Beyond the CFA Franc:
an empirical analysis of the choice
of an exchange rate regime in the UEMOA

Assandé Des' Adom[1]

ABSTRACT

The CFA franc, originally created in 1945, currently serves as the common monetary unit for the eight member countries of the West African Economic and Monetary Union (UEMOA). In recent years, one has witnessed repeated calls from economists and politicians alike for the introduction of a new currency, which will be more reflective of fundamentals in UEMOA member countries' economies. This paper attempts to provide a road map for decision-makers in their choice of an exchange rate regime, when they decide to switch to a new currency. The model utilises an ordered logistic model to investigate which type of exchange rate regime — a currency board, a fixed but adjustable regime (FBAR), a managed float or a free float — will be appropriate for the Union *in light of the economic and institutional fundamentals of its members. Our findings suggest that an FBAR will be the most suitable exchange rate regime, for it will have greater stimulus effects on investment and economic growth. The adoption of an FBAR will help UEMOA member states reach a two-fold objective: (i) to achieve sustained economic growth, (ii) while reinforcing the credibility and authority of their central bank, the BCEAO.*

1. INTRODUCTION

CREATED ON DECEMBER 26 1945, the franc of the African Financial Community (FCFA) — originally known as the franc of French colonies of Africa (FCFA) — currently serves as the single monetary unit of eight countries in West Africa. Today, these countries are part of a single organisation known as the West African Economic and Monetary Union (UEMOA), which regroups Benin, Burkina Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo. The conduct of monetary policy and the management of all other matters related to the banking system across the UEMOA are tasks assigned to the Central Bank of West African States (BCEAO). In recent years,

some officials in both Côte d'Ivoire and Senegal — the two largest economies — have voiced their desire to introduce a new currency to replace the CFA franc. The arguments of proponents for a new currency revolve around two major rationales.

First, from an economic standpoint, some studies have questioned the fixed exchange rate parity between the CFA franc (FCFA) and the French franc (FF) (Agbohou, 1999; Stasavage, 2003).[2] Indeed, this rate does not reflect the economic fundamentals of those countries it is supposed to serve. Very few economic rationales, if any, could justify such a (misaligned) rate that has hurt and continues to impact negatively the economies of these countries in an increasingly open and competitive international environment. It is well known in the literature that exchange rate misalignments have the potential to curtail both investment and economic growth (Dosse, 2006; Krugman, 1989; Zis, 1989). This proves even more crucial for developing countries in general and UEMOA member countries in particular because increased trade and investment will boost economic growth, which in turn will help alleviate the scourges of poverty. Sustained economic growth and development will remain illusory in the union if vigorous investment and trade-enhancing strategies are not implemented, or if such strategies are rendered ineffective through the existence of persistent misalignments in the exchange rate.

Although the FCFA was devalued in 1994 with respect to the FF, under pressure from Bretton Woods institutions — the International Monetary Fund (IMF) and The World Bank —- the problem of misalignments still persists. More than fifty years after their independence many observers, both national and international, believe that the time for these countries to establish an independent currency and conduct monetary policies better tailored to their economic needs has come, if not overdue. An exchange rate regime that is solely based on their economic and institutional fundamentals is accordingly in order. As a matter of fact, the current monetary arrangements between the former colonies and France were designed based essentially on the economic interests of the latter. A prominent Ivorian economist goes even further to explain how franc zone's member countries indirectly finance the French economy through these peculiar monetary arrangements (Agbohou, 1999).

Second, from a political perspective, there is a growing number of actors (both in the elite and among the general population) who believe that more than five decades after gaining independence from France, there is a necessity for their respective country to unambiguously exert their full sovereignty through a currency or monetary arrangement of their own. Hence, they have been increasingly denouncing the nature and the relevance of the current monetary arrangement, which was blueprinted in a pre-independence era.

This study builds upon the premise that a currency is an instrument of sovereignty used by a nation or group of nations to pursue and implement policies that promote their economic development and prosperity. As a result,

when a currency hinders the achievement of these goals, decision-makers should, in the best interests of their country or countries, contemplate an alternative to this currency and the monetary regime therewith associated.

The aforementioned factors, combined with the desire of new genera-tions of scholars and politicians for a new form of domestic currency, as well as the increasingly fading political clout of the 'old guard' of *Françafrique*, are clear indications that the separation from the FCFA is inevitable (Table 1).[3] In other words, it is safe to say that the current debate surrounding the FCFA revolves around the timing for the introduction of a replacement currency, not the advent of that new currency *per se*.

This research enters the debate about the creation of a new currency in the UEMOA. It adds to the literature considering the fact that no known empirical study has been conducted to date to investigate the forthcoming post-FCFA era in these West African countries. Specifically, this study attempts, empirically, to provide answers to a major question that decision-makers will have to address when time comes to consider a replacement cur-rency for the FCFA. That is, what type of exchange rate regime should be adopted, considering the economic and institutional fundamentals of UEMOA member countries? This investigation considers four potential exchange rate regimes: (i) managed float, (ii) floating, (iii) fixed but adjustable rate (FBAR) and (iv) currency board. A managed float allows the value of the currency to be determined by market forces, but the central bank will periodically inter-vene in the market as needed to prevent sharp fluctuations in the exchange rate. On the other hand, the value of the exchange rate is determined solely by market forces in a floating regime or free float. In an FBAR the value of the currency is pegged to another key currency (euro or the dollar) or a basket of currencies. However, there is a band within which adjustments could readily be made depending on economic conditions. A currency board regime is the hardest form of peg that exists. In this type of regime, there should be at least a one-for-one relationship between reserves held by the central bank and the monetary base.[4] That is, the central bank must hold net foreign reserves equivalent to at least 100 per cent of the monetary base (Kurt, 2004). This guarantees the convertibility of each and every unit of domestic currency from the monetary base into the anchor currency chosen.

