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**EXTERNAL FINANCIAL INFLOWS AND  
DOMESTIC INVESTMENT IN THE  
ECONOMIES OF WAEMU: CROWDING-OUT  
VERSUS CROWDING-IN EFFECTS**

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**ABSTRACT**

This paper analyzes the effects of capital inflows on domestic investment in the Economic and Monetary Union of West Africa (WAEMU). The WAEMU countries are Benin, Burkina Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal, and Togo. Several studies have examined the conditions of attracting foreign capitals and their contributions to economic growth in sub-Saharan economies of WAEMU. However, very few studies have examined the effects of capital on domestic investment in national economies. In this respect, there are three types of foreign capital to be taken into account namely Foreign Direct Investment (FDI), Official development Assistance (ODA) and Migrants Remittances (MR). FDI, ODA and MR are major sources of external capital flows in developing countries. The current empirical study is based on the theoretical model of Agosin and Mayer (2000) to test the hypothesis of crowding-out and crowding-in of domestic investments by different types of foreign capitals considered. The econometric estimates are based on the GMM method of Arellano and Bond (1991) applied to a panel of WAEMU countries over the period 1996-2011. The results of the study show that FDI crowds-out domestic firms in both the short and long term. Similarly, ODA have a lasting crowding-out effects on local investment. As for migrants' remittances, the econometric results show that they do not have a significant effect on domestic investment in the countries of the union. These findings imply that the host countries of the WAEMU should invest more on developing their absorptive capability to attract technology transfer oriented FDI, channel the ODA to develop vital infrastructure for rapid economic development and create conducive environment for the MR to divert towards productive investments to create more crowding-in effects in lieu of the crowding-out effects. Practically, the results of this study show that multinationals have a lasting crowding-out businesses in the WAEMU region. This is mainly due to the low technological absorption capacity of local firms and the lack of complementarity between local enterprises and multinational companies. Several future research on capital flows will better appreciate the impact of foreign investment on the economies of developing countries especially those in Africa.

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**Keywords:** investment, crowding-out, crowding-in, WAEMU

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## INTRODUCTION

Developing countries, particularly African countries face the problem of financing their economies, often with insufficient domestic resources (Rodríguez, 2013). To overcome this deficiency and to promote long-term development, economic strategies that advocate policy makers at national, regional and international levels put emphasis on external financial inflows. Thus, African countries strive to provide a legal, political and economic platform to attract foreign capital. Accordingly, the financial flows to Africa has risen sharply since the '80s (Bagnai, Rieber, & Tran, 2015; Suzuki, 2004). Sub-Saharan African countries including those of the WAEMU have special characteristics such as important informal sector, institutional weakness, embryonic basic industries etc. This situation makes the analysis of the relationship between foreign capital and domestic investment, a major theoretical and empirical challenge (Makhlouf & Mughal, 2011).

The technological progress in transport and communication have led to major changes in international economic relations (Wallerstein, 2011). The main architects of the globalization process are undoubtedly MNCs whose contribution to internationalization is seen among others through mergers, acquisitions and relocations by integrating into the new global division of labor (NGDL). These operations generate important capital flows that have affected national economies differently. Capital flows to developing countries have experienced a considerable growth since the beginning of the '80s. But the type of flows has changed completely from banking sources to non-banking sources such as portfolio investments and FDI (Agénor, 2003). Similarly, the African continent has also observed positive capital inflows following adopting economic policies for attracting external investments. These flows have changed the nature of capital inflows towards private capital especially FDI and portfolio investment. The West Africa was the first beneficiary of the capital inflows in sub-Saharan region. Numerous data show that developing countries including sub-Saharan economies have benefited from substantial external financial inflows in the recent years (Ezeoha, 2013).

According to Golub (2009), FDI flows to Africa in 2008 have been estimated at \$ 88 billion, which is a new record for the region despite the global economic and financial crisis. Among these FDI flows almost a third had the destination in Southern Africa. The highest growth rate (63%) was observed in the countries of West Africa. In addition, the latest data from the Development Assistance Committee (DAC) of the OECD indicate that ODA towards Africa increased from USD 47.9 billion in 2010 to 51.2 billion in 2011.

Furthermore, the amount of remittances by migrants to developing countries in 2010 is estimated at 325 billion dollars, 56.9 billion to developing countries in Africa and the Middle East (Adams Jr & Cuecuecha, 2013). Thus, MR towards Africa has shown strong growth during the last decade. They are estimated at approximately \$ 40 billion in 2010; almost double the 2005 level and four times that of 2000. At the WAEMU, the amount of funds received from migrant workers has also quadrupled between 2000 and 2011. Given the important inflows of foreign capital into the economies of WAEMU, the interactions of this capital with local investments and economic development deserve to be explored. In fact, the neo-liberal theories reinforced by the theory of endogenous growth highlight the positive effects of foreign capital inflows on domestic investment. The international capital investments facilitate access to new technologies, create jobs

and stimulate local industries through spillover effects. However, the net benefits of foreign capital are not automatic, and scale differs depending on the host country and context. Among the factors that prevent these capital fully bear fruit in some developing countries are generally low levels of education and health, the low-tech local industries, and inadequate regulatory frameworks, etc. (Bassett, 2014).

