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Effect of Exchange rate on Foreign direct investment: Evidence from Niger country

Abstract: This paper aims to assess the impact of the exchange rate on Foreign direct investment (FDI) inflows in Niger from 1992 to 2024. To achieve this, the study employs the Auto Regressive Distributed Lag (ARDL) model. The results indicate a positive and significant effect of the exchange rate on FDI inflows in the long run, while in the short term, it exerts a negative impact. The positive influence of the exchange rate reflects that FDI inflows in Niger are motivated by market-seeking behaviors; thus, FDI inflows react positively to the inflation rate. Based on these findings, FDI inflows should be directed towards the industrial sector, which creates wealth and employment. Additionally, measures should be taken to control prices; otherwise, foreign investors may continue to gravitate towards the domestic market to benefit from higher price levels.

Keywords: Foreign direct investment (FDI) inflows, Exchange rate.

Effet du Taux de change sur l'Investissement direct étranger : Cas du Niger

Résumé : Ce papier entend évaluer l'effet du taux de change sur les Investissements directs étrangers (IDE) entrants au Niger sur la période 1992-2024. Pour ce faire, le modèle autorégressif à retard échelonné (ARDL) est utilisé. Les résultats montrent un effet positif des Taux de change sur les IDE à long terme. Néanmoins, à court terme celui-ci exerce un effet négatif. Partant de ces conclusions et dans le but de profiter de leurs avantages, ces IDE devraient être orientés davantage vers le secteur industriel créateur de richesse et générateur d'emploi. Aussi, des mesures sur le contrôle des prix devraient être prises pour éviter que les investisseurs étrangers continuent d'exploiter le marché local afin de profiter du niveau élevé des prix.

Mots clés : Investissements directs étrangers (IDE) entrants, Taux de change.

***JEL Classification** : G15 - N27 - O24 -* E10.

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1. Introduction

The issue of foreign direct investment (FDI) inflows, particularly its determinants, has been extensively discussed in the literature. FDI inflows are understood as a flow of capital provided by foreign companies or investors into a host country. Regarding its motivations, Dunning (1993) in Demirhan and Masca (2008) identifies three types of FDI. The first is market-seeking or horizontal FDI, where the main objective is to serve domestic and regional markets; its major determinants are market size and market growth. The second is resource-seeking or vertical FDI, in which the firms aim to export from the host country, with natural resources, raw materials, or low-cost labor being the main factors. The final category is efficiency-seeking FDI, which occurs when firms benefit from jointly managing geographically dispersed activities in the presence of economies of scale and scope. In surveying the factors that determine FDI flow entries, three groups of factors are outlined by UNCTAD (1998): political factors, business facilitation, and economic factors. It is noted that any factor influencing a host country's FDI attractiveness aligns with these three groups.

It has been established that FDI increases the efficiency and volume of investment. Therefore, developing countries, in particular, seek to attract foreign direct investment for all the benefits it brings to the host economy. FDI not only complements national investment resources but also serves as a source of foreign currency, alleviating balance of payment constraints on growth. Most countries have made significant changes to their national policies to attract Foreign Direct Investment (FDI), considering the economic benefits. FDI can also act as a catalyst for technological development, with greater advantages stemming from positive spillover effects. Such positive spillovers include transfers of production technology, skills, innovative capacity, and organizational and managerial practices (Demirhan & Masca, 2008). Bilawal et al. (2014) also assert that FDI plays a vital role in the economic growth of the host country when accompanied by greater openness and sound domestic policies.

To attract Foreign Direct Investment (FDI), the governments of most developing economies adopt policies on exchange rates and interest rates that they believe will enhance their attractiveness. This notion is supported by Khan et al. (2012) and Mokuolu (2018), who suggest that an increase in the exchange rate creates competitive advantages in international trade. By raising the exchange rate of a country, domestic export goods become cheaper, leading to increased demand for exports, which means global demand for goods will rise while imports decline. This impacts FDI and ultimately affects the GDP of the country. In this context, focusing on Niger's case is essential concerning the evolution of FDI inflows in this country, on one hand, and, on the other hand, the challenge of its common currency (Franc CFA), which operates under a fixed exchange rate regime.