The literature abounds with studies analysing the many aspects of exchange rate regimes including, among others, the choice of exchange rate regime, the determination of the equilibrium exchange rate and the effects of exchange rate fluctuations on economic growth. Levy-Yeyati and Sturzenegger (2003) conduct a thorough investigation of the effects of exchange rate (float-ing or fixed) on economic growth. They utilise a pool of 183 developing and developed countries to conduct a variety of multiple growth regressions. Exchange rates regimes are determined through a *de facto* classification based on (i) exchange rate volatility, (ii) volatility of exchange rate changes and (iii) volatility of reserves. Unlike other studies, this classification does not consid-

er only the *de jure* announced by governments, but it rather assigns a regime based on the true behaviour of exchange rates in markets. Following a battery of tests relative to output volatility, robustness including cross-section analysis, high-credibility pegs analysis and endogeneity analysis, the authors conclude that a fixed exchange rate regime generates slower growth and high output volatility as far as developing countries are concerned. For developed economies, however, the choice of exchange rate regime matters little in affecting economic growth. Another study, by Bleaney and Francisco (2007), analyses exchange rate regimes in developing countries and finds that hard-peg economies experience slower growth than economies with soft peg and floating regimes.

Jeong and Mazier (2003), in their anticipation of a new monetary arrangement following the 1997-1998 financial crisis in East Asia, examine exchange rate regimes and equilibrium exchange rates in the region. They use the Fundamental Equilibrium Exchange Rate (FEER) model as developed by Williamson (1994) to estimate equilibrium exchange rates in the region's three major currencies — namely, the Japanese yen, the Chinese Yuan and the Korean Won. The results suggest the absence of a significant misalignment for both the won and the yen during most of the 1990s. However, an undervaluation with respect to the (US) dollar and the yen was noted from 1998 to 2000 for the won. The yen experienced a weak undervaluation compared to the dollar in the same period and an overvaluation compared to the yuan (from 1995 to 2000) and the won (from 1998 to 2000). The yuan appeared undervalued in the second half of the 1990s against the dollar and the yen, but experienced little misalignment in both nominal and real terms from the mid-1980s through the first half of the 1990s.

The 1997-1998 Asian financial crisis has been at the centre of a thorough study conducted by Corden (2002), to understand the role played by the exchange rate regime prevailing at the time of the crisis. She notes that most countries in the region had an FBAR regime, which may have inhibited their ability to hedge against problems created by large foreign borrowings. However, she concedes that a crisis was unavoidable, regardless of the prevailing exchange rate regime, given excessive international borrowings and other factors. The study contends, on the other hand, that in the presence of a (managed) floating regime, the recession that ensued would have ended sooner.

This paper is structured as follows. The next section gives brief historical and economic perspectives about the FCFA, the CFA franc zone in Africa and the UEMOA. Section 3 presents the methodology and the data, while section 4 examines the results and discusses their implications. Concluding remarks are made in section 5.

2. HISTORICAL AND ECONOMIC PERSPECTIVES

The CFA franc (FCFA) is the common currency used by fourteen sub-Saharan countries that are part of the franc zone.[5] All but two countries, Equatorial

Guinea and Guinea Bissau, were former colonies of France. The FCFA was pegged to the French franc (FF) until December 31, 1998. It has been pegged to the euro via the FF, since January 1, 1999, when the euro became effective as an accounting currency. The CFA franc zone is divided in two main regional groups that are each covered by a separate central bank. Eight countries — Benin, Burkina Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo — in West Africa are under the umbrella of the Central Bank of West African States (BCEAO).[6] They make up the West African Economic and Monetary Union (UEMOA). Figures 1 and 2 respectively show changes in GDP and growth rates in UEMOA countries over a 30-year period. On January 10, 1994, seven countries — all of which were former French colonies — signed a treaty in Dakar, Senegal, establishing the UEMOA. The eighth member, Guinea Bissau, a former Portuguese colony, joined the union on May 2, 1997.

There are six countries — Cameroon, Chad, Central African Republic, Congo, Equatorial Guinea and Gabon — in Central Africa, with the Bank of Central African States (BEAC) as their central bank.[7] The Economic and Monetary Community of Central Africa (CEMAC) is the equivalent of the UEMOA for Central African states. The BCEAO and the BEAC were originally headquartered in Paris until the late 1970s, when they were formally relocated to Dakar, Senegal and Yaoundé, Cameroon, respectively. It is noteworthy that the acronym FCFA has different meanings depending on the sub-regional group considered. Indeed, confusions are commonplace in the literature regarding these two acronyms. For UEMOA member countries, it has been known as the *Franc de la Communauté Financière Africaine (FCFA)* since 1960. It translates roughly as the 'Franc of the African Financial Community.' The same acronym has stood for the Franc de la Coopération Financière Africaine (FCFA) in the CEMAC sub-region since 1972. This one translates nearly as the 'Franc of the African Financial Cooperation.'[8]

This paper focuses on the West African members of the CFA franc zone (i.e., UEMOA). The FCFA was created in 1945 as a monetary arrangement between France and its former colonies. After gaining their independence in 1960, the FCFA remained the official currency for the newly-independent nations as part of a broader political, economic and strategic set of accords concluded with France.[9] The primary goal of this monetary arrangement was to design a post-colonial system destined both to consolidate France's influence in these countries and secure her economic needs (in terms of raw materials) and other interests (i.e., outlets for French manufactured products). As far as the former point is concerned, the FCFA made these countries a cheap source of raw materials for France. In practice, the parity between the two currencies was set at an unwarrantedly high level. This in turn limited the price competitiveness of these colonies' exports of raw materials onto world markets except the French market. In other words, the parity was engineered in such a way as to make France's market the exclusive outlet for her former colonies' raw materials -— cocoa, coffee, cotton, rubber, uranium, among others.

Stasavage (2003, p. 13) reveals that France financed an overvalued FCFA from 1986 to 1993. In reality, the overvaluation of this currency with respect to the fundamentals of UEMOA countries, had existed for decades before January 12, 1994, when a devaluation against the FF was implemented. Indeed, the readjustment in 1994 was the first one in 36 years — the previous one was in 1958 — for a group of developing countries among the poorest in the world (Table 2).[10] It is worth mentioning as well that the readjustment in 1948 was actually an appreciation of the FCFA against the FF.

