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FINANCIAL PERFORMANCE AND ECONOMIC GROWTH IN BENIN: IMPACT OF NAIRA EXCHANGE RATE VOLATILITY

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Abstract: The presence of frictions can alter the relationship between corporate profitability and national wealth. This paper examines the relationship between corporate financial performance and economic growth in Benin, focusing primarily on the impact of volatile changes in the official exchange rate of the Nigerian naira on this relationship. Using aggregate microeconomic data on 234 formal firms of all categories (small, medium and large), complemented by quarterly data on the economy as a whole from 2013 to 2018, two error-correction models were estimated using time-series econometric techniques. The results show that firm performance has a positive impact on long-term growth when the real exchange rate of the naira improves, while high exchange rate volatility worsens the effect. These findings suggest that efforts should be made to significantly reduce the negative impact of the naira by continuously improving the quality of institutions, in particular through better regulation and governance, and a rigorous fight against corruption, while at the same time increasing the effectiveness of financing for businesses so that their financial performance can be closely linked to the growth of the Beninese economy.

Keywords: Financial performance, companies, economic growth, exchange rate volatility, naira.

JEL: G_{32}, F_{31}, O_{11}.

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1. INTRODUCTION

Unanimously recognised as wealth creators (Mokhefi & Belaribi, 2015), firms, especially the most successful ones, are a major asset for the socio-economic development of developing countries. They are even seen as the engine of economic stability and growth, providing jobs, goods and services, and high-quality tax revenues that contribute directly to the economic health of countries (ITC, 2014). Thanks to their substantial tax payments (direct and indirect[1]), companies enable governments to finance various sectors, especially priority sectors such as education, health and infrastructure (Renouard & Lado, 2013; Gravellini & Leon, 2021, Haddouchi *et al.*, 2023). This tax contribution often takes into account, several objective criteria, such as investments, profits, payroll and turnover (Chanterac & Renouard, 2012). Similarly, the jobs they create are an essential factor in reducing unemployment and increasing output, which are important levers for economic growth. At the individual level, these jobs provide financial security, which improves living standards, increases productivity and consequently reduces poverty (Renders & Sleuwaegen, 2012). Finally, the goods and services provided by companies are also a vector for poverty reduction, as their high availability contributes to food security. A dense productive sector also allows an economy to be easily integrated into global value chains, which improves its export performance and is an important source of foreign exchange earnings (Gravellini & Leon, 2021).

However, these different dimensions of companies' contribution to economies are closely linked to their performance, which in turn depends heavily on their financial situation. According to Bloom *et al.* (2010), Kersten *et al.* (2017) and Restuccia & Rogerson (2017), access to finance is the central determinant of company performance, and limited access to finance is one of the main constraints to growth. In addition to this aspect, the literature also identifies uncertainties such as exchange rate volatility as potentially important factors likely to have a strong impact on company performance (Naib & Guati, 2022, 2023). Indeed, exchange rate instability confronts market participants with cost and return insecurity, leading to fluctuations in their financial performance (Burgess & Knetter, 1998; Gourinchas, 1999; Bahmani-Oskooee & Hegerty, 2007; Caporale *et al.*, 2015; Ahmed, 2017). Thus, companies' market power depends not only on prices and product qualities but also on exchange rate movements. For example, volatile exchange rate movements affect firms' sales levels, which fall when exchange rate movements are large and rise when they are small (Baggs *et al.*, 2011).

After an exhaustive review of the literature, it can be said that the direct relationship between company performance and economic growth has received little scientific attention. Most work has focused on transmission channels to explain this relationship (Khumbuzile & Khobai, 2018; Elabjani & Cherkaoui, 2018; Tufaner, 2021). Better still, the impact of exchange rate volatility on this relationship has been completely neglected. Research in this area has only examined the impact of exchange rate volatility on either growth (Madene & Slimani, 2015; Avlekete & Igue, 2024) or performance. The latter has even recently received an in-depth analysis by Kelilume (2016). The author suggested that investors, especially international companies, base their investment decisions on the volatility of the exchange rate between the Nigerian naira and the currency of their country of origin, which is the subject of this study. In doing so, he highlighted the significant negative impact that fluctuations in this rate have on company performance, especially when its high volatility makes it less efficient and less effective.