According to UNCTAD (2023), Niger recorded USD 581 million in FDI inflows in 2022, and in 2023, it stands at 617 billion Franc CFA. This amount exceeds that of the previous year, with a stock of $ 8.23 billion, or 54.1% of GDP. Moreover, the same report indicates an increase in Niger's FDI inflows over the past decade as the government actively implements measures to improve the business environment to attract foreign investors. These measures include the establishment of the Investment

High Council in 2017 and the introduction of a one-stop shop for international trade in 2018. The mining sector (uranium), construction (Kandaji and China National Petroleum Corporation pipeline), and services (telecom) are the primary sectors attracting overseas investors.

Given the significant roles of FDI in developing economies, several studies have attempted to determine the factors influencing FDI inflows into these economies. One such factor that has recently sparked debate is the exchange rate and its volatility (see Tokunbo and Lloyd, 2009). The impact of exchange rate on FDI inflows has been the subject of empirical studies, but the findings are inconsistent across all research. This inconsistency arises because the exchange rate's effect on investment decisions depends on the country where the good is produced, the national source of inputs used in its production, and the country where the final good is sold (Caves, 1989). Nevertheless, some studies indicate a positive effect of exchange rate on FDI inflows, while others report the opposite. The positive effect can be justified by the view that FDI substitutes for exports. Increases in exchange rate volatility between the headquarters and the host country compel a multinational to serve the host country through a local production facility rather than exports, thereby protecting against currency risk (Foad, 2005). The negative effect can be explained by the fact that, in the case of vertical FDI, any movement of the domestic currency, such as its depreciation, will increase FDI inflows into the country. Additionally, apart from this empirical evidence, a few studies report findings that lack statistical significance.

While these studies addressed certain aspects of the link between foreign direct investment inflows and exchange rates, the current study is unique in at least one way. To the best of our knowledge, this study is the first to analyze this relationship using time series analysis specifically within the context of Niger. By conducting a thorough investigation of the relationship between exchange rates and foreign direct investment, with a particular focus on Niger, this study aims to illuminate a country that has not been extensively examined before. Consequently, the findings will enhance the existing literature on the topic and inform policymakers on how to manage the exchange rate in FDI mobilization.

This paper seeks to answer to the following question: does exchange rate impact FDI inflows in Niger republic? Thus, the main objective of this paper is to evaluate the effect of exchange rate on FDI inflows in Niger.

This paper is organized as follows. After this introduction, the second section presents a review of related literature, while the third one exposes the methodology used. Results and discussions are addressed in the fourth section. Conclusion and remarks are rendered at the end in the fifth section.

2. Literature review

In this section, we discuss first the major theoretical assumptions on the relationships between the exchange rate and Foreign direct investment. In the second part, we address the related empirical literature on the topic.

2.1. Theoretical Framework

The channels through which the Exchange rate affects Foreign direct investment are numerous, regardless of the assumption considered. When we refer to Goldberg (2009), the current state of knowledge in this issue retains three main ways that exchange rate can contribute to increasing international investment. These ways are the relative wage channels, the relative wealth channels, and the imperfect capital market arguments[1]. The relative wealth channels can be explained as follows. While the local currency depreciated (all other things equal otherwise), higher FDI is attracted, while the reverse ultimately dissuades foreign investment. This is because a depreciation of a country's exchange rate increases the relative wealth of foreign firms and leads to an increase in foreign purchases of domestic assets and to capital inflows as foreign countries try to take advantage of relatively cheaper domestic labor. The imperfect capital market theory and the relative wage theory (the relative labor cost theory) predict an increase in the amount of inward direct investment in the face of a weaker real exchange rate (Kosteletou & Liargovas, 2000).

