FDI determinants in Mano River Union countries: micro and macro evidence

Rodrigo Caldeira de Almeida Martins
Centre for Business and Economics CeBER and Faculty of Economics, University of Coimbra

Jorge Cerdeira
University of Minho, School of Economics and Management and University of Porto, Institute of Sociology (IS-UP) Faculty of Arts and Humanities and Instituto Superior de Contabilidade e Administração do Porto (ISCAP), CEOS.PP

Miguel Fonseca
University of Porto, Faculty of Economics and Management and University of Lisbon, Centre for African and Development Studies, CESA, Lisbon School of Economies of Management

Mohamed Barrie
University of Porto, Faculty of Economics and Management

CeBER Working Papers
No. 2 / 2021

CeBER Working Papers
No. 2 / 2021

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Rodrigo Martins[♣]
University of Coimbra and CeBER

Jorge Cerdeira[♦]
University of Minho, IS-UP and University of Porto, CEOS.PP and P.Porto

Miguel Fonseca[♠]
University of Porto and CEsA

Mohamed Barrie[♥]
University of Porto

Abstract

This paper analyzes the main determinants of Foreign Direct Investment (FDI) in the member countries of Mano River Union: Côte d'Ivoire, Guinea, Liberia and Sierra Leone. We use both data at the firm level and at the country level - and employ OLS and ARDL techniques - in order to examine the differences and similarities in FDI drivers across these four countries.

Our results show that international trade, investment in infrastructures and access to credit have a positive impact on FDI. While credit and trade have a similar influence across countries, the effect of investment is distinct across Mano River members, which raises political implications for policy coordination among states. We also conclude that policies aimed to boost human capital, as well as political and economic stability, are relevant, as they augment FDI inflows.

Keywords: Foreign Direct Investment; FDI determinants; Mano River Union; West Africa.

JEL classification: C10, F21, F23, O55

♣ Faculty of Economics, University of Coimbra, Av. Dias da Silva 165, 3004-512 Coimbra, Portugal.
Centre for Business and Economics Research (CeBER), Av. Dias da Silva 165, 3004-512 Coimbra, Portugal Tel.: +351239790543; E-mail: rodrigom@fe.uc.pt. This work has been funded by national funds through FCT – Fundação para a Ciência e a Tecnologia, I.P., Project UIDB/05037/2020.

♦ School of Economics and Management, University of Minho, Campus de Gualtar, 4710 - 057 Braga, Portugal. Institute of Sociology (IS-UP) and Faculty of Arts and Humanities of the University of Porto, Via Panorâmica, s/n, 4150-564 Porto, Portugal. CEOS.PP, ISCAP, P.Porto, Rua Jaime Lopes Amorim, s/n 4465-004 S. Mamede de Infesta, Portugal; E-mail: jcerdeira@eeg.uminho.pt.

♠ University of Porto, Faculty of Economics and Management, R. Dr. Roberto Frias 464, Porto, Portugal. CEsA - Centre for African and Development Studies, Rua Miguel Lupi 20, Edifício Bento Jesus Caraça, Gab. 503, 1249-078 Lisboa, Portugal; E-mail: migfons@fep.up.pt.

♥ University of Porto, Faculty of Economics and Management, R. Dr. Roberto Frias 464, Porto, Portugal; E-mail: barrie6666@gmail.com.

1. Introduction

Due to its remarkable growth in the last decades, Foreign direct investment (FDI) has been widely recognized as a key force in the globalization process. Thus, it promotes stable and long-lasting economic links between countries and "With the right policy framework, FDI can provide financial stability, promote economic development and enhance the wellbeing of societies''[1]. So, besides the financial resources associated to FDI (its direct effects), we can also say that this cross-border investment has an impact on the development of labor markets and influences the economic performance of host countries through its spillover effects, as the local counter-parts of foreign firms can benefit from their managerial experience, entrepreneurial and technological skills (Todaro and Smith, 2012).

Considering its positive impact on the country´s employment, economic growth and development, attracting foreign investment in the form of FDI assumes a crucial role for developing countries. Hence, although developed countries are traditionally its major recipients, in recent decades there has been an increase of global FDI inflows into developing countries. In the case of Africa, foreign investment has been regarded as a source of capital inflow and a driver of economic growth, in part because policy makers believe that it will help bridge the large resource gap (that is savings-investment gap) in their economies. Indeed, the attraction of a significant amount of FDI in African economies is needed to improve growth through investment in development infrastructure, and it will support Sustainable Development Goals.[2]

In this context, despite FDI to developing countries has been rising, the attractiveness of Africa is very low, compared with other regions like Asia, Latin America and The Caribbean, and the Transition Economies. As such, it is important to understand what drives FDI in African nations to adequately choose policy measures that can improve investment attractiveness. The cases of Côte D'Ivoire, Guinea, Liberia and Sierra Leone are of particular interest because these countries belong to an Intergovernmental institution – the Mano River Union (MRU) – that, among other

[1] OECD Benchmark definition of foreign direct investment, 4th edition, 2008, pp. 3.