The Ivorian economist Agbohou (1999) explains the structure and functioning of the BCEAO. He reveals a peculiar aspect of the functioning of this central bank. France, notwithstanding its minority position on the board in charge of implementing monetary policy and institutional changes, possesses de facto a veto power because of a clause in the original architecture of the BCEAO that requires unanimity before any change in policy can be enacted. Moreover, he points out that the same arrangement prescribes that about 65 per cent (this figure was lowered to 50 per cent in recent years) of all reserves accumulated by UEMOA countries should be kept on a special account at the Bank of France. This special account earns no, or very low, interests for UEMOA member countries. This led the then President of Senegal, Abdoulaye Wade (2000-2012), to overtly question the economic rationales behind such deposits in France. In 2007, he stated that these funds were certainly needed in UEMOA member countries to boost investment, promote economic growth and therefore help alleviate poverty.[11] In addition, the former Speaker of the National Assembly of Côte d'Ivoire, economist Mamadou Koulibaly, denounced this pre-colonial and biased monetary arrangement which, in his view, is highly detrimental to the economic and political independence of former French colonies in Africa.[12]

3. METHODOLOGY AND DATA

3.1 Methodology

In this analysis, we consider a mall open economy or group of small open economies. The empirical results are derived using a logistic regression which is described by this general form:

$$k_{it} = \alpha_i X_{it} + \psi_{it} \qquad (1)$$

where X_{it} is a vector of explanatory variables at time t; α_i is the vector of coefficients associated with X_{it} and ψ_{it} represents the vector of disturbances at time t. Our dependent variable kit takes on four different values that represent the spectrum of potential exchange rate regimes in consideration in this work. It is distributed as follows:

k_{it} = 1, if a currency board; i.e., a hard peg regime;

k_{it} = 2, if a fixed but adjustable exchange rate (FBAR) regime;

k_{it} = 3, if a managed float regime;

k_{it} = 4, if a free float regime.

The logit regression determines the values of α_i, along with the three different threshold levels of kit, referred to as h_1, h_2 and h_3. The exchange rate regime of choice for UEMOA member countries should be (i) a currency board (hard peg) if $\tilde{k}_{i_t} < h_1$; (ii) an FBAR if $h_1 < \tilde{k}_{i_t} < h_2$; (iii) a managed float if $h_2 < \tilde{k}_{i_t} < h_3$; and (iv) a free float if $\tilde{k}_{i_t} < h_3$.

$$\tilde{k}_{i_t} = \Lambda_i X_{it} \tag{2}$$

where Λ_i = is the estimate of α_i.

The interpretation of α_i differs slightly from the traditional interpretation of regression coefficients, as it involves probability. A positive sign for Λ_i will connote a higher likelihood of choosing a free float as the relevant explanatory variable increases. On the other hand, a negative sign for Λ_i will suggest a higher probability of opting for a hard peg as the relevant explanatory variable increases. Hence, we can summarise the interpretation of results:

$$\Pr (kit = 1) = \Pr (\tilde{k}_{i_t} < h1)$$
$$\Pr (kit = 2) = \Pr (h1 < \tilde{k}_{i_t} < h2)$$
$$\Pr (kit = 3) = \Pr (h2 < \tilde{k}_{i_t} < h3)$$
$$\Pr (kit = 4) = \Pr (\tilde{k}_{i_t} > h3)$$

There exist various economic as well as non-economic variables that are essential in the choice of an exchange rate regime for a country, or group of countries, whether developed or not. As far as non-economic factors are concerned, the prevailing political environment is of interest. To capture this aspect, we introduce a measure of political instability. Indeed, the developing countries in this study have experienced to some degree episodes of political and social unrest over the period covered by of our dataset. Edwards (1996) established empirically that political instability is instrumental in the determination of an exchange rate regime. The more unstable countries are, the more likely they will consider a (more) flexible regime. In this paper, P_SINST will capture social and/or political unrest. Our intention is to assess if this peculiarity is a defining factor in the determination of the exchange rate regime for UEMOA countries.

Furthermore, we have included a set of economic variables that are

identified in the literature as potential determinants in the choice of an exchange rate regime. Considering the fact that member countries of the West African franc zone show differences in terms of economic development and income per capita, we consider real gross domestic product per capita (PCRGDP). According to optimal currency area (OCA) theory, a pegged exchange rate regime is warranted for countries that have high trade openness (McKinnon, 1963). Thus, openness (OPEN) is a relevant variable and is included in this study. OCA theory also argues that a country will tend to lean towards a peg vis-à-vis its main trading partner rather than a floating regime. A concern regarding monetary institutions and authorities in developing countries is the lack of expertise and the low development of their financial system which may not allow these countries efficiently to run and manage a floating regime. As a result, authorities' choice of an exchange rate regime may be biased toward a fixed regime. For member countries of the UEMOA, this concern could arguably apply because of both the facts that the FCFA has been pegged to the FF since 1945 and the monetary policy of these countries is virtually piloted from France, under the cover of the BCEAO headquartered in Dakar, Senegal.[13] In our attempt to test for these effects on the regime choice, we add the state of financial development (STFD) as an explanatory variable.[14]

It is well-known that countries in the Union, as with developing countries in general, carry a burdensome external public debt, whether 'odious' or not.[15] The service of this external public debt — which is denominated in international currencies (USD or euro) — consumes a large portion of these countries' budgets. As a result, it punctuates a great deal of total investment which becomes marginal in national budgets, designed with depleted public resources. The size of external public debt may indeed lead decision-makers to favour a regime that reduces uncertainties regarding the size and the service of their debt. Indeed, the larger the public debt (and debt service), the less likely a government will choose a volatile exchange rate regime which may play havoc with macroeconomic policies. External public debt per person (PCEXTPUBD) is introduced to account for these impacts.

The literature on investment by and large finds that it is paramount for sustained economic growth. It should therefore not be overlooked by a country or group of countries in the choice of an adequate exchange rate regime. Using a pool of 183 countries, Levy-Yeyati and Sturzenegger (2003) find that investment is highly significant in understanding the relationships between exchange rate regimes and output growth, one the one hand, and between exchange rate regimes and output volatility, on the other hand. To assess the validity of these findings and capture the impacts of investment on the choice of an exchange rate regime in the UEMOA, we introduce the ratio of investment to GDP (INVRAT).

Moreover, the capital openness hypothesis makes the case for the consideration of capital mobility in the debate regarding the choice of exchange rate regime. An increase in capital mobility, or capital openness (CAPOPEN),

will make it more difficult to maintain a hard peg for a given country (Papaioannou, 2003). This concern is heightened in developing countries, such as the ones encountered in the UEMOA, because they have relatively unsophisticated financial systems along with weaker regulatory and financial surveillance mechanisms.