In the specific case of WAEMU economies, what are the effects of external financial flows on local investments? In particular, what are the influences of remittances of migrants, ODA and FDI on domestic investment in countries of the sub-region? The answers to these questions are still important because the investment is the engine of growth. The objective of this study is to analyze the effects of capital inflows (FDI, ODA, remittances from migrants) on domestic investment in the WAEMU countries.

This study aims to contribute to elucidation of the influence of foreign capital on domestic investment in the countries of the WAEMU. This work consists to three sections. The first section introduces the problem addressed by the study objective and research hypotheses and a review of literature on the subject. The second deals with the methodology adopted in the context of hypothesis testing research. Finally, the last section is devoted to the presentation and analysis of empirical results as well as contributions for improvement of the externalities generated by the external financial flows in the WAEMU countries.

## **CAPITAL INFLOWS AND LOCAL ECONOMY**

### **FDI and domestic investment: crowding-out or crowding-in effects**

#### **The crowding-out effects and Crowding-in effect**

FDI can have crowding-out effects on local businesses, which is likely to inhibit growth, increase unemployment and further marginalize the poor (Brown, Connell, & Jimenez-Soto, 2013). Crowding out effects may be the result of three different mechanisms: micro-economic, macroeconomic and institutional.

From a microeconomic perspective, MNCs can oust local businesses with their technological superiority, higher managerial and financial abilities. In this case, FDI can create barriers to entry for small local firms (Agosin & Mayer, 2000). Macroeconomic mechanism is observed when MNCs are engaged in exploitation of natural resources. Indeed, the economic literature shows that the foreign investments in mineral resource exploitation can create disadvantage comparable to “Dutch disease”(Lewis, 2013) for local non-mineral resource sectors such as manufacturing. Thus, the increase in exports of natural resources implies a spending effect, an increase in the real effective exchange rate, which indicates a loss of competitiveness of other non-extractive tradable sectors (Bruhn, Karlan, & Schoar, 2010). The economic literature shows that when countries with poor institutions receive substantial FDI flows through the exploitation of their natural resources, they may face political and economic distortions due to the monopolization of the rents by elites. These institutional distortions create barriers to the emergence of new sectors of economic growth such as manufacturing. Therefore, FDI, strengthening poor governance, contribute indirectly to the crowding-out of domestic investment (Bruhn et al., 2010).

FDI may have stimulatory effects on local investment, which is likely to promote long-term growth, job creation and poverty reduction. The stimulus may go through three main channels. First, the competition between MNCs and local firms is likely to improve the factors' productivity. This competition is an economic mechanism of selection of the most productive firms. Even though some local businesses are squeezed out in the short-term, however, in the long run, new firms appear to offset the initial negative effect. In this context, technology transfer from MNCs to the local economy can help increase overall productivity (Elujoba et al., 2014). Second, the MNCs can build new markets. The superiority of MNCs in Quality and productivity can influence local businesses to improve the quality of their products. The enlarged and improved market can now attract more new local investors and can changes the informal sectors to formal sectors (Sonobe, Akoten, & Otsuka, 2011). Thirdly, foreign direct investment may promote domestic investment and reduce the constraints inherent to the investment climate of the host country. Thus, FDI may also help improve physical infrastructure (Wallerstein, 2011).

#### **THE IMPACTS OF FDI IN THE HOST COUNTRY**

The impacts of FDI in host countries have been the subject of an extensive literature (Table 1). Studies focus particularly on the effects of FDI on technology transfer, training of human capital capable of mastering these technologies, exports and foreign trade. However, Albino, Carbonara, and Giannoccaro (2005) finds that the entry of FDI is not necessarily beneficial to the host country.

**TABLE 1. THE IMPACT OF FDI IN THE HOST COUNTRY**

	<b>Technology transfer</b>	<b>Human capital</b>	<b>Exports and foreign trade</b>
<b>Crowding-in effects</b>	Diffusion of technical progress by spillovers (Albino et al., 2005; Amara, Landry, Becheikh, & Ouimet, 2008; Gadille, Méhaut, & Courault, 2013).	Training local employees of subsidiaries and imitation effects in the industrial sector (Carbonara & Tavassoli, 2013; Gordon & McCann, 2005)	MNC encourages domestic firms to export and improve their efficiency (Castells, 2011)
	Acquisition of new knowledge (Carbonara & Tavassoli, 2013; Görg & Strobl, 2005)	Reinforcement of educational institutions of the host country (Benko & Collignon, 2005; Schumpeter & Perroux, 1935)	Creation of local small businesses export-oriented (Landry, Amara, Pablos-Mendes, Shademani, & Gold, 2006)
	Improvement of technological innovation and managerial skills (Becattini, 2004; Litzenger & Sternberg, 2005)		“Virtual foreign enclaves” within the host country (Maillat, 1995)
<b>Crowding-out effects</b>	Negative externalities when the foreign firm with superior technology forces (competition effect or business-stealing effect (Rotunno, Vézina, & Wang, 2013).	Privatization and unemployment (Mohan, 2013)	Extensive power and ownership-specific advantage higher than domestic advantage (Awadzi, 2013; Fennell, 2013)
		Impediment of administrative capabilities (Busse, Königer, & Nunnenkamp, 2010).	Abundance of resources and poor economic performance (Ovadia, 2013; Tan-mullins & Mohan, 2013).