[2] The Sustainable Development Goals (SDGs) were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. It includes 17 SDGs that are integrated, recognizing that action in one area will affect outcomes in others, and consider that development must balance social, economic and environmental sustainability.

goals, promotes regional economic cooperation. As such, understanding the differences and similarities between them concerning FDI dynamics is important when it comes to policy coordination and to the establishment of efficient joint policy measures that can improve FDI attractiveness, and additionally generate spillover effects across member states that can multiply international investments in the region. Although some relevant studies have already tackled the FDI drivers in Africa, most of them rely on aggregate data and none as focused specifically on the Mano River Union countries. In this paper we intend to fill this gap and complement the existent knowledge on the subject for Africa. The empirical analysis relies on a previously unexplored dataset at the firm level, meaning that, contrary to previous studies, the topic is manly approached in a microeconomic perspective. Additionally, a macro level empirical analysis is also conducted to complement the analysis and provide some more insights on the matter. Results point out that some economic variables affect all members in the same way, while others have a differentiated impact that must be accounted for when trying to coordinate policies.

The rest of the paper is organized as follows. Section 2 provides a brief context for the MRU. Section 3 reviews the relevant literature on FDI determinants. The firm level empirical analysis and the discussion of the results are presented in Section 4, while Section 5 reports the macroeconomic empirical results. Finally, the last section concludes.

2. MRU: brief context

The Mano River Union (MRU) was established, on the 3rd of October 1973, as an instrument of regional economic cooperation in the West African Sub-region. It was formed with the signing of the Mano River Declaration by the presidents of Liberia and Sierra Leone and, as spelt out in the Declaration, the aim of this organization was to ‘’accelerate the economic growth, social progress, and cultural advancement of our two countries … by active collaboration and mutual assistance in matters of common interest in economic, social, technical, scientific and administrative fields’’.

MRU - named because the River is the natural and formal boundary between the two founding member states - was laid down as a Customs Union, with the goals of promoting the free

movement of goods and services between members, increasing trade cooperation, creating favorable conditions for expansion of productive capacity, and securing a fair distribution of economic cooperation benefits.

The original Declaration has been complemented by 16 protocols that expanded the scope of the organization's mandate, as well as allowing the participation of any Western African countries if they subscribe to the aims and objectives of the Union. As a result, Guinea joined MRU on the 25th of October 1980, and Côte D'Ivoire became a member on the 15th of May 2008.

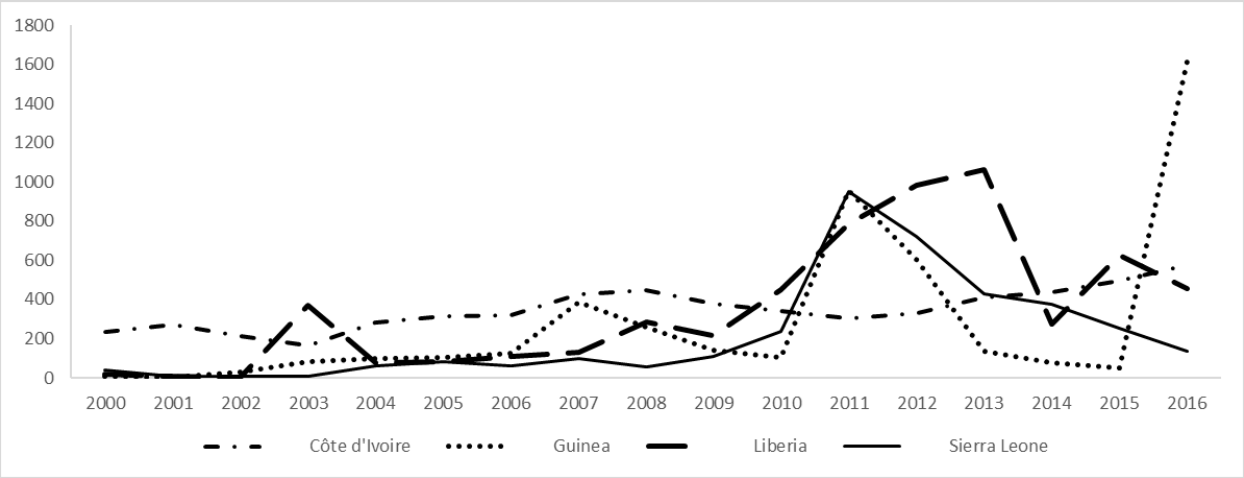
From the late 1980s to the early 2000s, the activities of the Union have been dominated by concerns about conflict management, peace, and security, as the sub-region was largely affected by violent civil conflicts. Except for Guinea, the other three neighboring MRU countries experienced civil wars that resulted in massive human suffering, social dislocation, and the destruction of the region's economy, disrupting the cooperation among Member States.

Hence, the post-conflict rebuilding of the broader organization began in May 2008, when the MRU Secretariat (the technical and administrative instrument that is responsible for the implementation of the Union´s policies) was mandated to revive the Union within the framework of four pillars: institutional revitalization and restructuring, peace and security, economic development and regional integration, and social development.

In synthesis, this Intergovernmental institution aims to strengthen the capacity of its members to integrate their economies and coordinate development programs in the areas of peace building (as a prerequisite to any development), trade promotion, infrastructure, education, agriculture, monetary and financial affairs, and other relevant matters of economic and social life of MRU States. Through dialogue, peaceful co-existence, cooperation, and solidarity, the four countries of this regional integration organization have been succeeded in promoting democratic good governance, economic liberalization, and higher standards of living for their citizens. Besides, the Union has made a significant contribution in maintaining peace and political stability in West Africa, and MRU states must therefore collaborate with regional partners and the international community to consolidate democracy and support sub-regional integration and socio-economic growth and development.