Regarding this relationship between FDI flows and changes in the exchange rate, the most popular model was first proposed by Aliber (1970) and later by Cushman (1985). Indeed, the model of Aliber (1970) is based on the resilience of different currencies and the differences in elasticity between the FDI host country and the source country. The author suggested that weaker currencies (compared to the stronger currency of the investing country) facilitate the attraction of FDI, as they create an opportunity to take advantage of the difference in the market capitalization rate. However, the model does not explain FDI flows in countries with controlled exchange rates. Within the framework of this model, a dynamic model of exchange rate expectations was proposed by Cushman (1985). This author shows that the expected devaluation of the currency in the host country can be positively or negatively correlated with the nature of the flow of FDI.

2.2. Review of Empirical Literature

Numerous studies have explored the link between FDI inflows and exchange rates among countries or regions, and the results are inconclusive. Beginning with Nguyen (2023) in the case of Vietnam, the author recently investigates the relationship between exchange rates and FDI from 2013 to 2022 using quarterly data. As a method, he employs a Vector Autoregression (VAR) model. The results suggest that foreign exchange rate movements positively influence FDI volumes, which, in turn, impact the overall economic stability of a country. Likewise, Osinubi and Amaghionyeodiwe (2009) inspect for Nigeria the effect of exchange rate volatility on foreign direct investment (FDI) from 1970 to 2004. To do so, they apply the ECM (error correction model) as well as the OLS method of estimation. The findings reveal that the depreciation of the Naira increases real inward FDI. This result suggests that a weaker currency can attract foreign investments. The same conclusions have been evidenced in the case of Pakistan. Indeed, from 1982 to 2013, Bilawal et al. (2014) have been interested in analyzing whether uncertainty or fluctuations in exchange rates affect Foreign Direct Investment (FDI). For this purpose, they applied the tests of correlation

[1] See Linda S. Goldberg (2009), for deep explaining of these ways.

and regression analysis through SPSS software, and the exchange rate was expressed as the price of foreign currencies in terms of Pakistani currency. The outcomes suggest that there is a significant positive effect of the exchange rate on FDI. In the same vein, analyzing the connection between the exchange rate and Japanese FDI for nine Asian countries from 1987 to 2008, Takagi and Shi (2011) show a sharp increase in FDI inflows from Japan to the countries under study caused by the depreciation of their currencies, respectively. This result implies that in these countries, depreciation of currency concerning the Japanese currency increases FDI inflows from Japan.

Examining the nexus between exchange rate changes and foreign direct investment in Nigeria from 1986 to 2020, Adegoriola and Emmanuel (2022) used the ARDL model, and their conclusion demonstrates a negative relationship between exchange rate and foreign direct investment at the 5% level of significance. Accordingly, given the perceived overvalued naira, the authors mention that any action to reflect the true value of the dollar to naira exchange rate will noticeably increase the exchange rate and, in turn, make it cheaper for foreign investors to invest in Nigeria. Additionally, Duiker and Gorg (2009) in Bilawal et al. (2014) demonstrate, in the case of Japan and China, that assuming Japan's currency is stable, the devaluation of the Chinese currency positively impacts FDI from Japan to China during the sampling period. This means that any increase in the value of the Chinese currency relative to the Japanese currency decreases China's FDI inflows from Japan. Similarly, Cambazoglu and Gunes (2016) examine the Turkish economy and note that an increase in the real exchange rate signifies an appreciation of the domestic currency for Turkey. Their findings reveal that when the real exchange rate appreciates, foreign direct inflows decrease, suggesting that the wealth channel is valid for Turkey.

A similar result was found by Vita and Abbot (2008) in a case study of Pakistan. In the context of West African countries, Abimbola and Oludiran (2018) study the determinants of FDI in WAEMU countries, utilizing exchange rate as one of the explanatory variables. Panel cointegration analysis is used to estimate the model. The output reveals that in the short run, exchange rate significantly and negatively affects FDI inflows in the WAEMU economy. These results align with the perspectives of Erdal and Tataoglu (2002) in the case of Turkey and Crowley and Lee (2003) concerning all sectors in the United States, both of whom also found a negative effect of exchange rate changes on FDI.