Our investigation likewise addresses the ability of a country to abandon (or maintain) a peg. Edwards (1996) finds that if there is a higher probability of abandoning a peg, one should in theory expect the country's likelihood of selecting a pegged regime to be affected. These effects are controlled for with the inclusion of two additional regressors, international reserves ratio (RESRAT) and the domestic credit growth rate (DCRGR). When a country has an ample amount of international reserves, other things being equal, it is less likely that it will abandon a peg as it can fend off speculative attacks against its currency. On the other hand, the higher the growth rate of domestic credit in a country, the harder it is to maintain a peg, or the higher the likelihood to abandon a peg.

Lastly, it should be noted that trying to maintain a hard peg in an environment with high inflation may be, at best, a difficult task. Consequently, a country will be more likely to move towards more flexible exchange rate regimes when inflation is persistent or rampant. On the other hand, this analysis does not overlook the effects of real GDP growth (RGDPGRW) in the selection process of exchange rate regime. The engine of growth is the key factor at play in this case. A country or group of countries with export-driven growth will be biased toward a more stable regime, rather than a country whose growth is mostly driven by domestic demand. Overall, the model in this study includes three dummy and eight non-dummy variables.

3.2 Data

The index (P_SINST) was computed based on a pool of 5 modules characterising the political and social environment of each country: (i) civil wars & social unrest, (ii) strikes by workers in the public and/or private sectors, (iii) military coups (and attempted coups) and political assassinations, (iv) non-respect of the rule of law/non-organisation of election according to the Constitution/criminality and (v) corruption. A higher index denotes a more stable country. The major sources used in the collection of information for modules were the CIA World factbook, the encyclopaedia of nations, the archives of the French foreign ministry, Radio France Internationale (RFI), the British Broadcasting Corporation (BBC) and the UEMOA.

PCRGDP is computed as nominal GDP per capita deflated by the inflation rate. OPEN, which captures the degree of trade openness, is measured as the ratio of the sum of imports and exports to GDP; and STFD is proxied by the ratio of domestic credit to GDP. PCEXTPUBD is total external public debt divided by total population. It is also lagged one period to reduce a potential

endogeneity problem. RESRAT is proxied by the ratio of international reserves to monetary base. The percentage change in domestic credit represents DCRGR, while INVRAT is the ratio of domestic investment to GDP. Finally, CAPOPEN, DOMINF and RGDPGRW are, respectively, measured by the ratio of inflows and outflows of capital to GDP, the percentage change in the CPI, and the percentage change in RGDP. The International Financial Statistics (IFS), the World Development Indicators and UNSTAT are used as sources for the dataset, which ranges from 1979 to 2010 for all variables.

4. RESULTS AND IMPLICATIONS

Tables 3, 4, 5 and 6 summarise the findings of our analysis. Table 3 presents results obtained using an ordered logistic regression. Probabilities associated with each variant of the baseline model are determined for each category of exchange rate regime, with countries considered as a pool (Table 4). Many variants of equation (2) have been provided in order to accommodate the different theories that have analysed the determinants of the choice of an exchange rate regime. A positive sign will indicate that large values of the associated variable will increase the likelihood of adopting a free float regime, while a negative sign will raise the likelihood of opting for a hard peg, like a currency board.

Considering UEMOA member countries as a pool remains the main approach in this work. This choice is driven by two major reasons. Firstly, all countries excepting Guinea Bissau, have been using the FCFA as their common monetary unit since 1945. As a result, it makes sense economically and politically to envisage a single currency for the same group of countries. Secondly, strong historical and cultural affinities have existed between these countries dating back to the pre-independence era.

However, it should be noted that these reasons do not preclude the empirical necessity of looking at countries individually to determine which regime would be suitable based on their respective economic and non-economic features. This concern is addressed in the next step where we check for the robustness of our findings by reassessing variant VI of our baseline model for each country. This variant includes all variables identified in the literature as relevant determinants in the choice of an exchange rate regime. The various probabilities associated with each type of exchange rate regime are then derived and reported in Table 6. The probabilities in this step are computed using the results in Table 5, which are the estimates from the ordered logistic model for each country.

Starting with the simplest variant (variant I, Table 3) of equation (2), the estimates confirm OCA theory as far as the choice of exchange rate regime is concerned. Our findings indicate that the higher domestic inflation (DOMINF) and per capita RGDP (PCRGDP), the more likely a country or group of countries will choose a free float regime. PCRGDP, DOMINF and OPEN are all significant at the 1 per cent level. The negative sign associated with OPEN shows

that the more open a country is, the more likely it will consider a hard peg, as predicted by OCA theory. Indeed, more than half of UEMOA countries' trade is with the European Union (EU). Such a hard peg would ensure stability in the main source of revenue derived from trade. Overall, the significance of variables included in this model conform to our expectations in the light of OCA theory. Papaioannou (2003) has found similar results in six Latin American countries.

Many other relevant determinants highlighted in the literature are over-looked in variant I. We thus provide five additional variants of the baseline model, to address and test for potential misspecification. This demarche will help assess the robustness of our findings. In variant II, PCRGDP remains sig-nificant at the per cent level with the same sign, as both DOMINF and OPEN are replaced by domestic credit growth (DCRGR) and investment ratio (INVRAT), respectively. Honkapohja and Pikkarainen (1994) find similar sig-nificance for PCRGDP in Nordic countries. DCRGR is significant at the 5% level and this variant reveals that UEMOA countries are more likely to con-sider a flexible regime with high growth in domestic credit. High credit growth makes it harder for a country or group of countries to maintain a peg. Accordingly, it is more likely that a flexible regime will be adopted by this country or group of countries.

In our third variant, capital openness (CAPOPEN) is introduced along with PCRGDP, DCRGR and INVRAT. This model confirms our earlier finding regarding PCRGDP, which remains significant at the 1 per cent level along with CAPOPEN. The latter variable is central in the capital account openness hypothesis, which contends that CAPOPEN is an essential determinant in the choice of an exchange rate regime. Our results show that the higher the mobil-ity of capital, the more likely a hard peg regime will be warranted for UEMOA countries. This finding contradicts our expectations, but a closer analysis will shed some light on the macroeconomics behind this finding. A pegged exchange rate regime will foster investments in these countries, as it reduces uncertainty and increases confidence in the monetary authorities. Moreover, it is noteworthy that for these countries, a large portion of capital is in the form of foreign direct investment. It results from the fact that domestic stock markets are not very active and do not constitute an important vehicle as far as capital movements are concerned.[18]

Similar to the previous model, INVRAT is not significant in the selection of exchange rate regime. However, when we account for domestic inflation, INVRAT is significant at the 5 per cent level, with a negative sign as shown in variant IV. The higher the share of investment in GDP, the more likely will developing countries in the UEMOA be drawn toward a less flexible regime. It is worth mentioning that the negative sign associated with INVRAT was expected. In developing countries in general, and in UEMOA countries in par-ticular, the adoption of a hard peg creates positive effects that foster econom-ic development. Indeed, a hard peg is conducive to price stability and increas-

ing the credibility of decision-makers. In turn, these factors have the potential to stimulate both domestic and foreign investment, and therefore employment.

