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*Original article*

# Measuring Capital Flight in West African Economic and Monetary Union Countries: The Role of Governance

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***Abstract -*** *This paper presents an updated methodology for estimating capital flight using the residual method in countries of the West African Monetary Union zone. The results indicate that four countries have experienced significant real capital flight over the last four decades (1970-2016), reaching $58655.28 million (Côte d'Ivoire, Niger, Burkina Faso and Senegal). To this end, given the importance of governance in the zone, the paper extends the debate on its role in capital flight over the period 1996-2016. Governance is clustered by principal components analysis and the results suggest that political stability, voice and accountability reduce capital flight while their collective effect through political governance is not significant in the long run. Overall, the fight against trade distortions is very important in WAEMU and the most effective weapon in the long run is the improvement of political governance through the priority of the Washington Consensus.*

***Keywords -*** *Capital flight, Governance, Residual method, WAEMU.*

## I. INTRODUCTION

For several decades, capital flight has been a problem in many developing countries. As a phenomenon that is worsening in Africa given the small size of resources and limited markets, the problem of capital flight warrants serious attention, particularly among sub-Saharan African economies (Ndikumana & Boyce, 2012a). More importantly, capital flight and poor governance are key determinants of a country's poor investment climate.

Today, one of the main factors that weaken savings and resource mobilization is capital flight (Ndiaye, 2010). Although the attention given to capital flight is remarkable, it remains a critical problem and negatively affects the economic performance of the West African Economic and Monetary Union zone (Ndiaye, 2010). The paper focuses on the WAEMU for several main reasons. First, according to Ndiaye (2011) in the WAEMU zone, capital outflows are estimated at about 19,426.7 million constant dollars, which represents 262.4% of their overall GDP between 1970 and 2010 or an average annual loss of 63.9 million 2010 constant dollars in the form of capital flight, including constant 2010 $41170.4 million in Côte d'Ivoire, constant 2010 $4436.1 million in Togo, constant 2010 $1104.4 million in Guinea Bissau and constant 2010 $1330.6 million in Burkina Faso. More worryingly, the area is particularly marked by a situation of instability. In addition, corruption, poverty, lack of transparency in the management of national resources, ethnic, religious and tribal conflicts, and electoral crises are the challenges that the countries in the zone are called upon to meet. The corruption of the ruling authorities in these very poor countries, the rebellion of Tuareg separatists followed by the occupation of northern Mali by armed Islamist fighters allied with the terrorist group AQIM, and the acute post-electoral crisis in Côte d'Ivoire, and instability in Burkina Faso are all reasons to question governance in West Africa.

Therefore, surprisingly, to our knowledge, much of the literature on capital flight has focused on the relationship between corruption and capital flight (Lederman, Loayza & Soares, 2005). The main objective of this paper is to determine the role of governance in capital flight from WAEMU countries. To this end, this study assesses the best governance tools for combating capital flight. The methodology used is consistent with the empirical underpinnings (Asongu, 2016) that recently made a comprehensive assessment of the governance nexus by clustering and unbundling six governance indicators. The motivation for grouping governance indicators is based on evolving paradigms in the conception, definition, and measurement of governance.

The literature on capital flight from WAEMU countries is quite extensive. However, except for Ndikumana and Boyce (2003, 2007); Cerra, Rishi & Saxena (2008) and Ndiaye (2011), most authors have not considered the vast majority of WAEMU countries. Their studies cover a sample of countries including only a few WAEMU countries (Ajayi, 1997; Lensink, Hermes & Murinde, 2002; Collier, Hoeffler & Pattillo, 2004a; Ndiaye & Siri, 2016). Also, the contemporary literature has focused on lessons learned from empirical studies on the causes and consequences of capital flight (Ndikumana, 2016).

In light of the above, the added value of this paper in the economic literature is at three levels. First, this paper establishes an empirical framework for updated estimation and analysis of the magnitude of capital flight for all WAEMU countries. Second, to our knowledge, no past empirical study exclusively composed of all WAEMU countries has taken into account the different forms of governance dynamics of the World Bank to determine the relationship with capital flight. Finally, we contribute to the ongoing debate on the effect of governance on capital flight in the zone because we have found that the effects of governance can be insignificant (Akpan, Salisu & Simplice, 2014) or limited to economic governance (Jadhav & Katti, 2012). In essence, we use ten indicators of governance, including institutional governance, economic governance, political governance, overall governance, control of corruption, rule of law, regulatory quality, government effectiveness, voice and accountability, political stability, and absence of violence. The article's emphasis on assessing how different dimensions of governance promote capital flight may have highly relevant policy implications. This research thus contributes to a better understanding of the role played by governance in explaining capital flight in the WAEMU zone.

The paper is organized as follows. Section A provides a literature review of the link between capital flight and governance; it clarifies the concepts of capital flight and governance through theoretical foundations. Next, the World Bank's residual methodology is described in section B through the quantification of capital flight in the area, while section C presents the empirical results and discussion of the findings. Finally, section D concludes with policy implications and future research directions.

### *A. Review of the literature*

Under governance, several actors are affected by government decisions (civil society and the private sector) and participate in decision-making processes (Kettl, 2002). Although there is no consensus on the definition of governance, a common theme among scholars is greater involvement of non-governmental institutions in the policy and decision-making process (Shaffer & Murray, 2004). Thus, under governance, the government is one of the actors, rather than the only one, that manages the affairs of a nation (Lovan, Murray & Shaffer, 2004; Rhodes, 1997).

To this end, in political governance, the political environment has been shown to be an important factor in capital flight as it is related to the loss or degradation of assets as well as the enhancement of investment-related insurance premiums (Collier et al., 2004a; Ndikumana, Boyce & Ndiaye, 2015). When such characteristics are associated with political stability and the absence of violence, there is a strong likelihood that investors will have an incentive to shift their capital to environments with lower investment risk. In addition, if investors believe that certain domestic political institutions (e.g., leadership accountability and competitive elections) are not conducive to economic growth, they are more likely to withdraw their funds and move them to countries with credible and stable political institutions. In this line of analysis, capital flight theory assumes that outflows are due to macroeconomic and political uncertainties in developing countries.

Second, economic governance can lead to uncertain economic prospects that discourage investors from investing in an economy. This is essentially because investors prefer to invest in less uncertain economic conditions (Le Roux and Kelsey, 2016). In essence, poor economic governance can hinder macroeconomic performance and discourage investors because the macroeconomic outlook is bleak. From the government's perspective, poor economic governance can lead to capital flight if the formulation and implementation of policies designed to deliver public goods are perfectly suited to deposit funds sent to tax havens. This implies that in the absence of effective and quality regulation, government officials are more likely to design policies that allow them to divert funds and deposit them in tax havens. Capital flight is strongly motivated by the portfolio diversification pattern of economic agents.