In the specific context of Benin, where the African Financial Community (CFA) franc is used, the fall in the exchange rate between the naira and this currency is having a significant impact on the performance of companies and, by extension, on the growth of the country's economy. Indeed, the official Naira/CFA franc rate[3] rose from 0.4 in 2016 to 0.52 in 2017 and 0.55 in 2018, before falling to 0.52 in 2019. It recovered, reaching 0.71 in 2021, only to fall again to 0.68 in 2022, before recovering to 0.94 in 2023 (BCEAO, 2024). Meanwhile, Benin's imports from Nigeria rose from 29.8 billion CFA francs in 2017 to 45.7, 33.2 and 37.9 billion CFA francs in 2018, 2019 and 2020 respectively, compared with 31.6, 7.19, 1.76 and 5.54 billion CFA francs of exports for the same periods (INStaD, 2022), explaining the strong imbalance in bilateral trade. At the same time, Beninese companies saw their turnover fall from more than 773 billion CFA francs in 2017 to around 597.6 billion CFA francs in 2018, a decrease of almost 29.35% over the period (INStaD, 2022). These statistics reflect the financial vulnerability of companies in Benin, which is linked in part to the fluctuation of the naira and will undoubtedly have repercussions on the growth of the country's economy. This is evidenced, for example, by the significant decrease in taxes collected on company profits over the same period, from around 9 billion CFA francs in 2017 to around 7.5 billion CFA francs in 2018 (INStaD, 2022).

All these facts motivate our research, the main question of which is: Does the volatility of the naira exchange rate affect the relationship between

a company's financial performance and economic growth in Benin? The answer to this question will enrich the literature in two ways. Firstly, by proving the impact of exchange rate volatility on the interaction between financial performance and economic growth. Most existing research documents the impact of volatility either on performance (Kelilume, 2016; Reaz *et al.*, 2017; Hussain *et al.*, 2020), or on economic growth (Madene & Slimani, 2015; Avlekete & Igue, 2024). Secondly, by becoming one of the very first works to establish a direct link between financial performance and economic growth for the specific context of Benin, while highlighting the transmission channels.

The remainder of the article is as follows: Section 1 reviews the theoretical and empirical literature on the topic. The methodological approach is then outlined in Section 2, along with the study data. Section 3 presents and discusses the estimation results, followed by the conclusion.

2. COMPANIES PERFORMANCE AND ECONOMIC GROWTH

This section reviews the theoretical and empirical literature on the relationship between the two variables.

2.1. Theoretical framework

The theoretical literature on the link between companies' performance and economic growth is generally based on transmission channels. Tax revenue, employment and output through value added are to a large extent the main channels through which company performance affects the economic growth of countries.

Tax revenue channel

The impact of taxation on the economy depends on the theoretical framework used (neoclassical or endogenous growth models), the factor of production taxed (capital or labour), the production techniques and the process of human capital accumulation (Brun & Chambas, 1998). For example, in his neoclassical growth model, Solow (1956) suggests that long-term taxation has no effect on economic growth, whereas in the endogenous growth models of Barro (1990), it does, and even has permanent effects.

Furthermore, the theoretical literature on taxation concludes two distinct effects (negative and positive) both of which influence economic growth. The positive effect is related to tax rates that are appropriate for agents and generate sufficient revenue to finance public spending, a potential source of

economic welfare (Engen & Skinner, 1996); whereas the negative effect is due to distortions in choice and the effects of disincentives inherent in taxes (Easterly & Rebelo, 1993) such as over-taxation (Hall & Jorgenson, 1967; Laffer, 1981), financial constraints limiting business investment, uncertainties such as exchange rate volatility likely to significantly affect results (Shapiro & Ruttenberg, 1976; Bernanke & Gertler, 1990).

Job channel

Job creation is a powerful tool for boosting overall economic growth. This assertion is based on Okun's Law (1962), which is seen as the starting point for this relationship. This law is, in theory, the link between the supply curve and the Phillips curve[4], stipulating that there is an inverse relationship between the unemployment rate and growth. In other words, when the unemployment rate falls significantly, output rises and vice versa. Moreover, a large number of jobs must be created in order for unemployment to be absorbed to any significant degree. Thus, Seers (1974) establishes that the availability of employment, the creation of employment opportunities and an increase in the level of employment are prerequisites for the economic prosperity of countries in general and developing countries in particular. In this context, several authors (Dunkelberg & Cooper, 1982; Kirchhoff, 1991) argue that improving the level of employment is a necessary condition for promoting economic growth, as it leads to an increase in the production of goods and services, which in turn generates income and creates new employment opportunities.

Value-added channel

Defined as the difference between the production value of goods and services (sales) and intermediate consumption (the value of goods and services used in the production process), value added is a key determinant of a country's gross domestic product. As such, it has a positive or negative impact on the level of economic activity. Indeed, when a partnership approach is favoured with suppliers, value-added makes a substantial contribution to national wealth production (Brodier, 2013). Similarly, greater emphasis on the non-price attractiveness of goods and services allows value added to offset the national level of imports through higher exports. Imports generally lead production units to choose a quantity of imported inputs that generates as much profit as it costs (Hall, 1988; Basu & Fernald, 2002). As a result, foreign shocks affect domestic value added only to the extent that they affect the supply of domestic factors.

Based on the above exhibits, we simplify the relationship between a company's financial performance and economic growth by focusing on the currency risk factor (Figure 1).