*Source: Created by the Authors from the Literature*

The author divides his sample of countries into two: the group of “leaders” who introduce technological innovations (developed countries) and the group of developing countries that import technologies from developed countries. The effects of FDI are generally positive on production in the two groups of countries. The effects are also positive on total factor productivity (TFP) in developed countries but negative contrast on productivity in developing countries. This result is explained by the fact that the follower

countries are only using new technology without real absorption and sometimes without adequate training to use them. The table below displays the different effects of FDI on the components of local economy.

*Hypothesis 1: FDI exert creative destruction on domestic investment through a foreclosure short-term and long-term stimulation in the WAEMU countries*

#### **MIGRANT REMITTANCES (MR) AND DOMESTIC INVESTMENT**

The MR has a direct impact on investment through entrepreneurship (Table 2).

**TABLE 2. THE IMPACTS OF MR ON DOMESTIC INVESTMENT**

	<b>Crowding-in effects of MR</b>	<b>Crowding-out effects of MR</b>
<b>Domestic investment</b>	The decision to become an entrepreneur is made based on the potential salary for work on the domestic labor market (Bodley, Bruch, Ralijaona, & Sithole, 2013).	RM may cause an increase in demand for imported goods and discourage domestic investment (Ekperiware & Adepoju, 2013).
	Returned migrants and diaspora entrepreneurs impacted positively local businesses (Chrysostome & Lin, 2010).	MR may also cause inflation and reduce the competitiveness of domestic firms (Liu & Buck, 2007).
	RM have a positive impact on rural productivity (Dunning, 2013; Rugman, 2013).	Local communities that receive RM tend to develop a culture of dependency (Checchi, De Simone, & Faini, 2007).

*Source: Created by the authors from the literature*

These flows allow migrant families to create or fund primarily small businesses. These investments may take place during the period of migration and when migrants returned back to home permanently. Therefore, the effect of MR on entrepreneurship corresponds to logic of maximizing household income, motivated by altruism, but also by the investment pattern. Despite this stimulatory effect of MR on domestic investments, the influx of MR encourages migration and disinherits national economies of skilled labor, which tends to increase the cost and rarity of skilled labor force for local businesses.

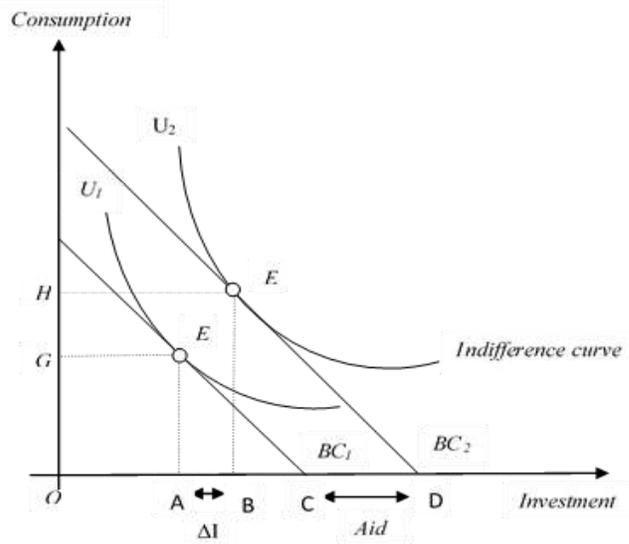
*Hypothesis 2: The remittances from migrants stimulate domestic investment in both the short and long term in the WAEMU zone.*

### OVERSEAS DEVELOPMENT AID (ODA) AND DOMESTIC INVESTMENT

The impact of foreign aid on domestic investment is a phenomenon studied in the economic literature on international aid. Several empirical analyzes (Ratha & Mohapatra, 2009) showed that international aid encourages consumption than investment. The reason most often cited to explain such a phenomenon is the diversion of aid from its original purpose. Aid funds do not go only for investment, and partly would indeed be diverted for other purposes such as financing of final consumer goods and corruption. According to and Sandefur (2006), foreign aid strengthens domestic investment (health or education) and frees local resources that the government can use at will in other projects and increase consumption. This is commonly referred to as the "fungibility" of international aid. The figure (1) below illustrates this phenomenon.

We assume that the government of the recipient country's budget allocates two types of goods: a good for final consumption and investment. Suppose further that the government has a preference for the commodity. However, it must meet a minimum level of investment in the country to avoid the discontent of the population. Under these conditions, at equilibrium, the government allocates to investment, the exact amount necessary to prevent popular discontent and the rest of the budget will be devoted to the welfare of final consumption. This situation is shown on the figure above by point E1. The Government allocates [OA] to the asset and [OG] to commodity. It is thus the indifference curve  $U_1$ . A "benefactor" institution then offers to help poor countries. It gives her this aid amount [CD] for financing the investment. The government budget constraint shifts from  $BC_1$  to  $BC_2$ . How then will increase the volume of investment property?