Finally, with respect to institutional governance, the control of corruption and the rule of law influence both investor confidence in the economy and the ability of public officials to dispose of and divert funds to offshore tax havens. As a result, investors would not place their money in an economy in which the rule of law is not optimized. In essence, they are less likely to invest if, in their view, the institutions of the state may weaken overall economic performance, whether or not they are directly affected by this phenomenon. Compliance with the law ensures better protection of property rights and guarantees that foreigners need not fear expropriation of their invested assets. This expropriation affects capital flight and discourages foreign investment. Moreover, countries with corrupt leaders may not be fully committed to respecting the property rights of investors. In the literature Nord (1990) indicated that the decision to invest in the domestic economy depends on whether property rights and other investment promotion institutions are in place. Therefore, institutional factors are important drivers of capital flight.

### *B. The methodology for measuring capital flight*

The problem of capital flight from WAEMU has received considerable attention in the economic literature, particularly in the context of the debate on financing sustainable development (Dornbush, 1986; Hermes & Lensink, 2001; Ndikumana & Boyce, 2003; Collier et al., 2004a). However, estimates of capital flight have varied, mainly due to differences in the measurement method used, the period selected, and the sample considered. In our development, we use the World Bank's residual method (Ndikumana & Boyce, 2018).

This study uses the World Bank (1985) residual method and includes further innovations using the updated methodology described by Ndikumana and Boyce (2018). This method remains the most widely used by economists, and has fewer limitations than the others. In this method, capital flight is defined as the difference between total capital inflows and total recorded foreign exchange outflows. It is presented by the following equation (Boyce & Ndikumana, 2018):

$$FC_{it} = (\Delta DET_{it} + IDE_{it}) - (CC_{it} + \Delta RES_{it}) \quad (1)$$

Where CF is capital flight according to the residual method; ΔDET is the change in outstanding debt, FDI is net foreign direct investment, CC is the current account deficit, ΔRES is the change in foreign exchange reserves.

In this paper, the estimate has some shortcomings, following the approach of Ndikumana and Boyce (2018), it needs to take into account four major modifications on the previous equation in order to give it more accurate values.

***a) Adjustment to the net change in interest arrears***

In recent decades, according to Boyce and Ndikumana (2018), developing countries have experienced the diversification of capital inflows beyond external borrowing and foreign direct investment. Portfolio asset inflows and other investments have increased significantly, particularly since the turn of the century. These two flows are added to the sources of finance in the calculation of capital flight as a residual of the balance of payments. For each country, the basic annual measure of capital flight as a balance of payments residual is therefore calculated as follows:

$$FC_{it} = (\Delta DET_{it} + IDE_{it}) + IP + OI - (CC_{it} + \Delta RES_{it}) \quad (2)$$

Where, IP is the portfolio investment and the OI is the rest of the investment

The residual balance of payments is expanded to include two additional sources of foreign exchange inflows, namely portfolio investment and other investments, in addition to external debt and net foreign direct investment. The calculation of the adjusted change in debt stock, i.e., the annual change in external debt stock obtained using World Bank international debt statistics, includes the "net change in interest arrears", although this does not correspond to an inflow of funds from resources.

***b) Adjustment for exchange rate fluctuations***

The World Bank reports debt data in a common currency, the United States dollar, using the year-end exchange rate. However, the debts of a given country are often reported in different currencies. To correct for this potential difference in values, Boyce and Ndikumana (2001) propose adjusting the change in long-term debt to fluctuations in the exchange rate of the dollar against the other currencies in which debt is issued. The total debt stock is the sum of long-term debt, short-term debt, and IMF credit. The World Bank's Global Development Finance database reports annual long-term debt data for the 08 WAEMU countries in our sample denominated in seven major currencies, namely the German Deutsche Mark, the French franc, the Japanese yen, the British Pound Sterling, the Swiss Franc, the IMF's Special Drawing Rights (SDRs), and the US Dollar. To correct for possible divergences due to exchange rate fluctuations.

For countries i, the US dollar value of the debt stock in year t-1 valued at the exchange rate of year t is obtained (NOUDET) as follows from Boyce and Ndikumana (2010):

$$\begin{aligned} NOUDET &= \sum_{j=1}^{7} (\alpha_{ij,t-1} * DETLT_{i,t-1}) / (TC_{j,t} / TC_{j,t-1}) \\ &+ CRFMI_{I,t-1} / (TC_{DTS,t} / TC_{DTS,t-1}) \\ &+ AUTRELT_{i,t-1} + MULTLT_{i,t-1} \\ &+ DETLTEU_{i,t-1} + DETCT_{i,t-1} \end{aligned} \quad (3)$$

Where DETLT is long-term debt; αij is the proportion of long-term debt held in currency j (j = French franc, Deutsche mark, Yen, Swiss Franc, Special Drawing Rights, Pound Sterling, Euro[i]); TC is the year-end exchange rate of the currency in which the debt is denominated against the dollar (expressed in units of that currency per dollar) ; CRFMI is IMF credits denominated in Special Drawing Rights (SDRs); AUTRELT is long-term debt denominated in "other currencies"; MULTLT is long-term debt denominated in "multiple currencies"; DETLTEU is long-term debt denominated in US dollars; DETCT is short-term debt. Thus, The composition of the long-term debt of WAEMU countries in different currencies is shown in Table 1 above.

To correct for the volatility of exchange rate fluctuations that lead to changes in debt, Boyce and Ndikumana (2001) adjust changes in long-term debt for exchange rate fluctuations as follows:

$$DETAJU_t = NOUDET_{t-1} - DET_{t-1}$$

From this, we obtain the change in debt adjusted for exchange rate fluctuations:

$$\Delta DETAJU_t = \Delta DET_t - DETAJU_t \quad (4)$$

Since, $\Delta DET_{t-1} = DET_t - DET_{t-1}$, then in relation (3), we have:

$$\Delta DETAJU_t = \Delta DET_t - DETAJU_t \quad (5)$$

**Table 1. Composition of WAEMU's long-term debt in different currencies (%)**

| Country * | American dollar | Pound sterling | Swiss franc | DTS | Other currencies | Multiple currencies | Japanese yen | French franc | Euro | German mark |
|---|---|---|---|---|---|---|---|---|---|---|
| Bénin | 29.6 | 0.4 | 0.1 | 8.2 | 31.4 | 6.7 | 0.3 | 14.4 | 3.2 | 0.8 |
| BF | 36.2 | 1.9 | 0.0 | 4.6 | 19.3 | 9.3 | 0.0 | 17.3 | 3.3 | 3.5 |
| CI | 35.1 | 0.6 | 1.8 | 0.4 | 5.4 | 10.5 | 0.8 | 21.0 | 16.1 | 3.3 |
| GB | 33.7 | 0.0 | 5.5 | 0.5 | 33.5 | 14.9 | 0.0 | 2.3 | 2.3 | 0.2 |
| Mali | 22.5 | 7.0 | 3.0 | 3.1 | 32.0 | 9.1 | 1.0 | 15.7 | 4.2 | 1.6 |
| Niger | 34.0 | 0.6 | 0.0 | 2.8 | 22.8 | 0.3 | 0.8 | 30.6 | 3.5 | 2.6 |
| Sénégal | 34.6 | 0.2 | 0.3 | 2.8 | 22.4 | 6.3 | 1.3 | 17.9 | 6.1 | 4.6 |
| Togo | 36.8 | 2.8 | 6.2 | 1.0 | 15.5 | 4.3 | 2.1 | 10.1 | 4.8 | 10.0 |

Note: author using World Bank data (2017).
These data represent the average of annual data on the composition of long-term debt of WAEMU countries in different currencies over the period 1970-2016.