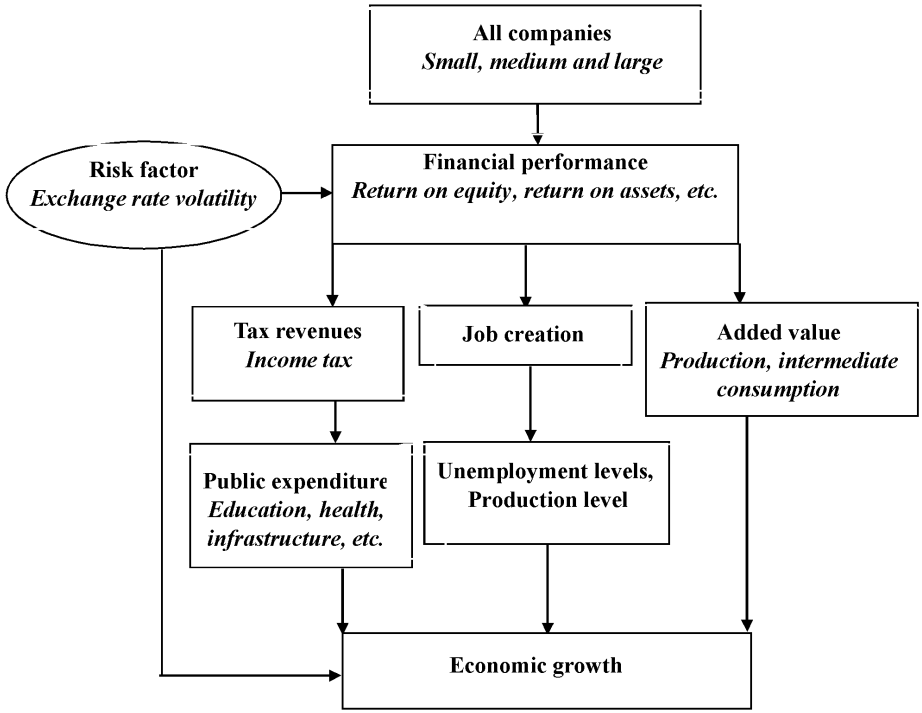

Figure 1: Conceptual link between companies' contribution to economic growth as a function of shock

Source: Authors.

2.2. Empirical literature

In relation to the theoretical analysis, this literature can be divided into three respectively associated with the transmission channels of company performance.

The first batch of research dealing with the tax revenue channel has been the subject of countless studies with mixed conclusions. Some confirm the theory and find a positive impact of taxes on economic growth, while others confirm a negative relationship between the two variables. Scully (1996) and Haddouchi *et al.* (2023), estimating the optimal tax threshold in the New Zealand and Moroccan economies respectively, find that an optimal tax rate generates substantial resources that boost economic activity. In a similar vein, Zellner and Ngoie (2012), based on a Marshallian macroeconomic model

applied to the US economy, reach a similar conclusion. The authors' results show an increase of almost 3%, in the growth of gross domestic product per capita, attributable exclusively to the 5% reduction in corporate tax rates. Better still, this tax policy is corroborated when tax structures are taken into account. For example, the work of Lee and Gordon (2005) clearly shows that a 10% reduction in corporation taxes increases economic activity by 1 to 2%. Similarly, Macek's (2014) research which assesses the impact of each type of tax on growth, shows that taxes on corporate and personal income significantly boost economic growth in OECD countries.

Other empirical papers report interesting results. This is the case of Babatunde *et al.* (2016) who conducted a study on the impact of taxes in Africa. Their conclusion reflects a positive correlation between tax revenues and gross domestic product. The same is true for Maïga *et al.* (2023), who use an ARDL to show that tax policy instruments ensure growth in Mali. Thus, any drop in investment due to a shock causes a drop in revenue and, ultimately, economic growth (Khumbuzile & Khobai, 2018).

By including shocks in this relationship, studies that are not very cross-sectional find negative relationships. For example, Ehrhart and Guerineau's (2013) quantitative analysis of developing countries observed from 1980 to 2008, shows that commodity price volatility has a negative effect on tax revenues, the main determinant of growth in these countries. More specifically, volatility in the price of imported commodities reduces revenues from direct taxes.

As for the second set of studies, the effect of employment levels on growth has also been the subject of much debate in the empirical literature. Some find a positive linear relationship between the two variables, while others conclude that it is non-linear. On the one hand, the work of Sodipe and Ogunrinola (2011) finds a linear positive relationship between labour and real gross domestic product in Nigeria. The same result is obtained in Morocco with Ezzahid and El Alaoui (2014). In this vein, Onsomu *et al.* (2024) find that job creation is essential for the development of economies, particularly those in Africa. Taking Kenya as an example, the authors used the social accounting matrix to determine which sector is potentially the strongest in terms of job creation. The development of agriculture, services and trade offers great potential for job creation in this country. For Idalfahim and El Ouardirhi (2024), entrepreneurship is the fundamental element in promoting economic growth and combating precariousness and poverty. Their analysis stems from

an assessment of the Middle East and North Africa (MENA) region, using the method based on generalised system moments.