A major impediment to sustainable economic development in UEMOA countries is the size of their public debt, which can affect their choice of an exchange rate regime. The fourth variant of our baseline equation includes public debt per capita (PCEXTPUBD) in each country, to test that hypothesis. This variable proves highly significant in the choice of an exchange rate regime. Moreover, the results reveal countries are more likely to consider a fixed regime when the burden of public debt per capita increases. This finding is in line with our expectations. Knowing that the bulk of that debt is denominated in international currencies, a fixed exchange rate regime reduces uncertainties regarding both the service to the debt and fiscal policy. As explained by Giavazzi and Pagano (1988), it fosters more fiscal discipline from these governments.

Markiewicz (2006) uncovers similar results when investigating the determinants of the choice of an exchange rate regime in transition economies. The consistency and significance of the sign of DOMINF in this model shows that it is fundamental in exchange rate regime choice in UEMOA countries. Our results support our previous finding that a country will be reluctant to select a fixed regime when it is prone to high inflation. The theory explains that expansionary monetary policy, combined with high inflation, increases external imbalances (Markiewicz, 2006). Thus, such a country or group of countries is more likely to move towards a flexible regime. Among other studies, Papaionannou (2003) reports similar results about domestic inflation in six Central American countries.

Many scholars have consistently highlighted through their studies that for developing or transition economies, historical, political and institutional characteristics of countries can play an instrumental role in the determination of an exchange rate regime. To test for this hypothesis, this paper estimates a fifth variant of the baseline model, by including a variable accounting for political and social instability (P_SINST). Our analysis reports that P_SINST is not statistically significant, but it carries a negative sign as expected. The more political and social instability experienced by UEMOA member countries, the less likely will they be to choose a fixed exchange rate regime. Edwards (1996) finds similar results after using an unbalanced panel of sixty three countries, while Markiewicz (2006) observes that weaker governments will have a tendency to select a more rigid exchange rate regime.

This work shows that both international reserves ratio (RESRAT) and the state of financial development (STFD) are key factors in determining exchange rate regime in the UEMOA. They are both significant at the 1% level, and have a negative sign. That is, the likelihood of UEMOA countries choosing a flexible regime falls in the presence of high international reserves. This finding was expected and is consistent with the theory. With a high level of reserves, a country or group of countries can sustain a peg by maintaining the parity of their currency. They can withstand speculative attacks and reassure

the market about their ability to maintain the parity of their currency. Countries are more likely to lean toward a fixed regime if they have a developed financial system. This result stands in contrast with Markiewicz's (2006) findings for transition economies.

As seen in Table 3, the bulk of our findings are confirmed with the sixth variant of our baseline model, where all variables are considered.[19] Indeed, excepting trade openness, this variant's results are generally consistent with the findings from the other variants, as far as signs and significances of determinants are concerned. Probabilities of falling in each category of exchange rate regime are displayed in Table 4. All variants reveal that the likelihood of UEMOA members choosing a fixed regime such as a currency board is around 50 per cent, while the probability of selecting a free float regime is about 22 per cent. The likelihood of having a hybrid type regime, an FBAR or managed float, is around 28 per cent. This probability breaks down to roughly 17 and 11 per cent for an FBAR and managed float, respectively.

In our continued inquiry into the robustness of our findings, we reassess variant VI of our baseline model by considering countries individually rather than a pool. This estimation seeks to determine the probabilities associated with each exchange rate regime category, from the vantage point of individual countries. Results are reported in Table 6 and indicate that a fixed regime (or currency board) should be the regime of choice for six countries out of eight. Probabilities for choosing a fixed regime are the highest (of all regimes) in Benin, Burkina Faso, Mali, Niger, Senegal and Togo. For these countries, probabilities draw near 50, 38, 51, 42, 46 and 88 per cent, respectively.

For two countries, Côte d'Ivoire and Guinea Bissau, the findings point to higher probabilities for an FBAR and a free float, respectively. This is not without consequences for one major reason. According to Figure 1, Côte d'Ivoire is by far the largest economy of the UEMOA and it claims about 25 per cent of the total international reserves held by the BCEAO. With such economic pre-eminence in the UEMOA, the choice of an FBAR in this country should be granted adequate weight in any (exchange rate) regime change-related discussion. As far as Guinea Bissau is concerned, it represents the smallest economy of the region (Figure 1). This leaves the final outcome of our investigation hinging on finding an exchange rate regime that is reflective of the economic and non-economic specificities of three distinct groups within the UEMOA.

Considering both the presented facts and our empirical results, the most economically viable course of action for decision-makers in the UEMOA would be to consider an exchange rate regime that accommodates the features of a fixed regime, while exhibiting at the same time some flexibility, to allow for adjustments as warranted by prevailing domestic and international economic conditions. In other words, UEMOA countries should adopt an FBAR when they introduce a brand new currency to replace the current FCFA.

5. CONCLUSIONS

This study has attempted to provide a road map for decision-makers of UEMOA developing countries, in the selection of exchange rate regime. Toward that end, likely determining factors have been analysed. Six variants of the baseline model are run and associated probabilities have been derived using an ordered logistic model. Then, to check for the robustness of our findings, the same exercise is conducted with variant VI considering, this time, countries individually.

In light of our findings, an FBAR is appropriate for UEMOA countries. The reasons for this choice are five-fold. First, this regime will accommodate our results suggesting the selection of a fixed regime in general, but a less rigid regime for Côte d'Ivoire and a free float regime for Guinea Bissau. Second, it will create a smooth transition for UEMOA countries. Indeed, almost all of these countries have been using FCFA for more than 6 decades with their monetary policy practically subjugated to the interests and veto power of France over the same period. Third, it will encourage fiscal discipline and strengthen the credibility of authorities as the FBAR is first and foremost a fixed regime. Fourth, it will provide them with the capacity to conduct slight adjustments vis-à-vis the euro, the US dollar or the Chinese renminbi, within a band to address changes in domestic and international macroeconomic conditions. The determination of the magnitude of this band, which is outside the scope of the present work, could open another avenue of research regarding the degree of flexibility to be considered with the proposed FBAR in the UEMOA. Finally, it accommodates the choice for an FBAR regime in Côte d'Ivoire, the economic powerhouse in the UEMOA.