BF* Burkina Faso, CI Côte d'Ivoire, GB Guinée-Bissau.

By modifying equation (2), Boyce and Ndikumana (2018) obtain a residual measure of capital flight (CF) adjusted for exchange rate fluctuations, defined as follows:

$$FC_{it} = \left(\Delta DETAJU_{it} + IDE_{it}\right) + IP + OI - \left(CC_{it} + \Delta RES_{it}\right) \quad (6)$$

This residual measure of capital flight only takes into account the adjustment to exchange rate fluctuations and the adjustment to the net change in interest arrears.

***c) Adjusting for Trade transaction falsifications and inflation***

Boyce and Ndikumana (2018) estimate the falsification of trade transactions in a given country by comparing its export and import data with those of its trading partners[ii]. Both economists assume that the trade data for industrialized countries are relatively accurate, and interpret the discrepancy between these data and those of developing countries as a trade falsification.

For a country i and a year t, Boyce and Ndikumana (2018) calculate the export differential between a WAEMU country and its industrialized country trading partners (DXIC) as follows:

$$DXIC_{it} = PXIC_{it} - \left(XIC_{it} * CIF_t\right) \quad (7)$$

where PXIC is the value of imports from industrialized countries from a WAEMU country; XIC represents exports from a WAEMU country to industrialized countries; CIF[iii] is the factor c.i.f/f.o.b, representing costs, insurance and freight (c.i.f) compared to free on board (f.o.b) prices.

The import differential between a WAEMU country and its trading partners in industrialized countries (DMIC) is defined by these two economists as:

$$DMIC_{it} = MIC_{it} - \left(PMIC_{it} * CIF_t\right) \quad (8)$$

Where MIC is the imports of a WAEMU country from industrialized countries and PMIC is the exports of industrialized countries to a WAEMU country.

To obtain the overall totals, Boyce and Ndikumana (2018) multiply these gaps by the inverse of the average share of industrialized and developing countries in exports (ICXS) and imports of WAEMU countries (ICMS).

$$MISINV_{it} = \frac{DXIC_{it}}{ICXS_t} + \frac{DMIC_t}{ICMS_t} \quad (9)$$

With

$$ICXS = \frac{XIC}{XIC + XED}; \quad ICMS = \frac{MIC}{MIC + MED} \quad (10)$$

Where XIC and XED are exports to industrialized and emerging countries and developing countries, respectively; MIC and MED are imports from industrialized and emerging countries and developing countries, respectively. Following Boyce and Ndikumana (2001), capital flight according to the residual method adjusted for trade transaction falsifications is finally equal to :

$$FCAJU_{it} = FC_{it} + MISINV_{it} \quad (11)$$

According to Ndikumana and Boyce (2018) to make annual estimates of capital flight comparable over a long period of time, data expressed in constant dollars are converted, using the U.S. producer price index for this purpose. This adjustment of capital flight for inflation provides real values of capital flight and allows examination of year-to-year changes in the real amount of capital flight and comparison of these real values with other aggregates such as debt stock, real GDP, and investment. Real capital flight is calculated as follows:

$$FCR_{it} = \frac{\left(\Delta DETAJU_{it} + INDE_{it}\right) + IP + OI - \left(CC_{it} + \Delta RES_{it}\right) + MISINV}{IPP_t} \quad (12)$$

Where FCR refers to real capital flight calculated using

the World Bank's version of the residual method (1985) adjusted for the net change in interest arrears, exchange rate fluctuations, trade transaction falsifications, and inflation; PPI is the U.S. producer price index (base 100=2010).

### *C. Results of capital flight estimation*

The fact that emerges clearly from the annual data on real capital flight shows that between 1970 and 2016, the total real capital flight of the eight (8) countries in the subregion covered in this paper amounted to $58,655.27 million (see Figure1). Yet, these countries recorded a capital inflow worth $47,556.82 million between 2010 and 2016 according to the residual measurement method.

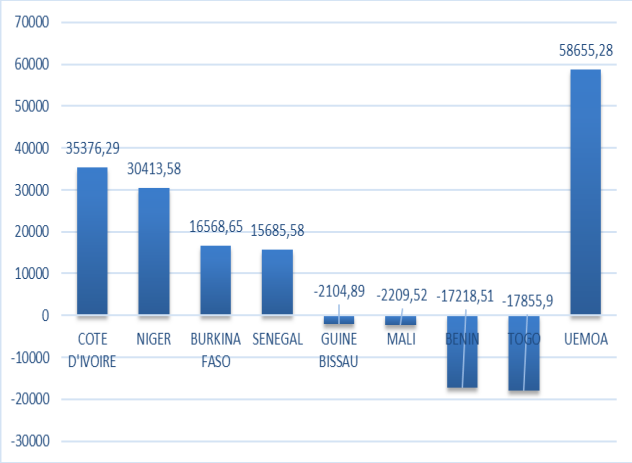


**Fig. 1 Flight of real capital by WAEMU country, 1970-2016 (million US $ 2010).**

*Note :* Author's Calculations

However, the falsification of transactions in the case of imports plays an important role in quantifying capital flight in the zone through organized smuggling in WAEMU countries, which testifies to the very low or even negative total volume of real capital flight observed in some countries. Indeed, this phenomenon, although observed over the last few decades, distinguishes Togo in first place with $72902.79 million as an under-invoicing of imports. Another hypothesis is that these countries benefited from net capital inflows over the period. A potential explanation for the negative capital flight may be related to migrant remittances. Indeed, these countries are among the largest recipients of remittances in the franc zone, both in absolute terms and as a percentage of GDP (Ndiaye, 2011). Moreover, they are mainly remittance-receiving countries in Sub-Saharan Africa, both in terms of volume and in terms of percentage of GDP or exports (Gupta et al., 2007).

Thus, between 1970 and 2016, the stock of capital flight for the entire WAEMU zone, estimated by the World Bank's residual method, represents 57.55% of its GDP. As an annual average, it represents 2.58% of GDP over the observation period.