Elabjani and Cherkaoui (2018), using a matching model in the case of Morocco, suggest that business creation is a policy that contributes to economic growth by generating jobs that absorb unemployment. More specifically, the authors point to small and medium-sized enterprises as the easiest economic units to create, the most dynamic and the most effective means of economic development. On the other hand, the study by N'guessan (2022) serves as an empirical justification among the rare studies that address the non-linearity of the positive employment-growth relationship. Using an ARDL of 42 industries as a sample in Ivory Coast for the period 1996-2016, the author concludes that the long-term relationship between the volume of employment and output growth is asymmetric. The sensitivity of companies to shocks underpins the nature of this relationship.

Finally, there are studies of value added. Although there is an abundance of work examining the contributions of the company, few have examined the effect of value added on economic growth. The little research that exists has been limited to the effects of value added in agriculture, industry, manufacturing and services on national wealth (Tufaner, 2021). In Turkey, for example, Tufaner evaluates the share of sectoral value added to gross domestic product. The result shows that the services sector, followed by industry and agriculture, are the most important drivers of economic expansion. The effect of sectoral value added is also found in Zambia, but in the long term by Muyambiri (2023) with an ARDL bound test over 1994 to 2021. On the other hand, Nonvide *et al.* (2021) qualify the impact of value added by considering a panel of countries. The authors determine the threshold at which agricultural value added no longer has an effect on economic growth in Sub-Saharan African countries. Using the Generalised Method of Moments (GMM) system, they indicate that once the share of agricultural value added in national wealth reaches 31.8%, the contribution of agricultural production to gross domestic production begins to decline for this group of countries.

All in all, the literature shows that there are no studies directly linking company performance, especially financial performance, to economic growth. This research on Benin focuses on this issue, highlighting the impact of exchange rate risk, which to our knowledge has not been addressed in this context.

3. RESEARCH METHODOLOGY AND DATA

We present the econometric model and its specification, followed by the data. This is followed by a descriptive analysis and statistical tests to arrive at the appropriate estimation method.

3.1. Econometric modelling

The model to be developed should make it possible to study the link that may exist between financial performance and economic growth, as well as the impact of exchange rate volatility on this link. To achieve this, we refer to the work of Some and Maiga (2021) and Avlekete and Igue (2024) and use the following economic growth model as a framework for analysis, which will be modified to take account of our objective.

$$\boldsymbol{Y = f\,(Perf,\, X)} \tag{1}$$

where Y is national wealth measured by gross domestic product per capita (*GDP*); *Per f* is the financial performance of companies captured by the rate of return on equity; X is the vector of additional variables and includes company-internal variables representing transmission channels, macroeconomic and institutional variables likely to affect the relationship between company profitability and economic growth.

In line with our objective, by studying the association between real domestic output and company performance, we attempt to determine whether relatively higher exchange rate volatility affects companies' contribution to national wealth. Thus, following Khan *et al.* (2017) and applying the logarithm (*l*) to the variables, we specify the following models depending on whether we are in a real exchange rate trend or its volatility (Avlekete & Igue, 2024):

Real exchange rate trend:

$$\text{IGDP}_t = \beta_0 + \beta_1\, Perf_t + \beta_2\, RER_t + \psi X_t + \varepsilon_t \tag{2}$$

Real exchange rate volatility:

$$\text{IGDP}_t = \beta_0 + \beta_1\, \text{Perf}_t + \beta_2\, \text{VolRER}_t + \beta_3\, (\text{VolRER}_t * \text{Perf}_t) + \psi X_t + \varepsilon_t \tag{3}$$

where Vol*RER* is the real exchange rate volatility RER and the interaction between Vol*RER* and *Perf* is our variable of interest; β_i are the parameters to be estimated; ε_t the following error term $N(0, \sigma^2)$ and t is the period.

To estimate these models (equations 2 and 3), and given the objective of our study, we use time series econometric techniques, namely the analysis of

series stationarity and the analysis of any cointegration relationships between series. The result of these analyses will allow us to make the appropriate specification. Thus, if the variables are stationary in level, a level VAR (*vector autoregression*) model is estimated; if stationarity is obtained at first difference for the variables and there is a cointegrating relationship between them, an ECM (*error correction model*) is estimated; if the variables are stationary only in first difference, but have no cointegrating relationship, a VAR is estimated in first difference; if stationarity is verified for different orders of integration, a VAR is estimated by harmonising these differences in order of integration (in other words, by reducing to the same order of integration).

