank (2008) and author estimates.

Appendix B: Construction of the real effective exchange rate index

Several problems arise when one computes the real effective exchange rate index in the context of developing countries. Nevertheless, the overriding concern remains the availability of appropriate data. Since the consumer price index (CPI) and wholesale price index (WPI) are often available respectively for domestic and foreign countries, calculating the REER index is limited to the model—the purchase power parity (PPP)-based exchange rate—which incorporates these relative prices.

The real effective exchange rate deriving from the PPP approach can be defined as the NEER adjusted for price differentials between the home country and its trading partners. To calculate the PPP-based real exchange rate, four elements are generally required in the literature: the operational formula (arithmetic or geometric metric), nominal exchange rate, country weights and the base year.

We use a geometric averaging technique because of some of the properties of symmetry and consistency that the arithmetic metric does not have. Additionally, as WAEMU member countries peg their exchange rate to the euro, following Hinkle and Montiel (1999), the real effective exchange rate index derives from the following formula:

$$REER_j^t = \prod_{i=1}^k (E_i^t / P_i^t)^{w_i^t} * P_j^t. \quad (B.1)$$

where:

- $REER_j^t$ denotes the real effective exchange rate for the home country j in year

t ; $P_j^t = \prod_{i=1}^k (P_j^t)^{w_i^t}$ denotes the geometric average of domestic price indices weighted by the trading partners' weight in period t .

- $NEER_i^t = \prod_{i=1}^k (E_i^t)^{w_i^t}$ denotes the nominal effective exchange rate for the home country with respect to each trading partner i in period t .

- E_i^t denotes the bilateral nominal exchange rate index between the home and foreign countries denominated in units of the foreign currency per unit of domestic currency in period t .

- $w_i^t = (X_i^t + M_i^t) / \sum_{i=1}^k (X_i^t + M_i^t)$ denotes the trading partner's weight, and

$$\sum_{i=1}^k w_i^t = 1$$

- X_i^t and M_i^t respectively denote imports and exports.
- P_i^t is the wholesale price index of trading partners¹⁴.

Finally, the multilateral real exchange rate index is calculated as:

$$REER_j^t = NEER_i^t / ERPI_{ij}^t \quad (\text{B.2})$$

$ERPI_i^t = \prod_{i=1}^k (P_i^t / P_j^t)^{w_i^t}$ denotes the effective relative price index (henceforth ERPI).

Therefore an increase in the value of $ERPI$ entails a decrease in $REER$ —corresponding to the depreciation of the domestic currency. Additionally, $REER$ is defined so that its increase (decrease) represents depreciation (appreciation) of the local currency.

The remaining element to complement the construction of REER is the choice of the base year. In the light of the literature, we assumed 1995 as the base year. Therefore a value larger (lower) than that of the base year represents an overvaluation (undervaluation) of the local currency. We used Direction of Trade (DOT) data from IMF to calculate the index of the real effective exchange rate. Table B.1 presents the weights for the trading partners.

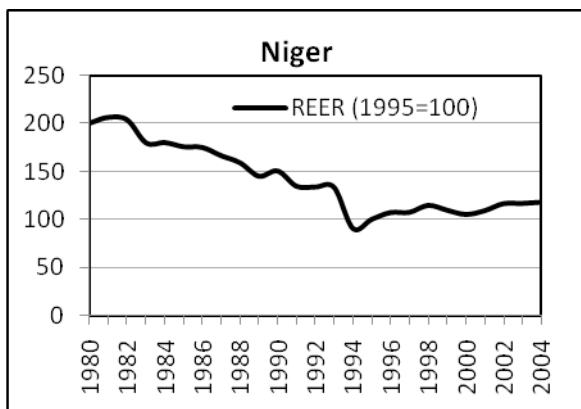
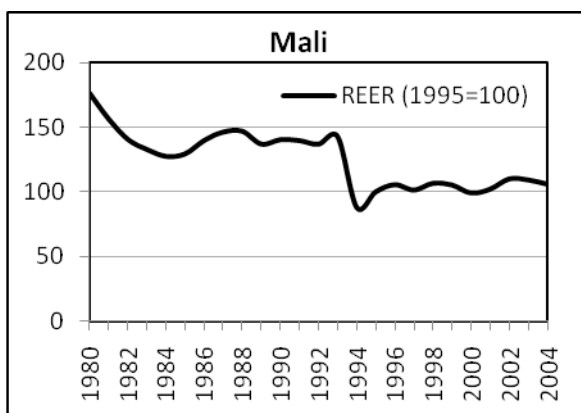
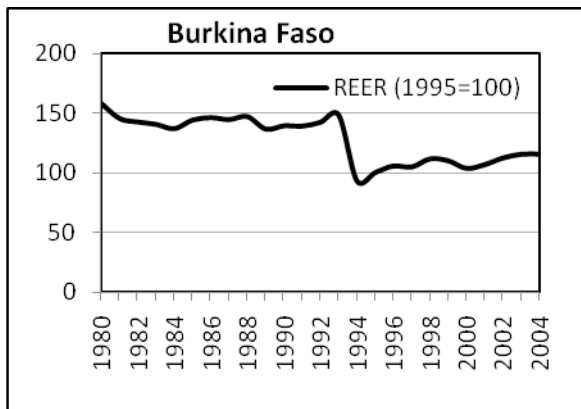
Table B.1: Trading partners' weights in the trade of WAEMU member countries