In sum, it is important to better appreciate the magnitude of capital flight with certain macroeconomic indicators, namely GDP and investment as shown in Table 2. Indeed, the weights of capital flight relative to GDP and investment measured as a percentage of GDP are not more remarkable in the countries with the largest volumes of capital flight in absolute terms. Moreover, the stock of massive capital flight that ranks Côte d'Ivoire at the top of the group of countries is not a heavy burden on its GDP compared to the rest of the countries. In particular, the ratio of capital flight to GDP is about 96.15 percent for Côte d'Ivoire while it is, for example, more than 376.13 percent in Niger and 133.84 percent in Burkina Faso. On the other hand, the negative values of the capital flight to GDP ratio recorded by some countries indicate how much the economic growth of these countries has benefited from capital inflows.

**Table 2. Flight of real capital by WAEMU country, 1970-2016 (million US $ 2010)**

| Country | Total actual capital flight | Annual average | Capital flight stock in 2016 | Debt stock in 2016 | GDP ratio (%) | Invest ratio (%) |
|---|---|---|---|---|---|---|
| Bénin | -17218.51 | -366.35 | 75.83 | 2323.37 | -189.13% | -647.85% |
| Burkina Faso | 16568.65 | 352.52 | 1612.67 | 1176.01 | 133.84% | 492.34% |
| Côte d'Ivoire | 35376.29 | 752.69 | 2014.48 | 2824.88 | 96.15% | 606.87% |
| Guine Bissau | -2104.89 | -110.78 | -174.94 | 11344.09 | -199.06% | -3424.12% |
| Mali | -2209.52 | -69.05 | -963.94 | 6637.54 | -16.46% | -87.00% |
| Niger | 30413.58 | 647.10 | 1488.08 | 3787.95 | 376.13% | 1131.53% |
| Senegal | 15685.58 | 333.74 | -1254.75 | 3233.06 | 93.18% | 382.34% |
| Togo | -17855.90 | -379.91 | -8060.18 | 295.01 | -420.61% | -1795.69% |
| WAEMU | 58655.28 | 144.99 | -5262.75 | 31621.90 | 57.55% | 263.76% |

*Notes: Author's calculations*

This analysis therefore shows that WAEMU could have had financing available to meet its public investment needs in most of the priority sectors and that the shortfall in these savings is necessarily due to governance factors.

### *D. Methodological approach*

In this section, we describe the variables, the data and the econometric methods used, in particular the tests of stationarity of the variables, the cointegration tests and the estimation strategy. We use a two-step methodological approach. First, we examine econometrically the effect of the components of governance dynamics on capital flight. Second, given that the contribution of countries with positive capital flight to total capital flows in the WAEMU zone is predominant, we will econometrically estimate the impact of governance dynamics in countries with positive capital flight in a second step in countries with negative capital flight, to see whether the effect of governance on capital flight is channeled through the first group or the second group of countries.

#### *a) Principal Component Analysis*

In line with Asongu and Nwachukwu (2015), the PCA technique for clustering and disaggregating governance dynamics is used. PCA is generally used to reduce highly correlated variables into a smaller set of uncorrelated principal components. The corresponding correlation matrix is presented in Table 3. The criterion used to retain the principal component is that of Kaiser (1974) and Jolliffe (2002) who recommended retaining eigenvalues above the mean or greater than one. These authors recommended retaining only common factors with an eigenvalue greater than the mean or one.

| **Components main** | **Component matrix (loadings)** | | | | | | **Proportion** | **Cumulative Proportion** | **Eigen value** |
|---|---|---|---|---|---|---|---|---|---|
| | **VA** | **PS** | **RQ** | **GE** | **RL** | **CC** | | | |
| First PC (GGov) | 0.41 | 0.29 | 0.43 | 0.43 | 0.45 | 0.42 | 0.73 | 0.73 | 4.40 |
| Second PC | 0.19 | 0.85 | -0.27 | -0.22 | 0.07 | -0.34 | 0.13 | 0.87 | 0.80 |
| Third PC | -0.75 | 0.33 | 0.31 | -0.29 | 0.09 | 0.38 | 0.06 | 0.92 | 0.35 |
| First PC (Polgov) | 0.71 | 0.71 | - | - | - | - | 0.78 | 0.78 | 1.56 |
| Second PC | -0.71 | 0.71 | - | - | - | - | 0.22 | 1.00 | 0.44 |
| First PC (Ecogov) | - | - | 0.71 | 0.71 | - | - | 0.91 | 0.91 | 1.81 |
| Second PC | - | - | -0.71 | 0.71 | - | - | 0.09 | 1.00 | 0.19 |
| First PC (Instgov) | - | - | - | - | 0.71 | 0.71 | 0.89 | 0.89 | 1.78 |
| Second PC | - | - | - | - | -0.71 | 0.71 | 0.11 | 1.00 | 0.22 |

*Notes:* PC: Main components. VA: Voice and Accountability. RL: Rule of law. R.Q: Quality of regulations. GE: Government efficiency. PS: political stability. CC: Control of corruption. G. Gov (General governance): First PC of VA, PS, RQ, GE, RL.

As shown in Table 3, political governance (Polgov), which accounts for about 77.4% of the information from voices and accountability, and political stability has an eigenvalue of 1.55; economic governance (Ecogov), which accounts for about 89.6% of the information from government efficiency and regulation with an eigenvalue of 1.792; while institutional governance (Instgov), which accounts for about 88.46% of the information from control of corruption and rule of law, has an eigenvalue of 1.769. It is important to note that the eigenvalues reflect the eigenvectors associated with the principal components. For example, the first eigenvector of a correlation matrix indicates the maximum variance of the data. The eigenvector is the first principal component. Therefore, a principal component provides a new orthogonal basis for uncorrelated data points and each principal component is a linear combination of original indicators with coordinates on the basis. The maximum variance can also be understood as common information contained in the principal components. This logic is consistent with the values reported for the dynamics of political, economic, and institutional governance. "Political governance, which measures the election and replacement of political leaders, is approximated by voice and accountability and political stability/non-violence. Economic governance, which is the formulation and implementation of policies that deliver public goods, is characterized by regulatory quality and government effectiveness. Institutional governance, which is defined as respect for the rule of law and the citizen institutions that manage their interactions, is measured by the rule of law and control of corruption" (Andrés et al., 2014).

According to the literature, while the two-step process produces efficient and consistent estimates, not all resulting inferences are valid. This caveat is consistent with a recent stream of literature on concerns: Westerlund and Urbain (2013a); Ba and Ng (2006) documented problems with the inferential quality of variables derived from the principal component. The authors drew on numerous previous studies on the topic (Greenaway-McGrevy, Han & Sul, 2012) to conclude that normal inferences are possible with augmented principal component regressors, provided that the estimated parameters converge to their true values with N and T (T being the amount of time series and N denoting cross-sectional observations). They went further by specifying that,

for the suggested that convergence occur, N and T must be sufficiently large. But there is no indication of how large it really has to be. In the specific context of this work, we face two major problems. On the one hand, N can no longer be increased because we are involving the eighth (8) countries of the WAEMU zone. On the other hand, T can only be located between 1996 and 2016, because the good governance indicators only date from 1996. In summary, we argue that valid inferences are possible as Asongu and Nwachukwu (2016a) recently established valid inferences using weaker governance indicators in terms of T and N.