3.2. Data definitions, sources and statistics

The specifications of this study are estimated in time series. The sample for our analyses consists of microeconomic and macroeconomic data. The microeconomic data are based on a rigorous sample of 234 formal Beninese companies (43 small, 115 medium and 76 large) across all sectors of activity, obtained from Benin's National Institute of Statistics and Demography (INStaD) covering the period 2013-2018 on a quarterly basis. The choice of this period and the relatively small number of companies selected is constrained by the regular availability of data. Macroeconomic data are related to the global economy. The time dimension of this study relates to that of the companies, i.e., from 2013 to 2018 in quarters (2013: Q1 to 2018: Q4). For the sake of harmonisation, and given our objective, we aggregate the company data, as their microeconomic nature does not allow us to provide a reliable answer to the research question.

In addition, the data for all the research variables come from a variety of sources: the National Institute of Statistics and Demography (INStaD) of Benin; the Central Bank of West African States (CBWAS); the World Governance Indicators (WGI) and the World Development Indicators (WDI) of the World Bank. Table 1 shows the definitions and sources of the different variables.

We recall that the financial performance captured by the return on equity is the ratio of profit after tax to equity (Naib & Guati, 2022, 2023) and the standard deviation of the real Naira/CFA franc exchange rate is used as a measure of exchange rate volatility (Avlekete & Igue, 2024). According to the literature (Khan *et al.*, 2017), the other variables internal to the company (channels) include income tax, value added, and number of employees. The macroeconomic variables retained following the example of Mankiw

(1990) and Avlekete and Igue (2024) are: gross domestic product per capita, Benin-Nigeria bilateral exports and imports, and financial development; the institutional variables (Lanha, 2022) defined are of three dimensions, namely control of corruption, effectiveness of governance and quality of regulation, which are synthesised into an index of institutional quality (IQ) using the Principal Component Analysis (PCA) method of formula following the example of Dadegnon (2020) :

$$QI_i = \sum_{i=1}^{k} \rho_i X_i \tag{4}$$

with ρ_i the weighting coefficient associated with each corporate variable X_i.

Table 1: Variable definitions and data sources

Variables	*Definitions*	*Sources*
Gross domestic product per capita (GDP)	Measures the level of economic activity	WDI
Financial performance (Perf)	It is captured by the rate of return on equity, which is profit after tax on equity.	Calculating authors from INStaD
Real exchange rate Naira/CFA franc (RER)	Shows the relative value of the naira against the CFA franc, taking into account price variations in Nigeria and Benin	INStaD and CBWAS
Naira/CFA franc real exchange rate volatility (VolRER)	Exchange rate volatility is measured by the standard deviation of the real Naira/CFA franc exchange rate (RER)	Calculating authors from INStaD
Income tax (Incotax)	Deduction from company profits	INStaD
Value added (VA)	Measures the wealth generated by the production process	INStaD
Number of employees (Emp)	Number of employees taken on by the company	INStaD
Bilateral export (XB)	Value of goods from Benin to Nigeria	INStaD
Bilateral imports (IB)	Value of Benin merchandise from Nigeria	INStaD
Financial development (Devf)	Domestic credit to the private sector as a percentage of GDP	WDI
Institutional quality (IQ)	Institutional quality is an index calculated from the control of corruption, the effectiveness of governance and the quality of regulation using the PCA method	Calculating authors from WGI

Source: Authors.

Table 2 summarises the statistics for all the research variables. Analysis shows that most variables internal to the company (income tax and value added)

are highly volatile, with fairly high means and standard deviations. The same is true for some control variables, namely bilateral imports and exports. Other sensitive variables in the study, such as the financial performance indicator, the real exchange rate and its volatility, and gross domestic product per capita, show little dispersion.

Table 2: Summary statistics for study variables

Variables	*Average*	*Standard deviation*	*Minimum*	*Maximum*
GDP	280.812	22.897	239.085	318.949
Perf	7.981	5.646	-1.491	16.526
RER	1.340	0.328	0.878	1.906
VolRER	0.135	0.134	-0.018	0.398
Incotax	1.93e+09	3.71e+08	1.16e+09	2.36e+09
VA	3.14e+10	3.63e+09	2.51e+10	3.81e+10
Emp	1949.532	351.759	1529.123	2842.858
XB	5.41e+09	4.68e+09	1.03e+09	1.45e+10
IB	8.11e+09	1.84e+09	5.68e+09	1.16e+10
Devf	4.109	0.144	3.847	4.363
IQ	4.570	0.252	3.865	4.854

Source: Authors.

4. RESULTS AND DISCUSSION

This section presents and discusses the results, without omitting the preliminary tests.

4.1. Preliminary tests

As stated above, it is essential to carry out certain preliminary statistical tests to ensure that the estimation technique is adequate to avoid spurious regressions. These include stationarity tests and possibly cointegration tests.

Stationarity test

Studying the stationarity of a statistical series involves detecting whether or not it has a unit root. In this case, we use the standard Dickey-Fuller Augmented (1981) ADF and Phillips Perron (1988) PP tests on our variables. These tests follow a three-step sequential procedure and have as their null hypothesis the presence of a unit root in the series studied, in other words, the non-stationarity of the series. McKinnon's critical values are used to make a decision. After running these tests in Stata, the results are summarised in Table 3 below.