Additionally, an intriguing result is presented by Goldberg and Klein (1997) when analyzing the linkages between exchange rate, foreign direct investment, and trade in Southeast Asia and Latin America. They used data from 1978 to 1993 or 1994 in some cases. Cross-sectional time-series panel data and the fixed effects model are utilized to regress FDI functions among the subsets of countries. The output indicates contradictory results. Specifically, when the real exchange rate of Southeast Asian countries depreciates relative to the Yen, FDI from Japan increases in these countries, while that from the United States decreases. Conversely, when the real exchange rate of Southeast Asian countries appreciates against the dollar, FDI from the United States increases. In keeping with this conflicting result, the study by Kosteletou and Liargovas (2000) concerning some European countries can also be mentioned. These authors examined

the interlinkages between exchange rate and FDI inflows of 12 European Union countries against 21 other industrialized countries over the period from 1960 to 1997. After utilizing appropriate models and tests for regression needs, the results show that the weaker Euro does not have uniform effects on FDI across unified Europe. For instance, it decreases FDI inflows in Belgium, Luxembourg, Germany, Greece, Italy, the Netherlands, Portugal, Ireland, and Spain (indicating a positive effect) while stimulating inflows in Denmark, France, and the UK (indicating a negative impact).

Conversely, the positive effect of exchange rates on foreign direct investment is highlighted by Lily et al. (2014). Incontestably, in their paper, these authors examine the variations in the association between exchange rates and foreign direct investment (FDI) for four ASEAN countries: Malaysia, the Philippines, Thailand, and Singapore. To achieve this, they employ an ARDL bounds test approach using annual data. The results demonstrate a significant positive impact on FDI inflows when the Singapore dollar, Malaysian ringgit, and Philippine peso appreciate in the long run, while no significant impact is observed in the case of Thailand.

In their paper, Azeroual and Cherkaoui (2015) investigate the main determinants of foreign direct investments (FDI) in Morocco from 1980 to 2012. Their methods include the cointegration test and the Vector Error Correction Model (VECM) estimation, incorporating the real exchange rate among the independent variables. The results revealed that the real exchange rate increases FDI entry, thus positioning it as a primary determinant of FDI in Morocco. Additionally, Alba et al. (2010) inspect the relationship between exchange rates and foreign direct investment (FDI) inflows into the United States (US) within a model that allows for the interdependence of FDI over time. They utilize unbalanced industry-level panel data from 1988 to 1994. One of their main findings is that, under a favorable FDI environment, exchange rates exert a significant positive effect on FDI inflows.

While some studies revealed a significant relationship between FDI inflows and Exchange rate, other research conducted discovered no statistical long-term relation between the two variables. In this line, Raman-Raju and Gokhale (2012) in Oludiran and Abimbola (2018), attempt to analyze the link between FDI and the nominal exchange rate in India from 1992 to 2010 using time series data. The authors use the unit root test and the Johansen cointegration test to show whether the variables exhibit stationarity and a long-run association, respectively. The finding of the tests indicates the absence of any long-run association between the two variables under consideration. That is the Vector Auto Regressive (VAR) model illustrates that the coefficients do not have any long-term relationship.

In the same spirit, Batana (2011) tries to identify the determinants of FDI flows in seven countries of WAEMU with data spanning the 1972-2002 period using the Arellano and Bond (1991) Generalized Moments Method (GMM). To do this, the author integrates the real exchange rate as one of the explanatory variables. The finding suggests a negative coefficient but not statistically significant, indicating that the real exchange rate does not determine FDI flows for the countries concerned during the period of the study. Again, Boburmirzo and Boburjon (2022) attempt to examine the impact of Exchange rate on Foreign Direct Investment in the Commonwealth of Independent States (CIS)

countries from 1995 to 2018. The authors don't use any pre-estimation test on variables or post-estimation test on the model used. However, using simple regression analysis and the Granger causality test, they found that the Exchange rate does not affect foreign direct investment.