***b) The data***

This study uses data covering the period 1996 to 2016 for all eight countries in the WAEMU zone (Burkina Faso, Côte d'Ivoire, Mali, Niger, Benin, Togo, Senegal, Guinea Bissau). The data used in this study are quantitative in nature and are obtained from the World Development Indicators and Global Development Finance 2017 online database. However, in order to make the various adjustments (below) to the series obtained from capital flight, the IMF database (International Financial Statistics, IFS) is used (see appendix A). Also, in line with Asongu and Nwachukwu (2015) the CPA technique for aggregating and disaggregating governance dynamics is used to obtain political governance, economic governance and institutional governance.

The table 4 presents summary statistics for the variables used in the study. It presents information on the mean, median, maximum and minimum values and standard deviation of the variables. These descriptive statistics are derived from the countries considered in the study and for the period. The result indicates that capital flight averages only -6.48 percent of GDP with a standard deviation of 45.85 and minimum and maximum values of -324 percent in 2014 and 109.82 percent in 2009 in Togo respectively. As for the governance variables, they are all negative over the period except for control of corruption with a positive average value of 0.55.

**Table 4. Descriptive statistics of the variables**

| Variables | Average | Standard deviation | Min | Max | Obs |
|---|---|---|---|---|---|
| FCR | -6.48 | 45.85 | -324.0 | 109.82 | 168 |
| INF | 90.29 | 13.76 | 45.76 | 111.68 | 168 |
| CROIS | 4.15 | 4.00 | -28.10 | 15.38 | 168 |
| DET | 48.08 | 34.44 | 8.59 | 161.11 | 168 |
| IDE | -0.60 | 4.86 | -17.09 | 17.09 | 168 |
| FLS | -12.42 | 45.25 | -370.6 | 107.41 | 168 |
| APD | 8.58 | 4.21 | 0.43 | 26.92 | 144 |
| PS | -0.40 | 0 .52 | -1.51 | 0.43 | 144 |
| VA | -0.44 | 0.685 | -2.26 | 1.05 | 144 |
| VR | -0.81 | 0.383 | -1.64 | 0.08 | 144 |
| QR | -0.56 | 0.317 | -1.26 | -0.05 | 144 |
| ED | -0.69 | 0.4253 | -1.80 | 0.07 | 144 |
| CC | 0.55 | 3.403 | -1.55 | 18.61 | 168 |
| Gov po | 6.01e-10 | 1.248 | -3.11 | 2.43 | 144 |
| Gov eco | 1.35e-09 | 1.346 | -3.04 | 2.60 | 144 |
| Gov Ins | -1.14e-09 | 1.332 | -3.01 | 2.9 | 144 |
| Gov ge | 9.70e-09 | 2.097 | -4.28 | 3.91 | 144 |

*Notes:* Author based on calculations

***c) Estimation method***

To assess the impact of governance quality on capital flight from WAEMU countries, we will use the model developed by Ampah, Kiss & Koto (2018) who estimate a panel data model in which capital flight is a function of macroeconomic control variables such as

$$FCR_{it} = \alpha_0 + \beta_1 G_{it} + \delta_2 Z_{it} + \mu_t + \nu_t + \varepsilon_t \quad (13)$$

FCR is the ratio of capital flight to real GDP in country i at period t; G represents governance which can be those components cited above or clustering through policy, economic or institutional or general; G is the vector of control variables chosen following a careful review of the theoretical and empirical literature. u is the country-specific effect; v is the time constant; ε is the error term. Thus, G and Z can be rewritten as follows:

$$G = f(ecoGOV, polGOV, instGOV, gGOV)$$

$$Z = f(CROIS, IDE, INF, DET, FLS, APD)$$

Where Z represents the vector of macroeconomic control variables. Among them, we considered these: real GDP growth rate (RGPR), official development assistance (ODA), inflation rate (INF) measured by the annual change in the GDP deflator. The FDI variable which represents foreign direct investment as a percentage of GDP, the DET variable is total external debt as a percentage of GDP, and the FLS which represents trade falsification as a percentage of GDP. These control variables allow for the effect of the macroeconomic environment in explaining capital flight.

***E. Estimation results and interpretation***

***a) Stationarity and cointegration***

Tables 5 and 6 present the unit root tests applied to each series. The statistics of the Levin, Lin et Cho (LLC) (1992)-level tests as well as those of the Pesaran, Shin et Smith (IPS) (1997) contained in Table 5 allow us to accept the null hypothesis of non-stationarity for all the variables. These results are confirmed by the Hadri test which rejects the stationarity hypothesis for all variables except for the economic growth variable. The search for a unit root in the first difference is unsuccessful (Table 6). Indeed, the tests applied in difference indicate the rejection of the non-stationarity hypothesis for the LLC and IPS tests. On the other hand, the Hadri test accepts stationarity in difference for all variables except for the control of corruption. For the latter we retain the results of the other two tests. For the cointegration tests, the Kao (1999) tests reject the hypothesis of non-cointegration for all 10 relationships at the 10% error

threshold and The cointegration relationships thus highlighted are estimated by the DFE method (Table 7), with only the long-run coefficients being discussed.

**Table 5. Unit root-to-level tests**

| Test | LLC HO : non stationnaire | | IPS HO : non stationnaire | | Hadri HO : stationnaire | |
|---|---|---|---|---|---|---|
| **Variables** | **C** | **CT** | **C** | **CT** | **C** | **CT** |
| FCR | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INF | 0.14 | 0.92 | 0.95 | 0.01 | 0.00 | 0.00 |
| CROIS | 0.00 | 0.00 | 0.00 | 0.00 | 0.16 | 0.34 |
| DET | 0.15 | 0.14 | 0.35 | 0.12 | 0.00 | 0.00 |
| IDE | 0.01 | 0.04 | 0.03 | 0.00 | 0.00 | 0.00 |
| FLS | 0.04 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 |
| APD | 0.06 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| VA | 0.96 | 0.01 | 0.96 | 0.13 | 0.00 | 0.00 |
| PS | 0.09 | 0.00 | 0.51 | 0.00 | 0.00 | 0.00 |
| VR | 0.02 | 0.00 | 0.39 | 0.00 | 0.00 | 0.00 |
| EG | 0.37 | 0.01 | 0.24 | 0.04 | 0.00 | 0.00 |
| ED | 0.31 | 0.00 | 0.47 | 0.02 | 0.00 | 0.00 |
| CC | 0.01 | 1.00 | 0.00 | 0.00 | 0.00 | 0.58 |
| Gov po | 0.16 | 0.00 | 0.79 | 0.05 | 0.00 | 0.00 |
| Gov eco | 0.55 | 0.00 | 0.22 | 0.02 | 0.00 | 0.00 |
| Gov Ins | 0.25 | 0.01 | 0.83 | 0.11 | 0.00 | 0.00 |
| Gov ge | 0.23 | 0.00 | 0.82 | 0.03 | 0.00 | 0.00 |

*Note:* For p> 0.1 the null hypothesis of non-stationarity cannot be rejected according to the tests of LLC and IPS, On the other hand for p <0.1, the null hypothesis of stationarity is rejected according to the test of Hadri.