APPENDIX

Table 1: Pillars of *Françafrique* in Africa

Omar Bongo Odimba@	Gabon	1967-2009
Gnassingbé Eyadéma@	Togo	1967-2005
Félix Houphouët-Boigny@	Côte d'Ivoire	1960-1993
Paul Biya	Cameroon	1982- Present
Blaise Comparé	Burkina Faso	1987- Present

Note: @ = President who died while in office.

Table 2: Timeline regarding the evolution of the FCFA parity with the FF

	Date	*Exchange Rate (FF per FCFA)*
Introduction of the FCFA	December 26, 1945	1.70
Appreciation of the FCFA#	October 17, 1948	2.00
Introduction of the new FF	December 27, 1958	0.02
Depreciation of the FCFA	January 12, 1994	0.01
Pegging of the FCFA to the Euro	January 1, 1999	0.00152##

Source: BCEAO, Central Bank of West African States.
Notes: # It was the result of a depreciation of the FF, which de facto meant an appreciation of the FCFA vis-à-vis the FF
This rate is expressed in Euro rather than FF

Figure 1: Evolution of GDP across UEMOA, 1989-2009 (in Billions of FCFA)
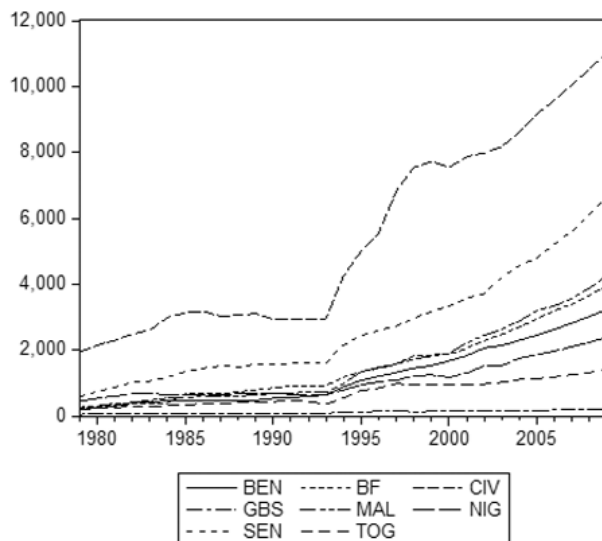
Figure 2: Percentage change in GDP across UEMOA, 1989-2009
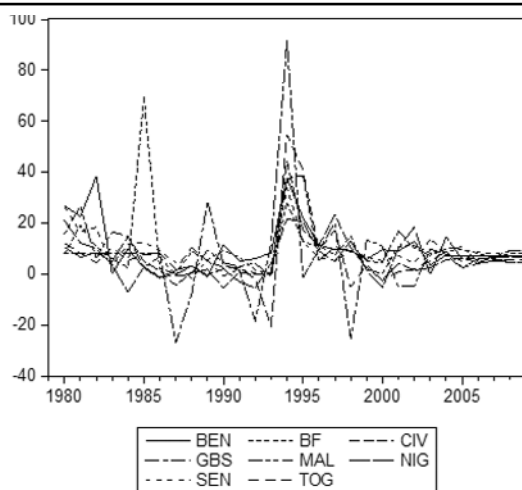
Table 3: Ordered logistic model estimates

	I		II		III	
Variables	*Coefficients*	*z-statistics*	*Coefficients*	*z-statistics*	*Coefficients*	*z-statistics*
PCRGDP	1.3879***	3.5093	1.2724***	3.261	1.2011***	3.0182
DOMINFL	0.0399***	3.2023				
OPEN	-2.4848***	-3.4502				
DCRGR			0.0075*	1.6663	0.0067	1.4737
INVRAT			-0.1004	-0.0444	0.166	0.0725
CAPOPEN					-26.904***	-2.7518
PCEXTPUBD						
RESRAT						
P_SINST						
RGDPGRW						
STFD						
LR Statistic	41.3078		20.75462		32.8899	
p-value	0.0		0.0		0.0	

cont....

Table 3: Ordered logistic model estimates   …cont.

	IV		V		VI	
Variables	*Coefficients*	*z-statistics*	*Coefficients*	*z-statistics*	*Coefficients*	*z-statistics*
PCRGDP			1.0166	1.4588	1.4882**	2.1586
DOMINFL	0.0448***	3.4551	0.0069	0.437	0.0352**	2.0686
OPEN			1.4066	1.4218	1.3813	1.3501
DCRGR	0.0028	0.5848	0.0002	0.0411	-0.0021	-0.4208
INVRAT	-5.5159**	-2.087	-1.0468	-0.3466	-0.9182	-0.2972
CAPOPEN	-13.519	-1.5244	-29.580***	-2.5427	-31.195***	-2.5702
PCEXTPUBD	-1.1548***	-3.8468	-0.3699	-0.8153	-0.2673	-0.5835
RESRAT			-1.1735***	-4.2651	-1.2498***	-4.3013
P_SINST			-0.0686	-0.4291	-0.1884	-1.1496
RGDPGRW					0.0669***	3.6198
STFD			-10.4746***	-4.9463	-11.225***	-5.1599
LR Statistic	50.287		87.2328			103.3547
p-value	0.0		0.0		0.0	

Table 4- Probabilities associated with UEMOA member countries (as a pool)

	I	II	III	IV	V	VI
k=1	0.5029	0.5005	0.5003	0.5003	0.5007	0.4987
k=2	0.1701	0.1701	0.1701	0.1711	0.1733	0.1746
k=3	0.1065	0.1073	0.1072	0.1078	0.1067	0.1066
k=4	0.2205	0.2221	0.2224	0.2208	0.2193	0.2201