Likewise, Amuedo-Dorantes and Pozo (2001) examine the effect of FDI inflows on both the exchange rate and its volatility in the USA from 1976 to 1998. Interestingly, they could not find any statistically significant relationship between the two variables in the short run, even if their findings indicate a negative coefficient, meaning that when foreign exchange rate uncertainty increases, the FDI inflows decrease in this country. The same results can also be observed with Calderon and Jorge (1985) and Tuman and Emmert (1999), who did not find any significant relation between these two variables of interest. To conclude this presentation, even though the issue of FDI and exchange rate has been intensively studied, there are still mixed empirical supports.

This controversy motivates this research on the comparative relationship between the exchange rate and FDI inflows in Niger, where the empirical evidence is still not thoroughly developed.

3. Methodology

To address the issue of the relationship between Foreign direct investment and exchange rate, the analysis relies on annual time series data from 1992 to 2024 sourced from consistent institutions. The variables used are based on the theoretical and empirical framework. The model used is that of Gbenga and Eleh (2024) with some modifications. These authors used Gross Domestic Product (GDP), Inflation rate (INF), and Lending rate (LR) as control variables. In our model, instead of LR, we use the degree of openness of the economy (OPN) in order to capture whether the movement of goods and services across the border can attract FDI inflows. FDI is provided by World Bank development indicators (WDI); GDP, INF, and OPN come from the Central Bank of West African countries (BCEAO), and Real effective exchange rate (REER), a proxy of exchange rate, is provided by the Bruegel dataset. The functional model of Foreign direct investment is specified as follows:

$$FDI = f\,(REER, OPN, RGDP, INFL) \tag{3.1}$$

Furthermore, the econometric model of the aforementioned model is given as:

$$FDI_t = \beta_0 + \beta_1 REER_t + \beta_2 OPN_t + \beta_3 RGDP_t + \beta_4 INF_t + \mu_t \tag{3.2}$$

where:

i. FDI refers to Foreign direct investment, net inflows (% of GDP). This series shows net inflows (new investment inflows less disinvestment). It's the dependent variable.

ii. REER, Real effective exchange rate, is the proxy of the exchange rate. It is calculated by using the nominal exchange rate times the ratio of consumer price index of the 65 most trade partners of Niger to domestic consumer price index. It is in certain terms. So, an increase of REER reflects an

appreciation of the domestic currency (Franc CFA). It is the variable of interest. It has an ambiguous sign according to the literature. It can have a positive or a negative sign.

iii. OPN is the degree of trade openness, which is measured by the ratio of the sum of exports and imports of goods and services to GDP. This variable measures the significance of foreign trade, that is, the degree of protection. The use of this variable is in line with the studies conducted by Gbenga and Eleh. (2024), Xing and Wan (2006) and Batana (2011). It is expected to be positive.

iv. RGDP is the rate of real gross domestic product. It is used as a proxy for market size. This metric has been used by several researchers. See, for instance, Gbenga et al. (2024), Batana (2011), Kosteletou (2000), and Xing and Wan (2006). It is assumed that the higher the size of the market, the higher the number of foreign investors in the country. So, this variable is expected to be positive.

v. Finally, INF is the Inflation rate, which is measured as the Consumer Price Index (CPI) movement. The CPI measures the yearly percentage change in the cost of obtaining a basket of goods and services for the average consumer. This variable is used as a proxy for economic stability. It is assumed that foreign investors avoid countries with unstable economies. Too much price volatility refers to this instability. Gbenga et al. (2024), Boburmirzo and Boburjon (2022) used this inflation metric. It is expected to be negative.

μ = Error term or white noise; t = Time period and $\beta_0 - \beta_4$ = Intercept and coefficients of the estimated parameters.

To estimate equation (3.2), the study used Augmented Dickey-Fuller and Phillips-Perron tests to check for the stationarity of the variables. The cointegration among the variables has been checked by the ARDL Bond test. Because of the differences in the orders of integration of the variables, the ARDL model has been used to estimate the relationship between FDI and exchange rate in Niger. At the end, some post-tests of validity (correlation, heteroscedasticity, Ramsy and normality tests) of the model have been conducted. The output of these different tests is presented and commented in the fourth section.