C= Constante, CT = Constante +trend

**Table 6. Unit root tests in the first difference**

| Test | LLC HO : non stationnaire | | IPS HO : non stationnaire | | Hadri HO : stationnaire | |
|---|---|---|---|---|---|---|
| **Variables** | **C** | **CT** | **C** | **CT** | **C** | **CT** |
| FCR | 0.00 | 0.00 | 0.00 | 0.00 | 0.98 | 0.99 |
| INF | 0.00 | 0.00 | 0.00 | 0.00 | 0.38 | 0.08 |
| CROIS | 0.00 | 0.00 | 0.00 | 0.00 | 0.99 | 0.99 |
| DET | 0.00 | 0.00 | 0.00 | 0.00 | 0.33 | 0.68 |
| IDE | 0.00 | 0.00 | 0.00 | 0.00 | 0.98 | 0.89 |
| FLS | 0.00 | 0.00 | 0.00 | 0.00 | 0.88 | 0.84 |
| APD | 0.00 | 0.00 | 0.00 | 0.00 | 0.94 | 0.82 |
| VA | 0.00 | 0.00 | 0.00 | 0.00 | 0.51 | 0.74 |
| PS | 0.00 | 0.00 | 0.00 | 0.00 | 0.88 | 0.58 |
| VR | 0.00 | 0.00 | 0.00 | 0.00 | 0.34 | 0.87 |
| EG | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.54 |
| ED | 0.00 | 0.00 | 0.00 | 0.00 | 0.21 | 0.68 |
| CC | 1.00 | 1.00 | 0.00 | 1.00 | 0.99 | 0.99 |
| Gov po | 0.00 | 0.00 | 0.00 | 0.00 | 0.83 | 0.61 |
| Gov eco | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.76 |
| Gov Ins | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.39 |
| Gov ge | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.53 |

*Note:* For p> 0.1 the null hypothesis of non-stationarity cannot be rejected according to the tests of LLC and IPS, On the other hand for p <0.1, the null hypothesis of stationarity is rejected according to the test of Hadri.

**Table7. Results of Kao cointegration tests in WAEMU**

| Equations | KAO ADF |
|---|---|
| (1) | 2.47 |
| (2) | -2.41 |
| (3) | -2.49 |
| (4) | -2.57 |
| (5) | -2.50 |
| (6) | -2.48 |
| (7) | 1.03 |
| (8) | -2.47 |
| (9) | -2.47 |
| (10) | -2.45 |

*Note:* The statistics are N (0,1) under H0: non cointegration. *** indicates the rejection of H0 at 1%.

***b) Presentation of results***

Only the Dynamic Fixed Effects (DFE) estimates were carried out because of the weakness of the temporal dimension of the panel and the property of the Mean Group (MG) and Pooled Mean Group (PMG) estimators. The heterogeneous error correction model, proposed by Persean (1999), shows that the error correction coefficient is negative and significantly different from 0 at the 1% error threshold in all regressions. The long-term relationships between the variables are therefore validated.

Indeed, Table 8 presents the results corresponding to the estimation of capital flight with political stability, voice and accountability, government effectiveness, regulatory quality, rule of law, control of corruption, political governance, economic governance, institutional governance and general governance as variables of interest for all WAEMU countries. Next, Table 9 presents the results for ungrouped governance in the two group categories (positive and negative leakage). Finally, Table 10 presents the results corresponding to grouped governance (political governance, economic governance, institutional governance and general governance) in the two group categories. The objective is to test the robustness of the empirical results found earlier at the aggregate level and to analyze some potential disparities between the two groups considered in this study. The estimation results are presented in Table 9 and 10 for each country group. In fact, these specifications group together the different variables of the model. The argument that can explain this choice is related to the predominance of the strong contribution of countries with a positive total capital flight over the period because of the productive structure of these countries, which are resource-producing economies.

The econometric estimation results presented show that the coefficient of the trade distortion variable is positive and statistically significant at the 99 percent confidence level in most specifications. Also, the effect of the macroeconomic environment on capital flight is observed through external debt and foreign direct investment. The coefficient associated with the external debt variable is positive and statistically significant in all specifications of the composite governance in line with the findings of Henry (1986) and Duwendag (1989). However, an opposite effect is observed for foreign direct investment in some specifications with a negative and statistically significant coefficient.

As for the key variable of the model, governance, the mixed sign of its coefficient as well as its significance in all specifications confirm the validity of the central hypothesis of this work that governance is a factor that weakens or increases capital flight in the zone. We find that two governance variables not associated in the long run are statistically significant at the 10% level and have a negative impact on capital flight: political stability (-18.44); voice and accountability (-33.35) for countries with positive capital flight. This reading is opposite to the result obtained with pooled governance, since in the latter configuration the four types of governance have no impact on the level of capital flight in the long run.

All these figures, which confirm the empirical literature on direct effects, show, however, that governance factors remain rather indecisive in general, and these results may be due in part to the lack of reliable measures for these factors. However, it is more than important to keep in mind that Côte d'Ivoire, Niger, Burkina Faso, and Senegal have an interest in fostering an environment of improved political governance to stem the perpetual capital flight that is severely damaging their economies.

## II. CONCLUSION

The paper measured the magnitude of capital flight and the results show that over the period 1970 to 2016, capital flight from the WAEMU is estimated by the World Bank's residual measure at $58,655.28 million constant dollars. The study also shows that the net trade imbalance has significantly reduced the amount of capital flight and has contributed to total capital inflows to some countries in the WAEMU.

Following this logic, the objective of this paper is to study the effect of governance on capital flight through the association and dissociation of governance components. Using data on WAEMU countries, we constructed a cylindrical database comprising eight (8) countries observed over the period 1996 to 2016. The countries were then divided into two groups, namely the group of countries with positive capital and the second group of countries with negative capital flight.

Given the results for all WAEMU countries, the results disaggregated in terms of the two groups of countries provide more precision and suggest that much remains to be done to improve governance standards to mitigate capital flight.

In general, capital flows from Western countries (supporting the Washington Consensus) that are based on preconditions in the economy such as respect for human rights and improved democratic standards, in contrast, capital flows from China (advocating the Beijing model) based on the principle of conditionality, essentially supports a non-interference foreign policy (Kolstad & Wiig, 2011; Lin & Farrell, 2013). Thus, the results can be further elucidated with the differences between the two dominant models of development, namely the Washington Consensus (which prioritizes political governance) and the Beijing model (which prioritizes economic governance). The Washington Consensus priority is more effective in the long run for countries with positive leakages in the WAEMU.