Table 3: Results of stationarity tests

Variables	In level		In first difference		Conclusion
	ADF	PP	ADF	PP	
lGDP	-1.331 (-1.746)	0.037 (-1.950)	-6.734* (-1.812)	-6.661* (-3.600)	I(1)
Perf	-0.652 (-1.746)	-0.307 (-1.950)	-1.874* (-1.812)	-1.967* (-1.950)	I(1)
RER	-0.732 (-1.746)	-0.415 (-1.950)	-2.237* (-1.812)	-2.721* (-1.950)	I(1)
VolRER	-0.522 (-1.746)	-0.437 (-1.950)	-1.927* (-1.812)	-2.091* (-1.950)	I(1)
lIncotax	-1.409 (-1.746)	0.062 (-1.950)	-1.946* (-1.812)	-2.421* (-1.950)	I(1)
lVA	-0.039 (-1.746)	-0.361 (-1.950)	-1.864* (-1.812)	-2.306* (-1.950)	I(1)
lEmp	0.122 (-1.746)	-0.530 (-1.950)	-2.137* (-1.812)	-2.124* (-1.950)	I(1)
lXB	-0.721 (-1.746)	0.049 (-1.950)	-1.957* (-1.812)	-2.010* (-1.950)	I(1)
lIB	-0.780 (1.746)	0.840 (-1.950)	-5.588* (-1.812)	-5.503* (-3.600)	I(1)
Devf	0.249 (-1.746)	0.137 (-1.950)	-20.982* (-3.600)	-20.982* (-3.600)	I(1)
IQ	-0.530 (-1.746)	-0.110 (-1.950)	-13.635* (-3.600)	-7.030* (-1.950)	I(1)

Note: Critical values at 5% are in brackets.
(*) indicates rejection of the null hypothesis of non-stationarity at 5%.

Source: Authors using Stata 15.1.

The results of the two tests carefully presented in this table are similar. They show that at the 5% threshold, the critical values of the different variables are all lower than the statistical values in level. However, the opposite is observed for the first difference. Thus, the null hypothesis of the existence of a unit root is accepted for all the series in the first case and rejected in the second. Consequently, the series in our models, i.e. lGDP, Perf, RER, VolRER, lIncotax, lVA, lEmp, lXB, lIB, Devf and IQ, do not show stationarity at the level (*I (0*)), but at the level of the first difference (*I (1)*). Therefore, there is a risk of long-term economic relationships between these series. Hence the need to perform a cointegration test to see whether the variables in the models move together at the same rate.

Cointegration test

Among the cointegration tests available in the literature, we adopt Johansen's test for this study. This test, based on the use of the maximum likelihood method, is used to test for the existence of long-term relationships in integrated time series and to obtain all cointegrating vectors in a multivariate framework. In general, Johansen's cointegration proposal is based on the results of the trace test and the maximum eigenvalue test. When the conclusions of these tests are different, it is usually the case that the results of the trace test are more powerful than those of the maximum eigenvalue test (Cadoret *et al.*, 2009). In our case, we fall back on the cointegration trace test, the results of which are shown in Table 4.

Table 4: Results of the Johansen (1988) cointegration test

Assumption: Number of EC assumed	*Equity*		*Likelihood ratio*		*5% critical value*	
	(1)	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*
None*			73.1730	180.3514	47.21	47.21
At most one*	0.86786	0.99781	30.6711	57.8577	29.68	29.68
No more than two	0.52932	0.92609	14.8460	5.7607	15.41	15.41
No more than three	0.50151	0.25027	0.2263	1.7012	3.76	3.76
*denotes a cointegrating relationship with a threshold of 5% CE = Cointegration equations						

Source: Authors using Stata 15.1.

Analysis of this table reveals that in each of the models (1 and 2), there is at least one (01) cointegrating relationship between the variables. Indeed, under the null hypothesis r = 1, the trace statistics (30.6711 for model 1 and 57.8577 for model 2) are all strictly above the critical value (29.68). These results suggest that the variables in our models are therefore cointegrated at the 5% threshold. This leads us to apply Engle and Granger's two-stage error correction model (*ECM*) to the detriment of Hendry's single-stage model, in order to capture the dynamic structure of the evolution of our series. Using the ordinary least squares (*OLS*) method, we estimate the long-term relationships between them, taken as the first difference.

4.2. Business profitability and the economy

This subsection presents the results of estimating the short- and long-term relationship, their validation, analysis and discussion.