**FIGURE 1 ILLUSTRATION OF AID FUNGIBILITY (SOURCE: DEVELOPED BY THE AUTHORS).**



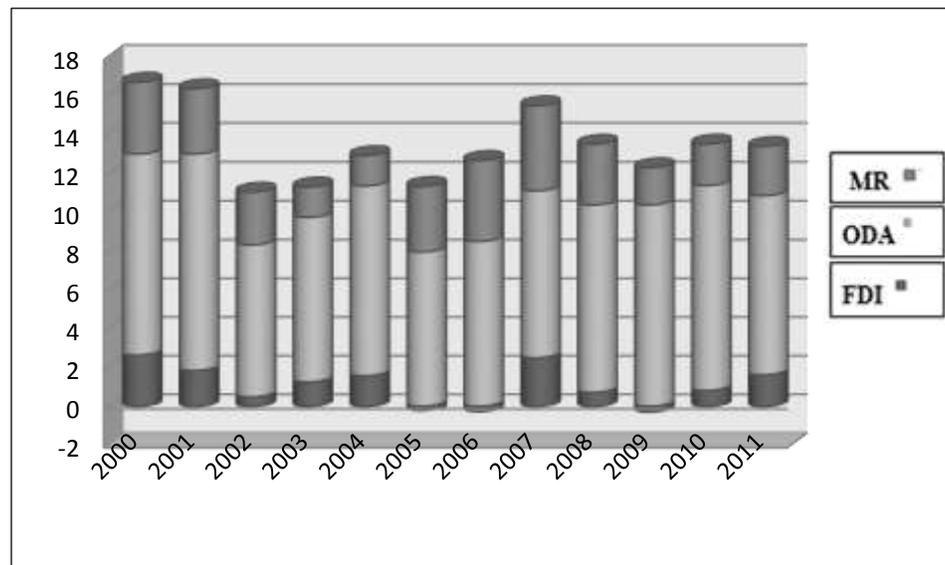
As the figure 1 shows, the volume of investment will increase by less than the amount of aid received. This occurs even if the donor ensures that all aid is devoted to investment. One can indeed imagine if the aid is not in cash but in kind (sending textbooks). In this case, the government of the recipient country with a preference for the good of final consumption will simply readjust the allocation of its domestic resources in order to maximize its usefulness. A certain amount of its budget (here [GH]), which was originally dedicated to the asset will now be allocated to the welfare of final consumption. It will thus find the equilibrium point E2. Although all the help received is invested in increasing the volume of investment (here  $\Delta I = [AB]$ ) will be less than the aid received (here [CD]). Thus, in our example, the aid is not diverted from its original purpose (investment), but ousted domestic investment: this is the "fungibility" of aid. Allocation of international aid affects not only the budget constraint of the recipient country, but also the relative prices between goods.

***Hypothesis 3: Public development aid crowd out domestic investment in both the short and long term in the WAEMU***

#### **DISTRIBUTION OF EXTERNAL FINANCIAL INFLOWS IN THE WAEMU**

The WAEMU attracts several types of foreign capital that ODA, FDI and MR (Figure 2).

**FIGURE 2: DISTRIBUTIONS OF FOREIGN CAPITAL INFLOWS IN THE WAEMU (% GDP) (SOURCE: DEVELOPED BY THE AUTHORS BASED ON WDI).**



These foreign capitals affect differently the recipient countries in the sub-Saharan region through their influence on different sectors of the economy. But this influence depends on the proportion that the capital involved in the gross domestic product of the country. Over the period 2000-2011, public aid for development occupies a relatively larger share in GDP of the countries of WAEMU. The figure 2 above displays the balance of ODA in the GDP of the WAEMU area countries.

## RESEARCH METHODOLOGY

### The Theoretical Model

This study follows the model of Agosin and Mayer (2000). Indeed, the authors define domestic investment as a capital accumulation process that is based on adaptive behaviors involving dynamic adjustments and corrections. These adaptations depend on its current and past achievements of other economic factors. They developed a theoretical model that explains the relationship between domestic investment and foreign investment. The initial premise of this model is based on the idea that domestic investment ( $I_{i,t}$ ) is the sum of local investments ( $LI_{i,t}$ ) and real foreign investment ( $RFI_{i,t}$ ):

$$I_{i,t} = LI_{i,t} + RFI_{i,t} \quad (1)$$

Local investment ( $LI_{i,t}$ ) is a fitting function between the desired capital stock and the existing capital stock. Thus, the desired stock depends itself, on the expected growth that follows an adaptive adjustment process incorporating its earlier statements. As regards the real capital stock, it depends on the depreciation rate of capital and the real domestic investment in the previous year. Local investment can be modelled as follows:

$$I_{i,t} = \theta(K_{i,t}^* - K_{i,t}) \quad (2)$$

Where  $K_{i,t}^*$  represents the capital stock desired by domestic firms, and  $\theta < 1$ .

The real foreign investment ( $RFI_{i,t}$ ) is a function of FDI. It is a proportion of current FDI and past FDI whose actual realization occurs only after a certain time of financial achievement. The equation explaining that lagged adjustment is written as follows:

$$RFI_{i,t} = \gamma_0 FDI_{i,t} + \gamma_1 FDI_{i,t-1} + \gamma_2 FDI_{i,t-2} \quad (3)$$

Based on these hypotheses, Agosin and Mayer (2000) construct a theoretical model explaining the relationship between domestic investment, economic growth and FDI. This model leads to the following equation:

$$I_{i,t} = \alpha_i + \beta_1 FDI_{i,t} + \beta_2 FDI_{i,t-1} + \beta_3 FDI_{i,t-2} + \beta_4 I_{i,t-1} + \beta_5 I_{i,t-2} + \beta_6 G_{i,t-1} + \beta_7 G_{i,t-2} + \varepsilon_{i,t} \quad (4)$$

Where

$I_{i,t}$  is the domestic investment of country  $i$  in year  $t$ .

$FDI_{i,t-j}$  are the FDI of country  $i$  in year  $t - j$ , with  $j$  between 0 and 2.