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## APPENDICES

**Appendix A. Definition of variables and data sources, the effects of governance on capital flight.**

| Variables | Définition | Source |
|---|---|---|
| | **Dependent variable** | |
| Capital Flight (FCR) | Ratio of real capital flight to GDP | The author's calculations using data from: World Bank, Global Development Finance 2017 ; World Development Indicators 2017; Africa Development Indicators 2017; IMF, International Financial Statistics 2011; IMF, Balance of Payments Statistics 2011; IMF, Direction of Trade Statistics 2011; IMF, Selected Issues and Statistical Appendix (in www.imf.org). |
| | Indépendantes Variables | |
| Economic growth (CROIS) | Real GDP Growth Rate | World Bank, World Development Indicators 2017 |
| Foreign Direct Investment (FDI) | Foreign Direct Investment to GDP in% | World Bank, World Development Indicators 2017 |
| Inflation (INF) | Annual change in the consumer price index (CPI) | World Bank, World Development Indicators 2017 |
| External Debt (DET) | Stock of Total External Debt (DET) as % of GDP | World Bank, World Development Indicators 2017 |
| Official Development Assistance (ODA) | Official Development Assistance as % of GDP | Africa Development Indicators 2017 |
| Falsification of commercial transactions (FLS) | Falsification of commercial transactions % of GDP | Author calculations using data from the World Bank, World Development Indicators 2017; IMF, International Financial Statistics 2017; IMF, Balance of Payments Statistics 2017; IMF, Direction of Trade Statistics 2017. |
| | **Variables of interest** | |
| Political stability (PS) | Perceived likelihood that the government will be destabilized or overthrown by unconstitutional and violent means, including domestic violence and terrorism | Polity IV database, World Bank, World Development Indicators 2017. |
| Voice and Responsibility (VR) | The extent to which the citizens of a country can participate in the selection of their government, freedom of expression, freedom of association and freedom of the press | Polity IV database, World Bank, World Development Indicators 2017. |

*Notes:* Author

**Appendix A. (continued): Definition of variables and data sources, the effects of governance on capital flight (Continued)**

| Variables | Définition | Source |
|---|---|---|
| | **Variables of interest** | |
| Political governance (Polgov) | First main components of political stability and voice and accountability. The process by which those in authority are selected and replaced. | PCA |
| Government Effectiveness (EG) | the quality of public services, the quality and degree of independence from political pressures of the civil service, the quality of policy formulation and implementation, and the credibility of government commitments with respect to these policies | Polity IV database, World Bank, World Development Indicators 2017 |
| Regulatory Quality (RQ) | the government's capacity to formulate and implement sound policies and regulations enabling and encouraging private sector development | Polity IV database, World Bank, World Development Indicators 2017. |
| Gouvernance économique (Ecogov) | The first main component of government efficiency and regulatory quality. The government's capacity to formulate and implement policies and deliver services. | PCA |
| Rule of Law (ED) | captures perceptions of the extent to which officers trust and abide by the rules of society, including the quality of contract enforcement, property rights, the police, the courts, and the likelihood of crime and violence | Polity IV database, World Bank, World Development Indicators 2017. |
| Corruption Control (CC) | perceptions of the degree of exercise of public power for private gain, including minor and major forms of corruption, as well as the "capture" of the state of elites and private interests | Polity IV database, World Bank, World Development Indicators 2017 |
| Institutional governance (Instgov) | First main components of the rule of law and the fight against corruption. Respect for citizens and the state of the institutions that govern interactions between them. | PCA |
| General Governance (GG) | first main component of political, economic and institutional governments | PCA |

*Notes:* Author

## Appendix B.

**Table 8. Result of the estimations using the dynamic fixed effects method in the countries of the WAEMU zone**

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Return force | **-1.09** | **-1.1** | **-1.03** | **-1.11** | **-1.08** | **-1.00** | **-1.41** | **-1.41** | **-1.41** | **-1.40** |
| | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** |
| INF | 0.2 | 0.14 | 0.19 | 0.28 | 0.256 | 0.22 | -0.09 | -0.02 | -0.07 | -0.07 |
| | (0.50) | (0.55) | (0.3) | (0.23) | (0.32) | (0.33) | (0.71) | (0.91) | (0.77) | (0.77) |
| CROIS | -0.43 | 0.47 | 0.43 | -0.8 | -1.04 | 0.19 | -0.23 | 0.148 | -0.47 | -0.27 |
| | (0.76) | (0.76) | (0.72) | (0.53) | (0.50) | (0.84) | (0.85) | (0.89) | (0.71) | (0.83) |
| DET | - | - | - | - | - | - | **-0.16** | -1.46 | **-0.17** | **-0.16** |
| | | | | | | | **(0.09)*** | (0.14) | **(0.08)*** | **(0.09)*** |
| IDE | - | - | - | - | - | - | **-1.42** | **-1.23** | **-1.44** | **-1.44** |
| | | | | | | | **(0.04)*** | **(0.07)*** | **(0.03)*** | **(0.04)*** |
| FLS | **0.89** | **0.88** | **0.89** | **0.89** | **0.90** | **0.89** | **0.89** | **0.89** | **0.898** | **0.89** |
| | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00) *** ** | **(0.00) *** ** |
| APD | | | | | | | -0.55 | -0.49 | -0.53 | -0.54 |
| | | | | | | | (0.53) | (0.56) | (0.54) | (0.53) |
| PS | -0.37 | - | - | - | - | - | - | - | - | - |
| | (0.96) | | | | | | | | | |
| VA | - | - | - | - | - | - | - | - | - | - |
| | | (0.22) | | | | | | | | |
| EG | - | - | -12.73 | - | - | - | - | - | - | - |
| | | | (0.36) | | | | | | | |
| QR | - | - | - | 36.78 | - | - | - | - | - | - |
| | | | | (0.10) | | | | | | |
| ED | - | - | - | - | 11.32 | - | - | - | - | - |
| | | | | | (0.51) | | | | | |
| CC | - | - | - | - | - | -0.52 | - | - | - | - |
| | | | | | | (0.69) | | | | |
| Plgov | - | - | - | - | - | - | 0.27 | - | - | - |
| | | | | | | | (0.94) | | | |
| Ecogov | - | - | - | - | - | - | - | 1.66 | - | - |
| | | | | | | | | (0.74) | | |
| Instgov | - | - | - | - | - | - | - | - | 2.11 | - |
| | | | | | | | | | (0.62) | |
| GG | - | - | - | - | - | - | - | - | - | 0.914 |
| | | | | | | | | | | (0.76) |
| constante | -10.94 | -16.30 | -23.65 | 5.79 | -5.69 | -16.63 | 37.44 | 24.90 | 36.02 | 34.77 |
| | (0.69) | (0.52) | (0.24) | (0.83) | (-56.11) | (0.43) | (0.26) | (0.44) | (0.27) | (0.29) |

*Note:* Figures in parentheses denote standard deviations. ***, ** And * indicate the significance of 1%, 5% and 10% respectively.