Long-term relationship estimation results

The long-term relationship between domestic output per capita and the explanatory variables, including the return on equity of companies, is estimated by ordinary least squares. Table 5 below summarises the estimation results:

Table 5: Long-term relationship estimation results

	Dependent variable: lGDP *Estimation method: OLS*	
Variables	*(1)*	*(2)*
	Trend	*Volatility*
Perf	0.0241*** (0.0040)	0.0199*** (0.0045)
lIncotax	0.1378 (0.0900)	0.0493 (0.0891)
lVA	-0.1612 (0.1945)	0.0668 (0.1989)
lEmp	0.2720** (0.1316)	0.2082* (0.0938)
lXB	0.0239** (0.0084)	0.0187*** (0.0073)
lIB	0.3916*** (0.0571)	-0.2140** (0.0782)
Devf	0.6349 (0.0809)	0.7019*** (0.0515)
IQ	-0.3857 (0.1037)	0.4338*** (0.0596)
RER	-0.0160** (0.0472)	
VolRER		-0.0381** (0.1548)
VolRER*Perf		-0.0117*** (0.0044)
VolRER*lIncotax		-0.2943** (0.3614)
VolRER*lVA		-1.3661 (0.9309)
VolRER*lEmp		-1.0340** (0.5380)
Constant	2.6589 (1.8651)	2.4042 (1.5368)
R2	0.9977	0.9972
Fisher statistics	664.48***	830.25***

Note: Values in brackets are standard deviations. ****p<0.01; **p<0.05* and **p<0.1. Source:* Authors using Stata 15.1.

This table reflects the estimation results of two models (the RER trend model and the RER volatility model). In each case, the coefficients of determination of the long-term relationship R^2 (0.9977 and 0.9972 respectively for models 1 and 2) and the Fisher test statistic indicate the significance of the models and therefore their good fit. These coefficients show that 99% of the variability observed in GDP per capita is due to the exogenous variables in our models.

Furthermore, unit root tests on the residual of each of the long-term models lead us to accept the hypothesis that there is no unit root in the residual series (Table 6). Indeed, at the 5% threshold, the critical values are greater than the values of ADF and PP statistics in level (-3.000 > -3.726 and -3.000 > -4.953 for models 1 and 2 respectively). The residuals of the long-term relationship are therefore stationary in level. Co-integration between the variables in the models is therefore truly confirmed. From here, we can proceed to the estimation of the error-correction models (*ECMs*) which are used to analyse the short-term dynamics between variables.

Table 6: Results of residual stationarity tests

	ADF		PP		Conclusion
	(1)	(2)	(1)	(2)	
Residues	-3.726* (-3.000)	-4.953* (-3.000)	-3.726* (-3.000)	-4.953* (-3.000)	I(0)
Note: Critical values at 5% are in brackets. (*) indicates rejection of the null hypothesis of non-stationarity at 5%.					

Source: Authors using Stata 15.1.

Short-term relationship estimation results

Table 7 below presents the results of the short-term relationship. These are obtained by estimating, using ordinary least squares, the first difference of the model variables, which is representative of the short-term dynamics of the error-correction models.

Table 7: Results of the estimation of the short-term relationship (ECM)

	Dependent variable: lGDP *Estimation method: OLS*	
Variables	*(1)*	*(2)*
	Trend	*Volatility*
Δ Perf	0.0318*** (0.003)	0.0224*** (0.0029)
Δ lIncotax	0.0893*** (0.0554)	0.0103*** (0.0578)

Δ lVA	-0.2337 (0.1411)	0.0126 (0.1458)
Δ lEff	0.4027*** (0.1274)	0.2966*** (0.0876)
Δ lXB	0.0261 (0.0069)	0.0180*** (0.0060)
Δ lIB	0.1883** (0.0422)	0.0657** (0.0573)
Δ Devf	0.6101 (0.0879)	0.6419*** (0.0448)
Δ IQ	-0.3615 (0.1035)	0.3746*** (0.0529)
Δ RER	-0.0219** (0.0397)	
Δ VolRER		-0.0354** (0.1219)
Δ (VolRER*Perf)		-0.0112** (0.0035)
Δ (VolRER*lIncotax)		-0.1642 (0.1818)
Δ (VolRER*lVA)		-1.0405 (0.4809)
Δ (VolRER*lEmp)		-0.7445 (0.2712)
Residue	-0.6672*** (0.3082)	-0.3005*** (0.2945)
Constant	0.0005 (0.0013)	-0.0001 (0.0010)
R2	0.9968	0.9979
Fisher statistics	379.63***	472.97***

Note: Values in brackets are standard deviations. ****p<0.01; **p<0.05* and **p<0.1. Source:* Authors using Stata 15.1.

This Table shows that our models (RER trend and RER volatility) are overall significant, as the coefficients of determination and Fisher's test statistics meet econometric requirements.

Quality of model estimation

Before interpreting the various results, it is useful to assess the quality of the estimates using residual robustness tests. The normality tests of Skewness and Kurtosis, the heteroscedasticity test of White and the autocorrelation test of Breusch and Godfrey (Table 8) assure us that, in all models, the residuals are

normally distributed, homoscedastic and not autocorrelated. Furthermore, there is no evidence of instability in the model parameters, as the statistics do not exceed the critical limits of 5% (graphs A1 and A2 in the appendix). All these tests confirm the validity of the estimated models, whose results can now be interpreted.