Equation (3.2) transformed to the ARDL model as developed by Pesaran, Shin, and Smith (2001), is specified as follows:

$$FDI_t = \beta_0 + \beta_1 REER_{t-1} + \beta_2 OPN_{t-1} + \beta_3 RGDP_{t-1} + \beta_4 INF_{t-1} + \mu_t \quad (3.3)$$

From (3.3), we derive the error correction equation as follows:

$$\Delta FDI_t = \beta_o + \sum_{i=1}^{m} \beta_1 \Delta FDI_{t-i} + \sum_{i=1}^{m} \beta_2 \Delta REER_{t-i} + \sum_{i=1}^{m} \beta_3 \Delta OPN_{t-i} + \sum_{i=1}^{m} \beta_4 \Delta RGDP_{t-i} + \sum_{i=1}^{m} \beta_5 \Delta INF_{t-i} + \alpha_1 FDI_{t-1} + \alpha_2 REER_{t-1} + \alpha_3 OPN_{t-1} + \alpha_4 RGDP_{t-1} + \alpha_5 INF_{t-1} + \mu_t \quad (3.4)$$

Where Δ is the first difference operator; m stands for optimal lag, β_1 to β_5 are the coefficients of the short-run parameters, while α_1 to α_5 are the long-run coefficients of the variables in the equations. β_0 is the constant, and μ is the error term. However, the error correction representation of equation (3.4) is formulated as:

$$\Delta FDI_t = \beta_o + \sum_{i=1}^{m} \beta_1 \Delta FDI_{t-i} + \sum_{i=1}^{m} \beta_2 \Delta REER_{t-i} + \sum_{i=1}^{m} \beta_3 \Delta OPN_{t-i} + \sum_{i=1}^{m} \beta_4 \Delta RGDP_{t-i} + \sum_{i=1}^{m} \beta_5 \Delta INF_{t-i} + \Omega ECM_{t-1} \quad (3.5)$$

Where ECM is the error correction term generated from the ARDL models, and Ω is the coefficient of the ECM, which expresses the speed of adjustment back to equilibrium in case of any distortion in the economy. If Ω = 0, then there would be no evidence for a long-run relationship. This parameter is expected to be significantly negative under the prior assumption that the variables show a return to a long-run equilibrium.

4. Results and analysis

This section presents the results on the relationship between FDI inflows and exchange rate in Niger republic. The analysis begins with an assessment of the descriptive characteristics of the variables, and the results are reported in Table 1.

Table 1: Summary Statistics of the Variables

Statistics	FDI	REER	RGDP	OPN	INF
Mean	3.414799	99.78122	4.786136	20.04429	3.424235
St. Dev.	3.446139	8.718648	3.904734	3.564226	6.867473
Skewness	0.807250	1.838310	0.324531	0.840630	3.368516
Kurtosis	2.672685	7.232908	2.409689	2.919135	16.63468
Jarque-Bera	3.731397	43.22318	1.058403	3.895612	318.0268
Probability	0.154788	0.000000	0.589075	0.142587	0.000000
Observations	33	33	33	33	33

Source: *Author's computation.*

The results of the descriptive analysis presented in Table 1 indicate that there are 33 observations per variable, meaning that the assumption of at least 30 observations in the case of time series analysis is satisfied. All the variables have a positive mean, indicating a persistent period of increasing values of the variables. Furthermore, the variables real effective exchange rate and inflation rate exhibit the highest standard deviations, with values of 8.718 and 6.867, respectively.

Furthermore, the stationarity of the variables was assessed using the Augmented Dickey-Fuller and Phillips-Perron tests, with results provided in Table 2.