$G_{i,t-j}$  is the economic growth of country  $i$  in year  $t - j$ , with  $j$  between 0 and 2.

$\varepsilon_{i,t}$  is the error term relative to country  $i$  in year  $t$ .

This model is an appropriate development of our theoretical econometric model. However, it does not introduce the effects of instrumental variables on domestic investment. These variables may in particular represent the specific characteristics of WAEMU countries such as institutional, financial, geographical, human and physical constraints.

### The Empirical Model

We adapt the function (4) for the region of study to estimate the effect of different types of foreign capital such as MR, ODA and FDI on domestic investment in WAEMU countries. To this end, we add a matrix of instrumental variables that represent the specificities of WAEMU countries. In addition, we reduce the number of lags applied to foreign capital and domestic investment to limit the loss of information. The estimation strategy adopted is to separately estimate the effect of MR, ODA and FDI on domestic investment in the WAEMU. The model to be estimated is then as follows:

$$DInv_{i,t} = \alpha_i + \lambda_1 DInv_{i,t-1} + \lambda_2 FCF_{i,t} + \lambda_3 FCF_{i,t-1} + \alpha_k X'_{i,j,k} + \gamma_k Y'_{i,j,k} + \varepsilon_{i,t} \quad (5)$$

In this equation we can distinguish three groups of explanatory variables of domestic investment:

- The first group as shown in the theoretical model of Agosin and Mayer (2000), contains lagged domestic investments  $DInv_{i,t-1}$ , current foreign capital flows  $FCF_{i,t}$  and lagged foreign capital flows  $FCF_{i,t-1}$ . In our various estimates, the variable  $FCF$  will be replaced by its components that are  $MR$  flows  $ODA$  flows and  $FDI$  flows ( $FDI$ ) to estimate separately their influence on domestic investment.
- The second group of variables  $X'_{i,j,k}$  contains variables directly related to the domestic investment process and may be endogenous. As such, we estimate the effects of growth, trade openness, effective exchange rate, exports of natural resources and education.
- The third group of explanatory variables  $Y'_{i,j,k}$  contains variables supposed to be strictly exogenous and/or predetermined. Thus, infrastructures, bank credit, and institutional variables are part of this group of explanatory variables.

### Testing for Crowding-in or Crowding-out Effects

The estimation of the equation (5) permits to find out the effects of foreign capital on domestic investment at different time horizons. In this regard, the short-term effects of external capital are given by the value and significance of their coefficient in the regressions. The long-term effects are deduced using the following coefficient:

$$\lambda_{LT} = \frac{\lambda_2 + \lambda_3}{1 - \lambda_1} \quad (6)^1$$

With  $\lambda_{LT}$  the long term coefficient of the explanatory variable FCF (MR, ODA or FDI according to the type of capital included in each regression).  $\lambda_2$  is the current foreign capital coefficient ;  $\lambda_3$  is the lagged foreign capital coefficient and  $\lambda_1$  is the lagged domestic investments coefficient.

The value and significance of  $\lambda$  of short and long term permit to qualify the impact of international capital on domestic investment. Thus, we can distinguish three cases:

- If  $\lambda$  is significant and greater than 1, then the external capitals have a crowding-in effect on domestic investment. Therefore, domestic investment increases more proportionally than foreign capitals.
- If  $\lambda$  is significant and less than 1, then the external capitals have a crowding-out effect on domestic investment. Whereof, domestic investment increases less proportionally than foreign capitals.

If  $\lambda$  is significant and equal to 1, then the effect of international capital on domestic investments is neutral. Thus, domestic investment increases proportionally with foreign capitals.

On the whole, if we exclude the neutral effect, we can distinguish four cases depending on the nature and time horizon of the effect of foreign capital on domestic investment. The following table summarizes the different possible cases.

**TABLE 3: EXTERNAL CAPITAL EFFECTS ON DOMESTIC INVESTMENT**

	<i>Short term coefficient</i>	<i>Long term coefficient</i>	<i>Effect nature</i>
<i>1<sup>st</sup> case</i>	$\lambda_{ST} < 1$	$\lambda_{LT} > 1$	<i>Creative destruction</i>
<i>2<sup>nd</sup> case</i>	$\lambda_{ST} < 1$	$\lambda_{LT} < 1$	<i>Crowding-out</i>
<i>3<sup>rd</sup> case</i>	$\lambda_{ST} > 1$	$\lambda_{LT} > 1$	<i>Crowding-in</i>
<i>4<sup>th</sup> case</i>	$\lambda_{ST} > 1$	$\lambda_{LT} < 1$	<i>Transitory stimulation</i>

In the first case, we have a crowding-out effect in short term and a crowding-in effect in long term. The combination of those two effects is called "creative destruction effect". Thus, the destruction of local firms in short term is balanced by the creation of new firms more productive in long term. In the second case, we have a crowding-out

effect in short term and in long term. Thus, the destruction of local firms in short term continues in long term. In this case, foreign capitals lead to disinvestment in local sector that they compete. In the third case, we have a crowding-in effect in short term and in long term. Thus, external capitals stimulate domestic investment in short term but as well in long term. The last case has the opposite effect in the first case. Indeed, we have a crowding-in effect in short term and a crowding-out effect in long term. On the whole, we obtain a transitory stimulation effect. The destructive effects in long term exceed the initial stimulatory effects. Thus, the crowding-in effect in short term dissipates as external capitals increase.