The four member countries of the MRU region present growing levels of FDI inflows. For most of the period 2000-2016, has shown in Figure 1, Côte d´Ivoire was the top host economy, reflecting supportive publics investments by the Government and the improvement of business environment. Additionally, it reveals a stable evolution while the other countries, particularly in the last decade, present high volatility, that probably is not unconnected to the global financial crisis which began in USA in mid-2007 and echoed throughout the world in the following years. More recently, Guinea become the most attractive destination, reflecting the implementation of national reform actions plans which seek to break down barriers to investment, leveraging FDI. Besides the reforms adopted to improve the business climate, this country has a rich natural resources potential, so that the mining industry attracted most of the foreign investment, particularly by Chinese firms in the bauxite and alumina sectors (Santander Trade Markets, 2020).

Figure 1: FDI Inflows, 2000-2016 (US million dollars at current prices)



Source: UNCTAD Stat

3. Literature review

The United Nations Conference on Trade and Development (UNCTAD) defines FDI as an investment involving a strategic long-term relationship, in which the direct investor wants to ensure a significant degree of influence (that is evidenced when it owns at least 10% of the voting power of the direct investment enterprise) in the management of an enterprise resident in

another economy (FDI enterprise, affiliate enterprise or foreign affiliate). Besides the initial equity transaction that meets the 10% threshold, FDI includes all subsequent financial transactions between the direct investor and the direct investment enterprise, and it is not limited to equity investment but also relates to reinvested earnings and inter-company debt.

In this cross-border transaction, multinational enterprises (MNE) are the dominant players, as they own and control value adding activities in more than one country (Dunning, 1992). Although it is accepted that foreign investment can impact the host country's economic growth prospects, through additional employment, technological progress and productivity improvements, which is particularly relevant for less developed countries, there is still no consensus about the variables that can explain FDI patterns worldwide[3]. Nevertheless, the empirical analysis carried out over the years, like for instance Antonakakis and Tondl (2010) and Alam and Shah (2013), suggest that the most significant determinants of FDI inflows into a host country are economic variables, such as market size (measured by GDP or GDP per capita growth), labor force and human capital, exchange rate, inflation, trade openness, financial sector development and infrastructure, even though the most recent studies have considered additional explanatory factors. That is quite evident on the studies conducted in African countries, that emphasize the relevance of policy and institutional factors on foreign firms´ investment decisions, combined with the "traditional" economic determinants. Indeed, in these countries that are often characterized by weaker institutions and less consistent policies, governments can play an important role on FDI attractiveness, offering incentives to potential foreign investors such as tax holidays, tax rebates or investments in infrastructure, among others, while institutional indicators like corruption, governance, bureaucracy and transparency in the host country are also key determinants of FDI inflows (Anyanwu and Yameogo 2015; Mijiyawa 2015; Okafor et al. 2016; Pose and Coles 2017; Makoni 2017). However, Nondo et al. (2016) assessing the impact of institutional quality on FDI inflows for 45 Sub-Saharan African (SSA) countries, including the members of MRU, between 1996 and 2007, found that there is no statistically significant relationship between institutional quality (measured by dimensions such as political stability, rule of law and control of corruption)

[3] For a thorough discussion on the different types of FDI and the host country attractiveness see, for instance, the World Investment Report 1998: Trends and Determinants.

and FDI inflows to these countries. These findings may not be surprising, given that many SSA countries present very low score on all dimensions of institutional quality, but do not diminish its relevance in attracting FDI, as the impact of good governance could be indirect, for example, by enhancing the quality of human capital and encouraging GDP growth.

It is also well established in the literature the attraction effect generated by the African host's natural resources endowments (see, for instance, Anyanwu and Yameogo 2015; Nondo et al. 2016; Pose and Coles 2017 and Boğa 2019). The exception is Okafor et al. (2016) that found foreign investment in SSA countries not to be motivated by the abundance and low cost of natural resources. One of the explanations for this may reside in the outbreak of conflicts in countries such as Nigeria, Angola, Liberia, and Sierra Leone, that have halted the exploration and production of natural resources, thereby negatively impacting the attraction of FDI.

Also, higher levels of human capital and better infrastructures have been found relevant to explain FDI inflows in Africa. Pose and Coles (2017) refer that a good level of education of the labor force is an important asset for African countries in their efforts to attract FDI, and the results of Okafor et al. (2016) point in a similar direction. In turn, the idea that FDI inflows are attracted to markets that present better infrastructures have been confirmed by, for instance, Makoni (2017) and Jaiblai and Shenai (2019).

Several studies have sought to identify the economic forces driving FDI flows on African nations, but mainly in a macroeconomic perspective and resorting to panel data techniques. Overall, FDI drivers in this region do not differ much from those factors generally identified in other regions. Anyanwu and Yameogo (2015) analyzed 17 West African countries, using a panel data set from 1970 to 2010, and found that real GDP per capita (quadratic effect), domestic investment, trade openness, exports, and a monetary integration between countries of this sub-region have a positive and significant effect on FDI inflows, while factors such as foreign aid, GDP growth, market size (proxied by real GDP per capita), and domestic credit to the private sector present a negative impact on FDI. With annual data from 1984 until 2010 for 35 African countries (including those of MRU), Kariuki (2015) concluded that increases in the infrastructure of a country and in openness to trade, as well as a rise in the commodity price index and in the performance of stock

markets in developed countries, have a positive and significant effect on FDI inflows. In turn, the level of economic risk (that assesses a country's current economic strengths and weaknesses) has a negative and significant relationship with FDI inflows. Mijiyawa (2015) used five-year panel data and a GMM estimator over the period 1970–2009 to analyze 53 African countries, among which the four Western African nations of MRU (although some of the variables are not available for the entire period of analysis and not all countries have available data). Its results highlight the importance of maintaining and improving the return on investment in Africa (where it tends to be higher, because of low level of capital on the continent), in a world characterized by fierce competition for FDI attractiveness.