Table 5: Regression estimates of variant VI for individual countries

	BENIN		BURKINA FASO		CÔTE D'IVOIRE	
Variables	*Coefficients*	*z-statistics*	*Coefficients*	*z-statistics*	*Coefficients*	*z-statistics*
PCRGDP	16.5258	1.0943	10.8901	0.5893	-11.8126	-0.9524
DOMINFL	0.0219	0.2530	-0.0404	-0.4491	-0.3344*	-1.7187
OPEN	10.7388	1.3877	10.0755	0.5662	-9.6584	-1.0162
DCRGR	0.0070	0.2924	0.0671**	2.1384	-0.0230	-0.2737
INVRAT	16.2439	0.5818	-37.0789	-1.1518	46.5800	1.3934
CAPOPEN	-121.6155**	-2.1241	-290.8157	-0.9678	-148.6541	-0.8094
PCEXTPUBD	0.4962	0.1619	-4.4628	-1.1334	3.9611	0.4970
RESRAT	-1.2632	-1.0678	-3.8500**	-2.1600	10.9923*	1.6970
P_SINST	-3.3701***	-2.6882	-0.1161	-0.1674	1.0978	1.2788
RGDPGRW	-0.0799	-0.7242	0.0279	0.7254	0.6122***	2.6811
STFD	-19.3922	-1.2158	-59.0210**	-2.2236	24.4354	1.1096
LR Statistic	18.4739		30.3864		0.3621	
p-value	0.07		0.0		0.10	

cont....

	GUINEA BISSAU		MALI		NIGER	
Variables	*Coefficients*	*z-statistics*	*Coefficients*	*z-statistics*	*Coefficients*	*z-statistics*
PCRGDP	13.6069	1.1505	9.8626	0.7474	164.5421***	2.7476
DOMINFL	0.0683	0.7866	-0.1385	-1.0983	0.1790	1.9409
OPEN	-41.1454*	-1.8430	-1.9008	-0.2672	17.1746	0.6867
DCRGR	-0.0165	-1.2042	-0.0353**	-2.0060	-0.0461	-0.8003
INVRAT	111.4035**	2.2758	-38.5804*	1.6878	-94.3973**	-2.1228
CAPOPEN	-18.2597	-1.0308	62.3599	-2.1511	-334.8576	-1.8945
PCEXTPUBD	11.5695**	1.9450	-7.1893	0.9483	6.2129	0.8560
RESRAT	1.3108	0.1590	1.7300***	-2.6384	-0.4001	-0.3065
P_SINST	2.0943	1.5623	-3.9661***	3.0527	3.8452***	3.0665
RGDPGRW	0.5378**	2.0946	0.0001	0.21322	-0.0525	-0.4561
STFD	-28.9388	-1.2924	7.281864	0.8532	-113.113**	-2.4356
LR Statistic	38.8726		21.39599			32.4819
p-value	0.0		0.03			0.0

cont....

	SENEGAL		TOGO	
Variables	*Coefficients*	*z-statistics*	*Coefficients*	*z-statistics*
PCRGDP	57.7961*	-1.6930	45.3628**	2.1586
DOMINFL	0.2247*	-1.6805	0.1280**	2.0686
OPEN	16.9206	1.15120	-9.5665	1.3501
DCRGR	0.2612**	2.1471	0.1430	-0.4208
INVRAT	-109.3314***	-3.6122	28.4544	-0.2972
CAPOPEN	-104.3915*	-1.6171	-297.209**	-2.5702
PCEXTPUBD	-11.7494	-1.5039	-40.0924	-0.5835
RESRAT	6.2477*	1.8443	-8.3655***	-4.3013
P_SINST	-3.0093**	-2.0045	-1.9587	-1.1496
RGDPGRW	0.2445	1.1033	0.1577***	3.6198
STFD	-7.9765	-0.4521	-168.9089***	-5.1599
LR Statistic	36.4966		22.4093	
p-value	0.0		0.09	

Table 6: Probabilities associated with individual countries

	BENIN	BURKINA FASO	COTE D'IVOIRE	GUINEA BISSAU	MALI	NIGER	SENEGAL	TOGO
k=1	0.4963	0.3829	0.1454	0.2431	0.5147	0.4162	0.4596	0.8803
k=2	0.4657	0.3031	0.5531	0.0602	0.2001	0.1142	0.2759	0.0057
k=3	0.0186	0.2477	0.152	0.0813	0.1921	0.1069	0.0532	0.0321
k=4	0.0194	0.0663	0.1495	0.6154	0.0931	0.3627	0.2113	0.0819

Notes: 1) *** 1% level of significance.
       ** 5% level of significance.
       * 10% level of significance.
2) Total observations: 239 (when lag is applied) and 240, otherwise.
3) All probabilities have been rounded to 4 decimal places.

Construction of the P_SINST index

All modules are assigned the same weight. Indexes are computed using a straightforward (but intuitive) approach. The figure '1' is assigned to each module when (the associated description is) observed in a specific year, and the figure '0' otherwise. The value of the index in a particular year is then derived by adding up the number of '0' assigned in that particular year. That is, the value of the index ranges from 0 to 5. Therefore, the level of political and social instability is inversely related to the value of the index. The author acknowledges that a variety of ways, using different weights for instance, could be used to compute this index. As a result, with an abundance of precaution, we have limited the use of these indexes to only two out of six variants of our baseline model, for pooled UEMOA countries. Furthermore, it should be mentioned that differences between probabilities are marginal for each category of exchange rate regime across variants (See Table 4).

ENDNOTES

1. Department of Economics, Eastern Illinois University. Email: aadom@eiu.edu. I am grateful to Dr. Subhash Sharma for his valuable comments. I remain fully responsible for all mistakes and insufficiencies.

2. See also Coleman (2008), who underscores the existence of real exchange rate misalignments in the franc zone and sounds the alarm regarding the sustainability of the current fixed parity in the long-run.

3. *Françafrique* is an opaque concept developed by France and rulers in her former colonies to promote and maintain France's sphere of economic and political influence in these former colonies. In return, these rulers have directly and indirectly benefited from France's protection and support over the course of their long tenures through secret military arrangements, among others. African leaders such as Houphouët-Boigny (Côte d'Ivoire), Eyadéma (Togo) and Bongo (Gabon) were the pillars of this concept. They altogether spent 113 years in power. All three died while in office. Others, such as Compaoré of Burkina Faso and Biya of Cameroon have been in power since 1987 and 1982, respectively (See Table 1).

4. Kurt (2004) goes further, by indicating that the central bank in a currency board should hold at most 10 per cent of additional reserves.