## **EMPIRICAL ANALYSIS**

### **Data and Estimate Method**

The data used are annual data extracted from the World Bank database. Thus, all series are World Development Indicators. They cover the period 1996-2011. We built a balanced panel on the WAEMU countries for our econometrical analysis. Thus, we estimate a dynamic panel model to evaluate external financial flows effects on domestic investment. To this end, the Generalized Moments Method (GMM) is used to favor the analysis of dynamic adjustment.

### **Estimates Results**

Before any estimate, we test the unit root presence with each variable. To this end, we use the unit root tests on the basis of two hypotheses. The first one supposes that individuals of our panel are homogeneous (common unit root). It is illustrated in the test of Levin, Lin and Chu (2002). The second hypothesis implies that individuals are heterogeneous and have different unit roots. It is tested by Im, Pearson and Shin methods, ADF -Fisher and PP- Fisher. The unit root tests for the different variables are performed using Eviews7. The results indicate that the most of the variables in the different hypothesis presented above are stationary. However, some variables such as domestic investment, trade openness, credit, political stability and violence absence and migrant remittances are integrated of order 1 and therefore stationary in first difference.

In addition, the statistical robustness of the results depends on the validity of the specification tests, mainly, the over-identification test of Sargan and autocorrelation of 2nd order test. In our different regressions the Sargan test does not reject the null hypothesis of over-identification of the model. That validates the quality of instruments. As regard autocorrelation, tests do not reject the hypothesis of non-correlation of second order in all of the three regressions. That legitimizes the estimating equation in first differences under the hypothesis of initial perturbations independence. Thus, the specification tests validate the statistical exhaustiveness of the empirical model. That allows the interpretation of the coefficients of the explanatory variables. The results of the different estimates using stata11 are summarized in Table 4 below.

TABLE 4: ESTIMATES RESULTS

<i>Model with FDI</i>		<i>Model with ODA</i>		<i>Model with MR</i>	
<i>Variables</i>	<i>Coefficient</i>	<i>Variables</i>	<i>Coefficient</i>	<i>Variables</i>	<i>Coefficient</i>
<i>DInv (-1)</i>	- 0.42*** (- 5.37)	<i>DInv (-1)</i>	- 0.42*** (- 6.02)	<i>DInv (-1)</i>	- 0.40*** (-5.78)
<i>FDI</i>	- 0.17* (-1.92)	<i>ODA</i>	0.18** (2.14)	<i>MR</i>	-0.53 (-0.16)
<i>FDI (-1)</i>	0.16 (1.02)	<i>ODA (-1)</i>	- 0.14* (- 1.79)	<i>MR (-1)</i>	0.08 (0.28)
<i>EGR</i>	0.04 (0.34)	<i>EGR</i>	0.01 (0.10)	<i>EGR</i>	- 0.01 (- 0.12)
<i>TOR</i>	19.04*** (5.72)	<i>TOR</i>	18.17*** (5.81)	<i>TOR</i>	16.74*** (5.59)
<i>PSVA</i>	0.63 (0.82)	<i>PSVA</i>	0.31 (0.46)	<i>PSVA</i>	0.30 (0.45)
<i>CCont</i>	0.66 (0.50)	<i>CCont</i>	1.79 (1.29)	<i>ManEx</i>	0.04* (1.68)
<i>Credit</i>	0.07 (0.78)	<i>Credit</i>	0.07 (0.84)	<i>NREx</i>	0.04 (1.52)
<i>DomS</i>	0.31*** (4.00)	<i>RER</i>	0.41*** (3.85)	<i>RER</i>	0.63*** (6.12)
		<i>GEff</i>	- 1.66 (- 0.98)	<i>PavR</i>	0.12* (1.77)
		<i>PavR</i>	0.11 (1.50)		
<i>Sargan Test</i>	81.99 (0.14)	<i>Sargan Test</i>	87.24 (0.07)	<i>Sargan Test</i>	88.63 (0.06)
<i>Autocorrelation test</i>		<i>Autocorrelation test</i>		<i>Autocorrelation test</i>	
<i>1<sup>st</sup> order</i>	- 4.54 [0.00]	<i>1<sup>st</sup> order</i>	- 4.01 [0.00]	<i>1<sup>st</sup> order</i>	- 4.09 [0.00]
<i>2<sup>nd</sup> order</i>	- 0.99 [0.35]	<i>2<sup>nd</sup> order</i>	- 1.34 [0.18]	<i>2<sup>nd</sup> order</i>	- 0.66 [0.51]
<i>Number of observations :</i>	91	<i>Number of observations :</i>	91	<i>Number of observations :</i>	91
<i>Instruments :</i>		<i>Instruments :</i>		<i>Instruments :</i>	
<i>DInv (-2)</i>	<i>DomS(-1)</i>	<i>DInv(-2)</i>	<i>PavR(-1)</i>	<i>DInv(-2)</i>	<i>NREx(-1)</i>
<i>FDI(-1)</i>	<i>Credit(-1)</i>	<i>ODA(-1)</i>	<i>CCont(-1)</i>	<i>MR(-1)</i>	<i>TOR(-1)</i>
<i>FDI(-2)</i>	<i>EGR(-1)</i>	<i>ODA(-2)</i>	<i>PSVA(-1)</i>	<i>MR(-2) PavR(-1)</i>	<i>RER(-1)</i>
<i>TOR(-1)</i>		<i>Credit(-1)</i>	<i>EGR(-1)</i>	<i>1) PSVA(-1)</i>	<i>EGR(-1)</i>
<i>PSVA(-1)</i>		<i>TOR(-1)</i>	<i>GEff(-1)</i>	<i>ManEx(-1)</i>	
<i>CCont(-1)</i>		<i>RER(-1)</i>			