Table 2: Unit Root Test (Augmented Dickey-Fuller and Phillips-Perron)

Variables	Augmented Dickey-Fuller		Phillips-Perron	
	Level I(0)	First Diff. I (1)	Level I(0)	First Diff. I(1)
FDI	-1.8477	-4.7927***	-2.1020	-4.8065***
REER	-4.7537***	-10.592	-4.8941***	-6.4170
RGDP	-8.8277***	-7.5645	-10.043***	-49.510
OPN	-1.7536	-4.8513***	-1.3115	-4.8774***
INF	-5.2697***	-12.671	-5.2640***	-13.200

*Note ***, **, * indicating significance at 1%, 5%, 10% respectively.*

Source: *Author's computation.*

The results of the unit root test show that some variables (REER, RGDP, and INF) are stationary at level while FDI and OPN are stationary at the first difference, even with ADF and Phillips-Perron tests. Given the different orders of integration among the variables, it is concluded that the Autoregressive Distributed Lag (ARDL) model is the most suitable and effective method for analyzing the relationship among these variables. Consequently, this study proceeds to perform a bound test using the ARDL model, with findings presented in Table 3.

Table 3: ARDL Bounds Test

F-Statistics	5.84	
Critical Value Bounds		
Significance levels	I(0) Bounds	I(1) Bounds
10%	2.2	3.09
5%	2.56	3.49
1%	3.29	4.37

Source: *Author's Computation from EViews Version 12.0.*

The findings of the bound test, as presented in Table 3, indicate strong evidence of cointegration among the variables. This is supported by the F-statistics value (5.84), which surpasses the critical value bounds even at a 1% level of significance. Consequently, the null hypothesis of no cointegration is rejected. The presence of cointegration allows the study to estimate the long-run and short-run coefficients of the ARDL model. The long-run and short-run coefficients of the ARDL model are presented in Tables 4 and 5, respectively.

Table 4: Impact of Exchange rate on FDI inflows on the long-run in Niger

Dependent Variable: Foreign Direct Investment				
Variables	Coefficients	std. Error	t-Statistics	Prob.
REER	0.3407	0.0923	3.6930	0.0022
RGDP	-0.2901	0.2857	-1.0151	0.3261
OPN	-1.0462	1.8819	-0.5559	0.5865
INF	1.1113	0.3969	2.8001	0.0135
C	-29.5958	7.7689	-3.8095	0.0017
R^2 = 0.73, Adj. R^2 =0.62, DW = 1.64, F-Stat. = 6.77 (0.0012), AIC = 1.6107, SIC = 1.9578, HQC = 1.6924				
Source: *Author's calculation.*				

According to the results presented in the two Tables (4 &5), the real effective exchange rate (REER) exhibits a positive sign in the long run and a negative sign in the short run. However, its influence on Foreign direct investment is found to be statistically significant at 5% level. For instance, in the long run, a 1-unit increase in REER is associated with an increase in FDI inflows by approximately 0.341 units on average. It means that an appreciation of the domestic currency attracts FDI inflows while the opposite decreases it in Niger. The results are in line with Lily (2014), Goldberg and Klein (1997), Kosteletou and Liargovas (2000), among others. This result can be justified by the nature of the foreign investment. According to this results Niger's foreign investment is guided by the market-seeking objective. It is clear that in the long run, the main sectors such as construction (Kandaji and China National Petroleum Corporation pipeline) and services (telecom) are the major ones in attracting overseas investors. In this case, it appears that when the local currency appreciates, the return in the foreign currency will increase the earnings of these foreign companies. But on the other hand, specifically in the short run, any appreciation of the franc CFA reduces the volume of FDI entry. This result is in line with Abimbola and Oludiran (2018). For this kind of

investment, the short run is probably the period of implementation or probation period. So, in this sense, any appreciation of the local currency will make this implementation very expensive, thus reducing the capacity of investors to invest.