Also, open economies and larger countries tend to attract more FDI. Although the positive relationship between openness and FDI in Africa has been reported in several papers (like Boğa 2019; Anyanwu and Yameogo 2015; and Okafor et al. 2016), Nondo et al. (2016) using a panel of 45 Sub-Saharan African (SSA) countries, including the members of MRU, found that trade openness, and also the gross fixed capital formation do not significantly impact FDI inflows. Moreover, their results highlight a positive and statistically significant relationship between consumer price index (as a proxy for macroeconomic instability) and FDI attractiveness. This correlation is particularly unexpected but can be explained by the diversity of countries in the sample, including both experiencing hyperinflation and with a low inflation rate.

Additionally, other relevant economic factors, such as an abundant labor supply and market size (proxied by GDP per capita), are also referenced. In this context, Adinda (2018) reported that market size and agglomeration forces (measured by urban population) are major drivers of FDI inflows in Africa, showing that high concentration of economic activity within one area has positive externalities. Based on the location hypothesis, which assumes that FDI exists due to the international immobility of some factors, Okafor et al. (2016) also confirmed the importance of market size for SSA countries´ attractiveness, but their findings relate higher levels of inflation with decreases in FDI inflows, as it erodes the value of investment and assets. A similar result was obtained by Pose and Coles (2017) that studied the determinants of FDI in 22 sub-Saharan African countries (including Côte d´Ivoire), concluding that it is mainly driven by the key factors generally mentioned in the literature.

4. Microeconomic empirical results

Data and methodology

Contrary to previous research that tends to use a macro approach to analyze FDI determinants in Africa, we resort to firm-level data from the World Bank Enterprise Surveys (WBES) dataset that combines several country survey datasets. The WBES gathers information on a representative sample of firms in the private non-agricultural sector (Dethier et al., 2011). Our sample consist of cross-section data on firms for each member of MRU, including information for years 2006, 2007, 2016 and 2017, as described in Table 1.[4]

Table 1 – WBES Sample – Number of firms

Country/Year	2006	2009	2016	2017	Total
Côte d'Ivoire	0	526	361	0	887
Guinea	223	0	150	0	373
Liberia	0	150	0	151	301
Sierra Leone	0	150	0	152	302
Total	223	826	511	303	1,863

Based on the available data, we construct the following model

$$FDI_i = \beta' X_i + \varepsilon_i$$

where X represents the vector of explanatory variables; the β is our vector of interest, measuring the impact of the explanatory variables on FDI, and ε_i is a zero-mean error term.

The dependent variable is the proportion of private foreign ownership in the firm (*FDI*). The model includes the following explanatory variables:

— *Trade*, computed as the percentage of firm' sales that is exported. The literature has identified trade openness as one of the main FDI drivers. Thus, we include in the model this variable as a trade indicator.

[4] Descriptive statistics for all variables are presented in table A.1 of the annex.

- Infrastructure development has been considered one relevant determinant of FDI in previous studies. We intend to capture this effect including the variable *Investment*, which is a dummy variable equal to 1 if the firm invested in fixed assets, and zero otherwise.
- *Credit*, a dummy variable equal to 1 if the firm has a line of credit, and zero otherwise. Lines of credit enable the firm to obtain loans, allowing for the development of new projects, which has a positive impact on foreign firms' investment decisions.
- *Size*, measured by the number of workers of the firm. The inclusion of this variable is related to the fact that several studies established that larger firms may attract more FDI, as smaller companies face more financial and human resources constraints, which may struggle the internationalization process and its ability to attract foreign investment. In addition, some studies have suggested that the size of the firm can be used as a proxy for human capital, which previous research considers to be a main driver of FDI.
- It is well-known that institutions and political stability may have a significant impact on firm performance and on the attraction of foreign firms and investment. As such, we include in the model the variable *political obstacle*, which is a dummy variable equal to 1 if the firm considers that the levels of crime, theft and disorder in the country constitute a significant obstacle to its activity, and zero otherwise.
- *Manager's experience*, defined as the number of years of the top manager's experience in the firm's industry. Several studies have shown that foreign investors are more likely to invest when the top manager knows well the industry and country where the firm is established, as this knowledge may help the firm to do better and more informed decisions. In addition, as with variable *size*, previous studies have suggested that manager's experience can be a proxy for human capital.

Given that the data is comprised by a set of cross sections with some missing years and countries (see table 1) we are unable to construct a proper panel. Thus we estimate the model by OLS, with fixed effects (dummies) for countries, years and industries and use robust standard errors to deal with potential problems of heteroskedasticity in the model.

Empirical results

Table 2 presents the estimation results.[5] In all regressions, FDI is the dependent variable.

The results show that trade, investment and credit are key determinants of FDI at the micro level, as in all regressions these variables have a positive and statistically significant impact on FDI. These results are consistent across all regressions and in line with the macro literature on the determinants of FDI - firms that export more, invest more and have lines of credit can attract higher levels of FDI (see, for instance, Kariuki, 2015; Mijiyawa, 2015; Boğa, 2019; and Okafor et al., 2016).

As for size and manager's experience, the estimation results show that larger firms can attract more FDI than smaller firms. Also, manager's experience has a positive impact on FDI. Thus, these results suggest that human capital is a key driver of FDI, which has important policy making implications.