**Table 9. Result of the estimations using the dynamic fixed effects method for the two groups of countries**

| **Variables** | (1) | | (2) | | (3) | |
|---|---|---|---|---|---|---|
| | FN[1] | FP[2] | FN | FP | FN | FP |
| Return force | **-1.22** | **-0.74** | **-1.22** | **-0.79** | **-1.29** | **-0.67** |
| | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** |
| INF | 0.195 | 0.00 | 0.033 | 0.380 | -0.22 | 0.29 |
| | (0.66) | (0.99) | (0.93) | (0.12) | (0.53) | (0.35) |
| CROIS | -3.69 | 2.16 | -2.93 | 2.11 | -1.39 | 0.59 |
| | (0.20) | (0.09) | (0.35) | (0.07) | (0.59) | (0.68) |
| FLS | **0.88** | 0.214 | **0.86** | **0.85** | **0.829** | 0.588 |
| | **(0.00)*** ** | (0.57) | **(0.00)*** ** | **(0.01)** ** | **(0.00)*** ** | (0.16) |
| Gouvernance | 4.88 | **-18.44** | -5.55 | **-33.35** | **-51.78** | 0.678 |
| | (0.61) | **(0.02)*** | (0.82) | **(0.01) ** ** | **(0.05)*** | (0.98) |
| PS | 4.88 | **-18.44** | - | - | - | - |
| | (0.61) | **(0.02)*** | | | | |
| VA | - | - | -5.55 | **-33.35** | - | - |
| | | | (0.82) | **(0.01) ** ** | | |
| EG | - | - | - | - | **-51.78** | 0.678 |
| | | | | | **(0.05)*** | (0.98) |
| constante | 1.52 | -12.76 | 11.66 | **-39.75** | -28.95 | -15.10 |
| | (0.97) | (0.47) | (0.78) | **(0.052)*** | (0.52) | (0.50) |

*Note:* Figures in parentheses denote standard deviations. ***, ** And * indicate the significance of 1%, 5% and 10% respectively.
- FN: WAEMU countries with negative capital flight
-FN : WAEMU countries with positive capital flight

**Table 9. Result of the estimations using the dynamic fixed effects method for the two groups of countries(Continued)**

| **Variables** | (4) | | (5) | | (6) | |
|---|---|---|---|---|---|---|
| | FN | FP | FN | FP | FN | FP |
| Return force | **-1.24** | **-0.69** | **-1.21** | **-0.629** | **-1.25** | **-0.65** |
| | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** |
| INF | 0.219 | 0.400 | 0.19 | 0.326 | -0.25 | 0.21 |
| | (0.57) | (0.15) | (0.69) | (0.29) | (0.55) | (0.54) |
| CROIS | -2.94 | 1.44 | -3.57 | 0.54 | -1.83 | 1.06 |
| | (0.27) | (0.26) | (0.22) | (0.73) | (0.49) | (0.53) |
| FLS | **0.88** | 0.385 | **0.88** | **0.93** | **0.831** | 0.69 |
| | **(0.00)*** ** | (0.32) | **(0.00)*** ** | **(0.02)** | **(0.00)*** ** | (0.11) |
| Gouvernance | 38.55 | -7.68 | 15.13 | -10.41 | -43.28 | -5.98 |
| | (0.45) | (0.74) | (0.67) | (0.58) | (0.29) | (0.74) |
| QR | 38.55 | -7.68 | - | - | - | - |
| | (0.45) | (0.74) | | | | |
| ED | - | - | 15.13 | -10.41 | - | - |
| | | | (0.67) | (0.58) | | |
| CC | - | - | - | - | -43.28 | -5.98 |
| | | | | | (0.29) | (0.74) |
| constante | 27.73 | -30.17 | 14.44 | -20.21 | -3.05 | -13.33 |
| | (0.53) | (0.17) | (0.73) | (0.35) | (0.94) | (0.53) |

*Note:*Figures in parentheses denote standard deviations. ***, ** And * indicate the significance of 1%, 5% and 10% respectively.

**Table 10. Result of the estimations using the dynamic fixed effects method for the two groups of countries (continued)**

| Variables | Polgov | | Ecogov | | Instgov | | GG | |
|---|---|---|---|---|---|---|---|---|
| | FN | FP | FN | FP | FN | FP | FN | FP |
| Return force | **-1.64** | **-1.04** | **-1.65** | **-1.09** | **-1.59** | **-1.06** | **-1.57** | **-1.08** |
| | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** |
| INF | -0.04 | -0.21 | -0.16 | -0.18 | -0.09 | -0.33 | -0.15 | -0.29 |
| | (0.93) | (0.32) | (0.646) | (0.39) | (0.85) | (0.1) | (0.75) | (0.16) |
| CROIS | -1.61 | 1.08 | -0.79 | 0.67 | -0.81 | 0.89 | -0.66 | 0.68 |
| | (0.52) | (0.27) | (0.70) | (0.46) | (0.73) | (0.34) | (0.79) | (0.49) |
| DET | -0.115 | -0.24 | -0.06 | -0.22 | -0.13 | -0.28 | -0.13 | -0.27 |
| | (0.40) | (0.16) | (0.66) | (0.19) | (0.34) | (0.08) | (0.34) | (0.10) |
| IDE | -0.68 | **-1.50** | 0.06 | **-2.0** | -0.68 | **-2.09** | -0.39 | **-1.97** |
| | (0.64) | **(0.03)*** | (0.96) | **(0.00)*** ** | (0.66) | **(0.00)*** ** | (0.79) | **(0.00)*** ** |
| FLS | **0.90** | **0.47** | **0.87** | **0.41** | **0.89** | **0.64** | **0.89** | **0.57** |
| | **(0.00)*** ** | **(0.02)** ** | **(0.00)*** ** | **(0.03)** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)*** ** | **(0.00)** ** |
| APD | -0.59 | -1.51 | -0.32 | -1.55 | -0.51 | -2.09 | -0.43 | -2.02 |
| | (0.66) | (0.12) | (0.79) | (0.11) | (0.70) | (0.02) | (0.76) | (0.03) |
| Polgov | 1.60 | -3.51 | - | - | - | - | - | - |
| | (0.79) | (0.38) | | | | | | |
| Ecogov | - | - | -8.28 | 0.30 | - | - | - | - |
| | | | (0.42) | (0.94) | | | | |
| Instgov | - | - | - | - | 1.38 | -2.19 | - | - |
| | | | | | (0.91) | (0.47) | | |
| GG | - | - | - | - | - | - | -0.64 | -1.36 |
| | | | | | | | (0.92) | (0.58) |
| constante | 40.30 | 42.72 | 35.43 | 42.04 | 42.58 | 64.57 | 48.25 | 61.74 |
| | (0.53) | (0.15) | (0.51) | (0.19) | (0.50) | (0.02) | (0.43) | (0.04) |

*Note:* Figures in parentheses denote standard deviations. ***, ** And * indicate the significance of 1%, 5% and 10% respectively.