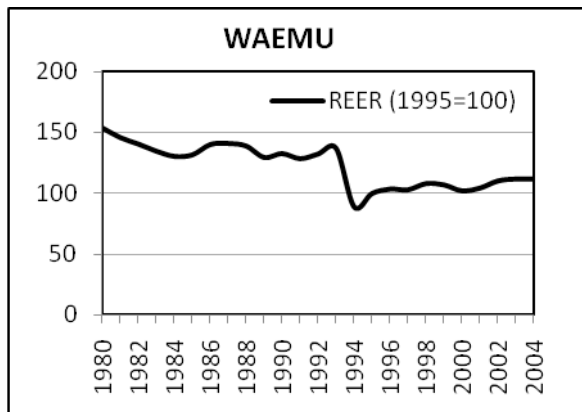
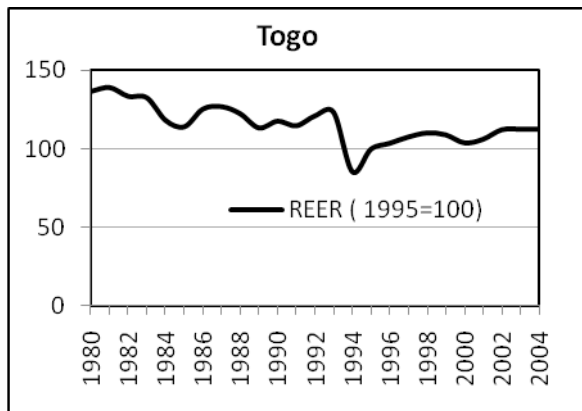
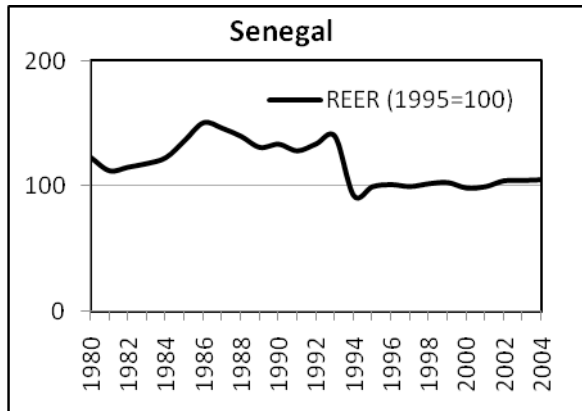
	Trading partners							
	France	USA	Japan	Italy	Netherlands	Spain	United Kingdom	Canada
Benin	0.4322	0.1144	0.0731	0.0747	0.1281	0.0602	0.1107	0.0064
Burkina Faso	0.5841	0.0997	0.0784	0.0839	0.0597	0.0403	0.0309	0.0167
Côte d'Ivoire	0.3080	0.1580	0.0155	0.1184	0.2748	0.0645	0.0564	0.0043
Mali	0.5441	0.0810	0.0434	0.0957	0.0666	0.0527	0.0857	0.0306
Niger	0.6087	0.0699	0.1835	0.0332	0.0291	0.0424	0.0268	0.0062
Senegal	0.5866	0.0724	0.0477	0.0963	0.0563	0.0791	0.0454	0.0161
Togo	0.4363	0.0680	0.0562	0.0724	0.1640	0.0579	0.0684	0.0765
WAEMU	0.4058	0.1265	0.0388	0.1027	0.1945	0.0637	0.0561	0.0117

Source: World Bank (2008), IMF (DOT) and author estimates.

France is the leading trading partner in every member country. Its weight accounts for about 40.58% of the WAEMU trade. With a weight of 19.45%, the Netherlands is the second major partner of the union. USA is the third partner with 12.65% and Canada is 8th with a weight below 8%.

Figure B.1: Real effective exchange rate of WAEMU countries





Source: World Bank (2008), IMF (DOT) and author computation.

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