With regards to the political obstacle, the results show a negative and statistically significant impact on FDI, indicating that crime, theft and disorder in the country decrease FDI. This negative relationship is in line with previous research at the macro level (e.g., see Mijiyawa, 2015; Okafor et al., 2016; Pose and Coles, 2017).

Table 2 –Estimation results

	(1)	(2)	(3)	(4)	(5)	(6)
Trade	0.274***	0.236***	0.272***	0.258***	0.221***	0.219***
	(0.0692)	(0.0701)	(0.0692)	(0.0711)	(0.0720)	(0.0719)
Investment	4.789***	4.148**	4.832***	4.203**	3.554**	3.595**

[5] Taking into account the different number of observations for each country, we have also estimated our model using weighted OLS. All the obtained results were qualitatively similar to those presented in table 2.

	(1.720)	(1.737)	(1.718)	(1.730)	(1.744)	(1.742)
Credit	10.60***	9.791***	10.66***	10.10***	9.324***	9.392***
	(2.729)	(2.750)	(2.728)	(2.751)	(2.758)	(2.759)
Size		0.0165*			0.0168*	0.0167*
		(0.00896)			(0.00881)	(0.00878)
Political obstacle			-6.647**	-6.179*		-6.051*
			(3.135)	(3.170)		(3.195)
Manager's experience				0.227**	0.214**	0.213**
				(0.0999)	(0.101)	(0.101)
Constant	9.006	9.232	9.431	4.852	4.801	5.211
	(6.608)	(6.549)	(6.603)	(6.819)	(6.752)	(6.748)
Observations	1,713	1,704	1,713	1,677	1,668	1,668
R-squared	0.071	0.079	0.073	0.071	0.078	0.080

Notes: Robust SE in parentheses. All regressions include dummies at the country, industry and year levels. *** p<0.01, ** p<0.05, * p<0.1.

The estimation results presented in table 2 are robust, given they are qualitatively the same across the different specifications considered in the analysis (1 to 6), with varying number of explanatory variables. Even so, it is natural that the impact of some explanatory variable on FDI may be different across countries. To evaluate these differences, we present in table 3 the estimated impact of trade, investment, credit and manager's experience on FDI, distinguishing the impact by country. We depart from the model and the results from table 2 and we estimate the additional impact of each explanatory variable on FDI for each country, considering different baseline countries, in order to collect all the possible effects. The results of this analysis are reported in Table 3 that compares each country (in column) with the respective baseline country (in line).

Table 3 –Differences in countries' impact of trade, investment, credit and manager's experience on FDI

	Trade				Investment			
	Côte d'Ivoire	Guinea	Liberia	Sierra Leone	Côte d'Ivoire	Guinea	Liberia	Sierra Leone
Côte d'Ivoire	---	-0.125 (0.173)	0.270 (0.229)	-0.175 (0.163)	---	**-11.00*** (4.112)**	-3.520 (4.450)	**-12.44*** (3.632)**
Guinea	0.125 (0.173)	---	0.395 (0.258)	-0.0507 (0.199)	**11.00*** (4.112)**	---	7.481 (4.672)	-1.438 (3.961)

Liberia	-0.270 (0.229)	-0.395 (0.258)	---	**-0.446*** **(0.248)**	3.520 (4.450)	-7.481 (4.672)	---	**-8.919**** **(3.755)**
Sierra Leone	0.175 (0.163)	0.0507 (0.199)	**0.446*** **(0.248)**	---	**12.44***** **(3.632)**	1.438 (3.961)	**8.919**** **(3.755)**	---

	Credit				Manager's experience			
	Côte d'Ivoire	Guinea	Liberia	Sierra Leone	Côte d'Ivoire	Guinea	Liberia	Sierra Leone
Côte d'Ivoire	---	11.78 (8.963)	6.172 (6.981)	5.963 (6.795)	---	-0.128 (0.225)	-0.168 (0.215)	**-0.734***** **(0.162)**
Guinea	-11.78 (8.963)	---	-5.603 (10.14)	-5.812 (9.975)	0.128 (0.225)	---	-0.0397 (0.277)	**-0.606**** **(0.239)**
Liberia	-6.172 (6.981)	5.603 (10.14)	---	-0.209 (8.057)	0.168 (0.215)	0.0397 (0.277)	---	**-0.566***** **(0.170)**
Sierra Leone	-5.963 (6.795)	5.812 (9.975)	0.209 (8.057)	---	**0.734***** **(0.162)**	**0.606**** **(0.239)**	**0.566***** **(0.170)**	---

Notes: Robust SEs are in parentheses; significance level at which the null hypothesis is rejected: ***, 1%; **, 5%; *, 10%. The coefficients in bold are those that are significant at least a 10% level of significance.

The results show that the impact of credit on FDI is not statistically different across countries, whereas the impact of trade, investment and manager's experience on FDI is different across countries. These differences may reflect different stages of development across countries, as well as differences in human capital and quality of institutions.

The impact of trade on FDI is higher in Liberia than in Sierra Leone, which may result from the fact that trade does not have the same relevance in these two countries, as Liberia is much more open to trade than Sierra Leone. Considering the years 2009 and 2017 for these two countries (see table 1), the World Bank reveals that the openness indicator for Liberia in 2009 is around 110%, while the same indicator in 2009 for Sierra Leone is approximately 41%; in 2017, trade accounts for around 123% of Liberia's GDP while the corresponding value for Sierra Leone is around 74%. The fact that Liberia is much more open to trade than Sierra Leone may, therefore, explain the different impact of trade on FDI in these countries.