5. Overall, the franc zone covers 14 countries grouped in the UEMOA and the CEMAC plus the Comoros Islands, which is the 15th member country. The UEMOA and the CEMAC constitute the CFA franc zone.

6. The French acronym for *Banque Centrale des États de l'Afrique de l'Ouest* (BCEAO).

7. The French acronym for *Banque des États de l'Afrique Centrale* (BEAC).

8. From 1945 to 1960 (West Africa) and 1945 to 1972 (Central Africa), the acronym FCFA stood for, in both sub-regions, the *franc des Colonies Françaises d'Afrique* (FCFA) — i.e., the franc of French Colonies of Africa.

9. Almost all of French sub-Saharan colonies gained independence in 1960.

10. Some adjustments in parity took place in 1948 (appreciation) and 1958 (devaluation), but they were primarily the result of changes in monetary regimes and policies in France, not in UEMOA member countries.

11. A call made on November 29, 2007.

12. He holds an '*Aggregation*' degree in Economics. In the *Francophone* system of higher-education, it is the most recognisable and most selective degree bestowed upon Professors at universities, as an acknowledgement of their expertise in their respective field. His tenure as Speaker officially lasted from around 2001 to 2012.

13. As noted earlier, the FCFA is currently pegged to the euro via the FF. See Agbohou (1999) to further understand the inner-working of the BCEAO and its monetary policy.

14. Following Markiewicz (2006) who argues that the low sophistication of financial systems will more likely lead to the choice of a pegged regime.

15. A full discussion of Africa's odious debt is provided by Ndikumana and Boyce (2011).

16. See the Appendix for more details on the construction of yearly indexes.

17. To correct for any potential interactions between STFD and DCRGR, an interaction term is introduced in all empirical specifications of the baseline model where both are included. In all cases, the associated interaction terms are not significant and they provide no notable changes in the explanatory power of models. These results are available upon request.

18. There is only one stock exchange in the UEMOA — the *Bourse Régionale des Valeurs Mobilières* (BRVM) — which began operating on September 16, 1998. It is located in Abidjan, Côte d'Ivoire.

19. In this variant, PCRGDP is lagged one and two periods successively, to ease potential endogeneity or multicollinearity problems caused by the presence of RGDPGRW. Only results with the one-period lag of PCRGDP are retained, as results with the second-lag provide no or little additional explanatory power.

20. According to the International Monetary Fund (IMF), the GDP of Côte d'Ivoire was $23.5 billion in 2008, while the GDP of Senegal the second largest economy was just $13.3 billion in the same period. As of 2010, the GDP of the former weighted about a third of the union's economy. The international reserves are in 2007 figures and are derived from the IMF's *International Financial Statistics*.

21. See footnote 20.

REFERENCES

Agbohou N (1999) *Le Franc CFA et l'Euro contre l'Afrique*, Paris: Eds Solidarité Mondiale A.S.

Bleaney M and Francisco M (2007) 'Exchange Rate Regimes, Inflation and Growth in Developing Countries—An Assessment', *B.E. Journal of Macroeconomics: Topics in Macroeconomics*, 7(1).

British Broadcasting Corporation (BBC) Archives, various years, available at: http://www.bbc.co.uk.

Central Intelligence Agency (various years) *World Factbook,* Washington D.C.: CIA.

Coleman S (2008) 'Estimating Equilibrium Real Exchange Rates in the Franc Zone', *Journal of African Economies*, 17(4), 600-634.

Corden W M (2002) 'Exchange Rate Regimes for Emerging Market Economies: Lessons from Asia', *Annals of the American Academy of Political and Social Science*, 579, Exchange Rate Regimes and Capital Flows, 26-37.

Dosse T (2006) 'Real Exchange Rate Misalignment and Economic Growth in Developing Countries', *Southwestern Economic Review*, 33(1), 57-72.

Edwards S (1996) 'The Determinants of the Choice between Fixed and Flexible Exchange-Rate Regimes', *National Bureau of Economic Research Working paper* 5756, Cambridge, MA.

Encyclopedia of nations. Available at: http://www. nationsencyclopedia.com.

French Foreign Ministry (various years) Archives, available at: http://www.diplo-matie.gouv.fr.

Giavazzi F and Pagano M (1988) 'The advantage of tying one's hand', *European Economic Review*, 32, 1055-1075.

Honkapohja S and Pikkarainen P (1994) 'Country Characteristics and the Choice of the Exchange Rate Regime: Are Mini-Skirts Followed by Maxis?', in Akerholm J and Giovannini A (eds) *Exchange Rate Policy in the Nordic Countries*, London: Centre for Economic Policy Research.

Jeong S and Mazier J (2003) 'Exchange Rate Regimes and Equilibrium Exchange Rates in East Asia', *Revue économique*, 54(5), Macroeconomics of Exchange Rate Regimes, 1161-1182.

Krugman P (1989) *Exchange Rate Instability*, Cambridge MA: MIT Press.

Kurt S (2004) 'Exchange Rate Regimes', *The Journal of Economic Perspectives*, 18(2), 274-275.

Levy-Yeyati E and Sturzenegger F (2003) 'To Float or to Fix: Evidence on the Impact of Exchange Rate Regimes on Growth', *American Economic Review*, 93(4), 1173-1193.

Markiewicz A (2006) 'Choice of Exchange rate regime in transition economies: An empirical analysis', *Journal of Comparative Economics*, 34, 484-498.

McKinnon R (1963) 'Optimum Currency Areas', *American Economic Review*, 53, 717-725.

Ndikumana L and Boyce J K (2011) *Africa's Odious Debts*, London: Zed Books.

Papaioannou M G (2003) 'Determinants of the Choice of Exchange Rate Regimes in Six

Central American Countries: An Empirical Analysis', *IMF Working Paper,* No. 03/59.

Radio France International (various years) Archives, available at: http://www.rfi.fr.

Stasavage D (2003) *The Political Economy of a Common Currency,* London: Ashgate.

Union Économique et Monétaire Ouest Africaine (UEMOA). Available at: http://www.uemoa.int.

Wade A (2007). Available at: http://www.grioo.com/info12259.html.

Williamson J (1994) *Estimating Equilibrium Exchange Rates*, Washington DC: Institute for International Economics.

Zis G (1989) 'Is there Still a Case for Flexible Exchange Rates?', *British Review of Economic Issues*, 11, 1–20.