*Notes:* Between parentheses are indicated z statistics; [ ] indicates P-values  
 (\*) = significant at 10%; (\*\*) = significant at 5%; (\*\*\*) = significant at 1%

The estimates results show through the negative and significant coefficient of the lagged investments [INVD (-1)] that domestic investment is a dynamic but not cumulative process. Thus, an increase in investment of the previous year (t-1) of one point would reduce domestic investment in the current year (t) of 0.40 to 0.42 point in the WAEMU. Therefore, the domestic investment is a decreasing function of the stock of last investment.

### The Effects of FDI on Domestic Investment in the WAEMU

The model with FDI shows that the FDI coefficient is significant and negative. Therefore, FDI have a negative effect on domestic investment. Thus, an increase in FDI of one point implies a decrease in domestic investments of 0.17 point in short term. Therefore, FDI have a crowding-out effect on domestic investment in short term. This crowding-out effect is so important that the short term coefficient is negative. The FDI long term effect on domestic investment is calculated using the formula 6 presented above. The results are shown in table 5.

**TABLE 5: LONG TERM FDI EFFECTS ON DOMESTIC INVESTMENT<sup>2</sup>**

$DInv(-1)$	$[\lambda_1]$	- 0.42
$FDI$	$[\lambda_2]$	- 0.17
$FDI(-1)$	$[\lambda_3]$	0.16
$\lambda_{LT} = \frac{\lambda_2 + \lambda_3}{1 - \lambda_1}$		<b>- 0.01</b>

From these results, an increase in FDI of one point causes a decrease in domestic investments of 0.01 point in long term. This coefficient is less than 1 and moreover negative. That indicates a long term crowding-out effect. Thus, FDI have a crowding-out effect in short term and in long term on domestic investment. In other words, the presence of multinational firms in the WAEMU countries has a crowding-out effect on local firms in short term as well as in long term. Thus, the hypothesis of a creative destruction effect of FDI on domestic investment is set aside in favor of a sustainable destruction effect. Foreign firms have a persistent crowding-out effect on domestic firms in the WAEMU countries. These results are similar to those obtained by Lahimer (2009) with a panel of 42 Sub-Saharan African countries including those of the WAEMU.

This persistent crowding-out effect on local firms can be explained by their inability to contain competition imposed by foreign companies. Indeed, multinational firms have a technological, managerial and financial advantage allowing them to evict

domestic firms on market factors as well as on products on the market. Thus, the presence of these multinationals in WAEMU countries is not conducive to technology transfer to local firms. Indeed, domestic firms have a very low technological absorption capacity. In addition, foreign companies don't employ local labor in jobs which can permit them to attain knowledge and benefit from the learning effects. We can also explain this crowding-out effect by the lack of complementarity between local firms and foreign companies.

### **The Effects of ODA on Domestic Investment in the WAEMU**

The model with ODA shows that the ODA coefficient is significant and positive. Thus, ODA have a positive effect on domestic investment. Therefore, an increase in ODA of one point causes an increase in domestic investment of 0.18 point in short term. However, this coefficient is less than 1 and reflects a crowding-out effect on domestic investment. The assistances enjoyed by WAEMU countries have a crowding out effect on domestic investment in those countries in short term. This crowding-out effect is so confirmed that the lagged ODA coefficient is significant and negative. In addition to the short term effect, we estimate the ODA effect on domestic investments in the long term. To this end, we calculate the ODA long term coefficient in the table 6.

**TABLE 6: LONG TERM ODA EFFECTS ON DOMESTIC INVESTMENT**

$DInv(-1)$ $[\lambda_1]$	- 0.42
$ODA$ $[\lambda_2]$	0.18
$ODA(-1)$ $[\lambda_3]$	- 0.14
$\lambda_{LT} = \frac{\lambda_2 + \lambda_3}{1 - \lambda_1}$	<b>0.03</b>

The long term coefficient of ODA is equal to 0.03. The positive sign of this coefficient shows that ODA have a positive effect on domestic investment in long term. Thus, an increase in ODA of one point implies an increase in domestic investment of 0.03 points in the long term. However, this coefficient is less than 1 and reflects a crowding-out effect. Therefore, ODA has a crowding-out effect on domestic investment in long term in WAEMU countries. The crowding-out effect of short term is then confirmed in long term. In others words, ODA have a durable eviction effect on domestic investment. That can be explained by the fungible character of foreign assistances. Thus, ODA would bring the WAEMU countries to reduce the share devoted to investment in their budgets. As international assistance is often earmarked for investment, the authorities readjust the allocation of local resources by focusing on final consumption expenditure such as operating expenses of administration. Foreign assistances exert then a crowding-out effect on domestic investment by substituting for public investment.