Table 3 also shows that the impact of investment on FDI is higher in Côte d'Ivoire than in Guinea or Sierra Leone and higher in Liberia than in Sierra Leone. These results are not surprising given the reality of these countries in those years. Between 2012 and 2016, Côte d'Ivoire had a very favorable economic environment - according to the World Bank, the country's annual growth rates of GDP were between 10.7% (in 2012) and 7.2% (in 2016). This strong GDP growth was due

to structural reforms introduced by the government, who made efforts to improve the business environment and ease investment (KPMG, 2017). In fact, the World Bank database shows that the annual average growth rate of investment in percentage of the GDP was around 14.0% for Côte d'Ivoire, higher than the corresponding growth rate for the other 3 countries of MRU.

On the other hand, Sierra Leone experienced a period of instability that may explain the lower impact of investment on FDI. This was particularly obvious in 2015, when Sierra Leone had an annual growth rate of GDP of around -20.6%, which resulted from a significant decrease in commodity prices and the negative impact of the Ebola crisis (KPMG, 2017). This less favorable economic environment experienced by Sierra Leone may also explain the lower impact of manager's experience on FDI in Sierra Leone than in the other countries.

5. Macroeconomic empirical results

Data and methodology

The purpose of this section is twofold. First, it allows us to do a robustness check of the outcomes found at the micro level and therefore evaluate to what extend they relate with the macro results. Second, it allows the study of the role played by the inflation rate, considered in the literature a relevant variable to explain FDI behavior.

Based on the available data we construct a panel for the MANU River countries spanning from 1990 to 2016. The standard panel data estimators such as pooled OLS, fixed effects and random effects are not the best estimation option in this case since they have some serious limitations especially in the presence of an autoregressive component. The GMM class estimators are also not suitable here as they are expected to produce spurious results in the presence of a small N and large T. In addition, any model trying to explain FDI is most likely dynamic. The notion that FDI exhibits some persistence is well documented in the literature (see, for instance, Anyanwu and Yameogo 2015; Mijiyawa 2015; and Makoni 2017). The amount of FDI received in the previous year by African countries typically influences the current value, as most FDI projects

tend to last for more than one year. As such we use the panel-ARDL model as proposed by Pesaran and Smith (1995) and Pesaran et al. (1999). According to these authors, this method does not produce inconsistent estimates of the parameters when the coefficients are different across units, contrary to other approaches. Also, panel ARDL can be used even when the variables under study exhibit different orders of integration *i.e.* the long-run relationships can be obtained without a context of cointegration among variables with the same order of integration.

The proposed specification as the form of an ARDL$(p, q, q \dots, q)$ model, where X represents the vector of explanatory variables:

$$FDI_{it} = \sum_{j=1}^{p} \alpha_{ij} FDI_{it-j} + \sum_{j=0}^{q} \gamma_{ij}{}' X_{it-j} + u_i + \varepsilon_{it} \qquad (1)$$

Reparametrizing the model, we obtain:

$$\Delta FDI_{it} = \delta_i (FDI_{it-1} - \beta_i{}' X_{it}) + \sum_{j=1}^{p-1} a_{ij}^{*} \Delta FDI_{it-j} + \sum_{j=0}^{q-1} \gamma_{ij}^{*}{}' \Delta X_{it-j} + u_i + \varepsilon_{it} \qquad (2)$$

Where the βi are our vector of interest, measuring the long-run impact of the explanatory variables on the FDI and δ_i is the error corrector mechanism impact. The other parameters are the short run coefficients. The disturbances ε_{it} are independently distributed across time and countries, with zero mean and constant variance within each country.

According to Pesaran and Smith (1995) and Pesaran et al. (1999) equation (1) can be estimated using the Mean Group (MG) estimator or the Pooled Mean Group (PMG) estimator. However, if the long-run coefficients are similar across groups the PMG is more efficient. Additionally, the ARDL model, provides consistent coefficients regardless of the possible existence of endogeneity because it includes lags of dependent and independent variables (Pesaran et al, 1999).

Prior to estimating the model, we ran unit roots tests to all the variables present in this study using the Levin–Lin–Chu test (Levin et al., 2002), the Fisher-ADF test (Choi, 2001) and the Hadri (2000) Lagrange multiplier (LM) test[6]. The results are presented in the annex and show a mixture of I(0) and I(1) thus allowing the estimation of a panel-ARDL.

[6] The Levin–Lin–Chu test and the Fisher-ADF test have as null hypothesis that the panels contain a unit root, while the Hadri (2000) Lagrange multiplier test assumes stationarity as the null.

The dependent variable used is the foreign direct investment net inflows as percent of gross domestic product (*FDI*). The baseline model includes the following explanatory variables[7]:

- The domestic credit to private sector as a percent of GDP (*credit*). The relevance of financial development in terms of creating a positive impact on foreign investors' mindset regarding the possibility of obtaining more loans has been well documented in the literature.
- Likewise, the literature has identified infrastructure development as one of the key factors driving foreign investment. With good infrastructure, transaction costs are expected to be lowered, thereby increasing the productivity of investments and consequently, stimulating FDI. Thus, we include the gross fixed capital formation as percent of GDP (*investment*) as a proxy for infrastructure development.
- The inflation rate (*inflation*). As a key measure of the degree of stability in an economy, a high rate of inflation indicates instability in the macroeconomic environment and consequently the inability of the host government to manage the economy, thus retracting FDI.
- Previous studies on this topic have also emphasised the relevance of natural resources endowment and note that FDI (particularly resource-seeking) in developing countries is mostly driven by the availability of these resources. As a proxy for endowments of natural resources, we use the total natural resources rents as a share of GDP (*Natural resources*) that is expected to have a positive correlation with FDI.
- Trade openness has been largely considered as a key factor driving FDI inflows. In most macroeconomic empirical studies, trade has been tested and found to have a positive and significant impact. We use as measure for trade the sum of exports and imports of goods and services as share of gross domestic product (*trade*).
- GDP per capita growth (*GDP pc*). It denotes the potential growth of the host country and is also used as a proxy for market size. Although the results found in the literature are

[7] Descriptive statistics and data sources for all variables are presented in table A.2 of the annex.

mixed, since it has been insignificant in some cases, a positive relationship is expected between GDP per capita growth and FDI.

— To provide information on the human capital we use as proxies the total labor force and the total labor force as share of total population (*labor force*). Several recent studies have found a positive relationship between human capital and FDI, as firms are more willing to invest in countries where workers have higher levels of education and training.

Empirical results

Table 4 presents the long-run PMG estimates for the determinants of the foreign direct investment. We conducted a Hausman test to choose between the PMG and MG that systematically favored the null hypothesis (PMG). We only present the long-run estimates because the main feature of the PMG estimator is that it allows short-run coefficients and error variances to be heterogeneous while the long-run coefficients are constrained to be homogeneous across countries. Additionally, the choice of the PMG estimator also seems to fit our particular case since the countries in question belong to the same Intergovernmental Institution that aims to improve the capacity of Member States to integrate their economies and coordinate development programs.

Table 4 - Panel ARDL: long-Run PMG estimates

	(1)	(2)	(3)	(4)
GDP pc	-0.032	-0.088		
	(-0.378)	(-1.196)		
Inflation	-0.040	-0.038**	-0.040	-0.038**
	(-1.632)	(-2.252)	(-1.626)	(-2.141)
Credit	-0.680	-0.273	-0.671	-0.279
	(-1.034)	(-0.746)	(-1.015)	(-0.740)
Investment	0.954***	0.901***	0.950***	0.899***
	(4.752)	(6.054)	(4.712)	(5.822)
Natural resources	0.079	0.186	0.075	0.170
	(0.493)	(1.193)	(0.466)	(1.092)
Trade	-5.596	3.787	-5.361	3.898
	(-0.736)	(0.686)	(-0.699)	(0.697)

Log(labor force)	1.499		1.428	
	(0.227)		(0.215)	
Labor force (% pop)		1.815*		1.769*
		(1.791)		(1.733)
GDP growth			-0.023	-0.068
			(-0.298)	(-1.049)
Error corr. Coef.	-0.423*	-0.519**	-0.423*	-0.523**
	(-1.732)	(-2.079)	(-1.719)	(-2.126)
Hausman	1.85	0.02	1.79	0.18
	[0.9677]	[0.999]	[0.9704]	[0.999]
Observations	102	102	102	102

Notes: z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1. P-values in squared parentheses. The estimated models are an ARDL(1,1,…,1).

The results presented in Table 4 show that infrastructure development (*investment*) is a main driver of FDI in MRU countries, as the impact of investment is consistently positive and statistically significant, being in line with the results obtained at the micro level. In agreement with previous studies, we also found that inflation has a negative relationship with inward FDI, suggesting that macroeconomic stability stimulates foreign investment. Furthermore, the results show that higher levels of human capital have a positive effect on foreign investors' decisions (as the coefficient is positive and statistically significant), which is consistent with the results reported at the micro level and may have relevant policy implications for these countries.

6. Conclusions

This study tries to understand what drives FDI in the countries that belong to the Mano River Union and to examine the differences and similarities between them. The empirical analysis uses an extensive firm level database approaching the topic mainly in a microeconomic perspective. Additionally, a macro level empirical analysis is also conducted in order to provide some more insights on the matter.

The empirical analysis shows that more trade, increments in investment and rises in credit increase the proportion of private foreign ownership in firms. A further inspection of these effects reveals some additional insights. Credit, and to some extend trade, appear to act in a

similar way for all countries. However, the impact of investment seems to be different across Mano River members, with Côte d'Ivoire being the country that appears to benefit more from it. These differences suggest that policy coordination in this dimension should be carefully analyzed. Additionally, results indicate that bigger firms and businesses led by more experienced CEOs can attract higher levels of foreign capital inflows. This highlights the importance of human capital, thus recommending a closer attention to policies aimed at improving it, since they are important to attract more FDI in these countries. Nevertheless, the impact of manager's experience is lower in Sierra Leone than in all other countries, which may be due to the Ebola crisis and to the decrease in commodity prices. As expected, crime, theft and disorder in these countries are found to decrease FDI.

Results at the macro level reinforce the importance of investment and of higher levels of human capital on FDI attractiveness in the MANU River countries. In agreement with previous studies, we also found that inflation has a negative relationship with inward FDI, suggesting that macroeconomic stability stimulates foreign direct investment.