Table 5: Short-run impact of Exchange rate on FDI inflows in Niger

Dependent Variable: Δ (Foreign Direct Investment)				
Variables	Coefficients	std. Error	t-Statistics	P-value
Δ (REER)	-0.0495	0.0227	-2.1860	0.0451
Δ (RGDP)	-0.1657	0.0650	-2.5508	0.0222
Δ (OPN)	-0.9165	1.3881	-0.6603	0.5191
Δ (INF)	0.3858	0.0867	4.4478	0.0005
ECM (-1)	-0.3285	0.0714	-4.5977	0.0003
Corr. = 1.39 (0.2832), H-test = 0.77 (0.6023), RESET = 0.99 (0.3356), Norm. = 3.15 (0.2060)				

Note: *corr. represents the test for serial correlation, H-test is the heteroscedasticity test, while Norm. is the test for normality.*

Source: *Author's computation.*

Also, the results presented in the two Tables demonstrate that the inflation rate exerts a positive impact on FDI inflows both in the long and the short run. However, its impact is found to be statistically significant at a 5% level of significance. This finding reveals for example that for any increasing of 1-unit of inflation rate, the FDI inflows will increase by 1.11 units and 0.38 units in Niger republic under the period of the study respectively in the long and the short-run. This conclusion supports the idea that Niger foreign investors are interested by the high domestic prices which will increase their profits. This finding contradicts the theoretical expectation that FDI inflows are negatively affected by the inflation rate.

Finally, the remaining variables of control demonstrate no significant effect except the growth rate (RGDP) in the short run at 5% level. Indeed, the result suggests that any increase or decrease of RGDP of 1-unit decreases or increases the FDI inflows by 0.165 units on average. The result contradicts the theoretical expectation and some empirical conclusions, such as the study of Adamou Illou and Oumari (2023), who found in the case of West African Economy and monetary union (WEAMU) that GDP is the main factor that attracts FDI inflows.

The results from Table 5 indicate that the Error Correction Model (ECM) has the correct sign, which is negative (- 0.3285), and it is statistically significant at a 1% level of significance. These findings demonstrate the relevance and validity of the estimation. Furthermore, the results suggest that in the event of any disturbances or imbalances in the economy, the system can correct itself at a rate of 32.85% per year. This means that, all else being equal, it takes approximately three years (1/0.3285) for the economy to restore to its equilibrium state following shocks or distortions.

Based on the results of both the pre-estimation and post-estimation tests, we can conclude that the model and its parameters are of good quality. This allows for the meaningful interpretation of the findings and provides confidence in the reliability of the estimated relationships among the variables. Furthermore, several diagnostic tests were conducted on the model to assess its appropriateness and provide additional confidence in the validity of the results. These tests include the Breusch-Godfrey Serial Correlation LM test, the Breusch-Pagan-Godfrey test of Heteroskedasticity, the Ramsy-test of specification, and tests for normality such as the Jarque-Bera test and the Durbin-Watson statistic. These tests are presented at the bottom of Table 5. The results of these diagnostic tests confirm that the model is appropriate and reliable due to insignificant probability values. They assure that the model adequately addresses potential issues such as serial correlation, heteroskedasticity, and normality of the residuals.

5. Conclusion

This paper assesses the effect of the exchange rate on FDI inflows. From the results, the paper improves the understanding of the real effects of exchange rates in developing countries' markets. This study carries out two important conclusions. In line with the theoretical expectation and some previous studies, the current study shows a significant positive long-run relationship between FDI inflows, exchange rate, and inflation rate. But in the short run, the exchange rate and growth rate exert a negative effect, while the inflation rate exerts a positive effect on FDI inflows. These findings make this case interesting for literature and policymakers. Indeed, this positive effect of exchange rate, reflects the fact that the FDI inflows in Niger are in the market-seeking motivations. It is also why the FDI inflows react positively to the inflation rate in the long run. It should be observed that this kind of FDI does not create wealth and does not improve the country's trade balance. It is based essentially on the services sector, mainly the telecommunication, infrastructure, Transport-logistics, etc. The oil sector of Niger is essentially for domestic consumption. The sector of mine, uranium, is a particularly regulated sector. In line of these conclusions if the objective is for instance to improve Niger's trade balance and generate employment using FDI inflows, one can ought to steer more FDI inflows toward the industrial sector, creator of wealth. This will discourage imports and improve exports. Additionally, measures as controlling prices should be taken. Otherwise, foreign investors will always move towards the domestic market to enjoy the high level of prices and the stability of the domestic currency due to the prevailing fixed exchange rate regime.

6. References

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