### **The Effects of MR on Domestic Investment in the WAEMU**

The model with MR shows that the remittances from migrants do not affect domestic investment in the WAEMU countries. Indeed, the MR coefficient is not statistically significant in the regression. Therefore, migrants' remittances have no effect on domestic investment neither in short term or in long term. This result is explained by the preponderance of current consumption patterns with MR transfers in WAEMU region. Indeed, the funds received in the union are affected up to 54.6% for consumption; real estate investment and other investments represent respectively 15.8 % and 5.5% of transfers received (BCEAO, 2013). Thus, Migrants opt for long migrations and their remittances are primarily used for immediate consumption of their families. These migrants are not interested in entrepreneurship in their countries of origin because they do not intend to return permanently. So they just prefer send what is necessary to maintain their families.

### **The Effects of Variables of Control on Domestic Investment**

The variables of control are the variables of the second and third group of Equation 5. It is basically economic growth, trade openness, exports, savings, infrastructures and institutional variables (refer annex).

Regarding economic growth, the results indicate a non-significant coefficient in all of our regressions. Therefore the economic growth rate does not explain the domestic investment evolution in the WAEMU countries. That may be explained by the bad visibility of investors concerning future economic conditions and the lack of an adaptive expectations behavior. Local investors have a short term behavior and their decisions are limited by the constraints of subsistence.

As regard the trade openness, it is indicated by two variables namely the trade openness ratio and the manufacturing exports. The coefficient of trade openness ratio is significant and positive in all of the regressions. Thus, an increase in this ratio of one point induces an increase in domestic investment from 16.74 to 19.04 points. So the opening of the economies of the WAEMU region encourages seriously local investors. This result is understandable because the majority of entrepreneurs in the region are net importers. In addition, regional integration promotes trade between the countries of the zone and encourages production companies to expand their investments to get benefit from the larger Community market. The positive effect of manufacturing exports confirms this analysis. Indeed, the coefficient of manufacturing exports is significant and positive in the model with MR. Thus, an increase in manufacturing exports of one point is followed by an increase in domestic investment of 0.04 points. This result confirms the catalyst effect of manufacturing exports on the local industry (Elbadawi & Mengistae, 2006).

Roads infrastructures influence also significantly and positively domestic investment in the economies of WAEMU. Indeed, an increase in the percentage of paved roads of one point leads to an increase in domestic investment of 0.12 point. Contributing to the revitalization of economic activities, the road infrastructures encourage local entrepreneurs to consolidate their investments. Likewise, domestic saving influences significantly and positively domestic investment. Thus, an increase in saving of one point

induces an increase in domestic investment of 0.31 points. This result shows that local entrepreneurs resort to the domestic savings for their investments.

As regard the real exchange rate, it also influences significantly and positively local investment. Thus, an appreciation of the real exchange rate of one point leads to an increase in domestic investment from 0.41 to 0.63 points. This is explained by the preponderance of imports business within the zone. Those enterprises benefit from the appreciation of the exchange rate to diversify their investments. On the other hand, institutional variables are not significant in any of our regressions. This seems to corroborate the results of Lahimer (2009) who found that institutional variables do not affect the level of domestic investment in the economies of Saharan Africa. Likewise, the natural resources exports coefficient is not statistically significant.

## CONCLUSIONS

Finally, FDI is mostly guided by economic logic whereas ODA is guided by political and humanitarian considerations. The remittance inflow has doubled over the last decade and may surpassed ODA, this capital inflow increases income earnings of migrant families back home (Adams Jr & Cuecuecha, 2013). This fund is mostly invested to fulfil the socio-economic needs such as family subsistence, education, health care (Chrysostome & Lin, 2010) and to a lesser extent in entrepreneurship or other productive investment. Remittances are a part of migrant family's self-enforcing, cooperative, contractual arrangement. Consequently, the effects of each kind of inflows are expected to be different.

The three hypotheses were tested: the first one states that FDI has a creative destruction effect on domestic investment. As to the second hypothesis, it assumes that ODA displace domestic investment both in the short and long term. Regarding the third hypothesis, it indicates that the MR stimulates local investment in the short term but also long term. At the end of the econometric analysis, only the second hypothesis was confirmed. Thus, the results show that ODA have a lasting crowding-out domestic investment. However, assumptions about the influence of FDI and remittances on domestic investments were reversed. Thus, the econometric results refute the hypothesis of creative destruction by FDI for sustainable destruction. MNCs therefore displace local businesses both in the short and long term in the WAEMU countries. Similarly, assuming a sustainable stimulation exerted by the MR is reversed. Econometric estimates show that MR do not have a significant effect on domestic investment in the union. Any foreign capital considered therefore generates sufficient positive externalities to stimulate domestic investment. However these external capitals permanently displace local investors.

There are strong but ambiguous and controversial arguments that the effects of ODA and FDI will depend on the institutional characteristics of the host country (Acemoglu & Robinson, 2005). Some studies also show that the MNCs perceive ODA as a sign of good relationship between the source and recipient countries. Most of ODA might be intended to promote market opportunities, social capabilities and conducive economic environment for attraction of FDI. Consequently, countries that receive higher levels of ODA are supposed to probably get higher FDI activities by the MNC located in the donation country simply because MNC consider country less risky. This study has

proposed measures to make it more sustainable coexistence between external financial flows and domestic investment.

Future research need to be done about how member states of the WAEMU and more broadly the African countries could implement measures that could facilitate multinationals to hire qualified nationals in positions that facilitate the transfer of technology to local markets. The implementation of these measures can help to capture the investments from nationals of the union residing in abroad in order to increase their contribution to the financing of investments in the home markets.

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