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VIII. Annex

Table A1. Descriptive statistics

Variable	source	Obs.	Mean	Std Dev	Min	Max
FDI	WBES	1,856	1.461.099	3.344.646	0	100
Trade	WBES	1,847	3.912.832	1.533.849	0	100
Investment	WBES	1,850	0.4924324	0.5000779	0	1
Credit	WBES	1,820	0.1576923	0.3645524	0	1
Political Obstacle	WBES	1,781	0.0398652	0.1956975	0	1
Size	WBES	1,850	4.068.482	1.755.681	1	6148
Manager's experience	WBES	1,820	1.442.912	9.974.124	1	56

WBES - World Bank Enterprise Surveys

Table A.2 Descriptive statistics and data sources

Variable	source	Obs.	Mean	Std Dev	Min	Max
FDI	WDI	108	10.77639	30.02325	-82.8921	159.7189
GDP pc	WDI	108	0.438159	13.24586	-50.2301	91.64805
GDP growth	WDI	108	3.207587	14.83041	-51.0309	106.2798
Inflation	WDI	108	11.65127	20.34971	-10.0088	128.7617
Credit	WDI	106	8.884624	7.537317	0.500549	36.49501
Investment	UN	108	17.13223	10.98475	3.480034	57.17976
Natural resources	WDI	108	21.11262	18.18017	3.286567	82.58936
Trade	WDI	108	0.697953	0.407041	0.27648	2.904993
Labor force	WDI	108	14.72144	0.7257	13.36329	15.87042
Labor force (% pop)	WDI	108	34.76219	2.059264	31.02718	37.35298

WDI – World Development Indicators; UN – United Nations

Table A3. Stationary tests

	LLC		Fisher-ADF		Hadri	
	Const.	**Trend**	**Const.**	**Trend**	**Const.**	**Trend**
FDI	-1.7467 [0.040]*	-1.6360 [0.050]*	2.1960 [0.014]*	4.5646 [0.000]*	5.5526 [0.000]	0.1743 [0.431]*
Inflation	-4.2149 [0.000]*	-2.9901 [0.001]*	6.2513 [0.000]*	3.9401 [0.000]*	7.0553 [0.000]	4.0469 [0.000]
GDP pc	-1.7113 [0.0435]*	-1.3649 [0.0861]	2.8562 [0.002]*	3.2937 [0.000]*	1.2513 [0.105]*	4.5428 [0.000]
GDP growth	-1.3891 [0.0824]	-0.8951 [0.1854]	3.5064 [0.000]*	1.9460 [0.0258]*	1.3143 [0.0944]*	5.2936 [0.000]

Investment	-0.0246 [0.4902]	-0.7227 [0.2349]	0.4833 [0.3144]	1.1775 [0.1195]	9.0499 [0.000]	3.3075 [0.000]
Natural Resources	-1.8851 [0.029]*	-2.4557 [0.007]*	1.4237 [0.0773]	1.6584 [0.048]*	4.9233 [0.000]	7.7693 [0.000]
Trade	0.0681 [0.527]	-0.1439 [0.442]	-0.0965 [0.5384]	-0.6775 [0.7510]	5.4627 [0.000]	6.8895 [0.000]
Credit	0.9418 [0.826]	-1.0637 [0.1437]	0.6015 [0.273]	-0.7290 [0.767]	15.9746 [0.000]	17.8887 [0.000]
Labor force (% pop)	0.4767 [0.6832]	-2.052 [0.020]*	-0.6041 [0.7271]	1.2818 [0.100]	28.3641 [0.000]	20.0444 [0.000]
Ln(labor)	0.0522 [0.521]	-10.083 [0.000]*	-1.1427 [0.873]	29.6671 [0.000]*	31.9557 [0.000]	11.7714 [0.000]
ΔFDI	-4.5342 [0.000]*	-3.7685 [0.000]*	13.1683 [0.000]*	10.6283 [0.000]*	-1.6771 [0.9532]*	-1.2966 [0.9026]*
ΔInflation	-5.6966 [0.000]*	-4.1121 [0.000]*	18.0489 0.0000	14.4998 [0.000]*	-1.8385 [0.9670]*	-2.1220 [0.9831]*
ΔGDP pc	-5.8770 [0.000]*	-4.1403 [0.000]*	21.7503 [0.000]*	16.8900 [0.000]*	-1.3528 [0.9119]*	-1.8083 [0.9647]*
ΔGDP growth	-5.7374 [0.000]*	-4.1717 [0.000]*	20.9287 [0.000]*	16.5495 [0.000]*	-1.2752 [0.8989]*	-1.6896 [0.9545]*
ΔInvestment	-2.9652 [0.001]*	-1.4982 [0.067]	8.1589 [0.000]*	4.9198 [0.000]*	-1.3177 [0.9062]*	-1.3463 [0.9109]*
ΔNatural Resources	-5.3926 [0.000]*	-4.1756 [0.000]*	11.9342 [0.000]*	8.6536 [0.000]*	-1.2320 [0.8910]*	-0.6717 [0.7491]*
Δtrade	-2.0432 [0.020]*	-1.4030 [0.0803]	5.4240 [0.000]*	4.1921 [0.000]*	-1.4192 [0.9221]*	-1.3198 [0.9066]*
Δcredit	-2.5578 [0.005]*	-2.4006 [0.008]*	5.8509 [0.000]*	5.5103 [0.000]*	4.1758 [0.000]	-0.8939 [0.8143]*
ΔLabor force (% pop)	-1.9478 [0.0257]*	-1.6491 [0.0496]*	1.2325 [0.1089]	4.7372 [0.000]*	3.9717 [0.000]	3.8086 [0.0001]
Δln(labor)	-6.7959 [0.000]*	-4.9171 [0.000]*	12.1749 [0.000]*	5.2645 [0.000]*	6.1038 [0.000]	13.5472 [0.000]