Table 8: Robustness test results

Test null hypothesis	Tests	(1)	(2)
No autocorrelation	Breusch-Godfrey	0.2259	0.6977
Homoscedasticity	White	0.3483	0.2158
Normality	Skewness-Kurtosis	0.8553	0.4143

Note: Values in the table are p-values. *Source:* Authors using Stata 15.1.

Results analysis and discussion

The adjustment parameters are negative and statistically significant. The estimated coefficient of the error correction term of the two models (-0.6672 and -0.3005 for the trend and volatility models respectively) is negative and significant at the 5% level. This confirms the existence of an error correction mechanism in each specification. Moreover, the error correction coefficients still reflect the speed at which imbalances between potential and actual growth are resolved. Indeed, a shock affecting economic activity in a given year in Benin can be fully absorbed after about one and a half years (1.49 years) in the case of trend and about three and a half years (3.32 years) in the case of volatility. Error correction models are therefore valid.

With regard to the elasticity results, the trend model (model 1) will be the subject of the first wave of interpretations and the volatility model (model 2) the second wave. The trend model shows that financial performance has a positive and significant coefficient at the 1% threshold in both the short and long term. A one-point increase in the return on equity of the companies in the sample improves domestic output per capita by 0.032 and 0.024 points in the short and long term respectively. This explains the existence of business-friendly conditions in Benin, where the activities of entrepreneurs and investors have a direct and positive impact on economic growth. This result is in line with the economic literature, which teaches that businesses are wealth creators and engines of economic growth (Mokhefi & Belaribi, 2015).

Among the company's variables internal, variables, income tax and employment levels are those that significantly transmit company performance to national wealth. The relationship between these variables and economic

growth is positive and significant at the 1% level, especially in the short term. In general, developing countries, and African countries in particular, are characterised by budget deficits and high unemployment (ILO & WB, 2022). One of the strategies they use to overcome these difficulties is often to encourage investors whose prosperous activities create enough jobs and increase government revenues, all other things being equal, to stimulate growth (Engen & Skinner, 1996; Elabjani & Cherkaoui, 2018). The positive significance of these company variables in the case of Benin is therefore understandable in light of these explanations.

The real exchange rate between the naira and the CFA franc has a significant negative impact on economic growth in both the short and long term. The exchange rate affects economic activity through trade. According to Ghosh and Ostry (2009), an appreciation of the exchange rate reduces the competitiveness of exports, which in turn reduces growth. Conversely, economic theory (Rodrik, 2007) postulates that a depreciation of the exchange rate stimulates investment to increase production, which strengthens exports and hence competitiveness, which is conducive to economic growth. In our study, bilateral imports and exports between Benin and Nigeria show a positive relationship with economic growth. These results therefore support the effective impact of the official naira exchange rate on Benin's domestic output per capita. However, the positive effect of imports may seem surprising and contradictory to the exchange rate theory itself. However, this result has a positive resonance in the specific context of Benin. Benin remains one of the African countries whose economic structure makes it highly dependent on certain imports that are essential for the economy, in particular petroleum products (Basse, 2018; Avlekete & Igue, 2024).

In the volatility model, the coefficients of the financial performance indicator, as before, are positive and statistically significant in both the short and long term at the 1% level. This result suggests that, on average, company profitability in Benin is beneficial for economic growth over our sample period. Specifically, a one-point increase in return on equity is associated with an improvement in economic activity of 0.022 and 0.02 in the short and long term respectively. However, the effect of the company's performance is inhibited when the real exchange rate TCR fluctuates sharply. In this respect, the volatility of the naira exchange rate acts as a brake on the improvement of Benin's economic growth, as shown by the negative and significant coefficient of the interactive term of this variable in the short and long term (-0.0112

and -0.0117). These results support the argument that an excessively turbulent exchange rate is a phenomenon that amplifies uncertainty about product prices in the market, which is detrimental to company profitability (Chi & Cheng, 2016; Kelilume, 2016), with serious consequences for the economy. As a result, efforts to attract investors for sustained growth in Benin are undermined.

In addition, the interaction of the standard deviation of RERs with transmission channels such as income tax and the level of employment have similar effects (-0.2943 and -1.0340) on long-term economic output. This confirms the impact of exchange rate volatility on the effect of a company's performance on growth. It manifests itself in the lack of results and layoff policies in production units (DGE, 2016).

However, financial development through credit supply and the composite index of regulation, governance and corruption maintains a positive and significant relationship with economic growth at the 1% threshold. These indicators are therefore important tools that Benin can rely on, especially in the face of shocks. In this sense, Levine (1997) states that the development of the financial system, through its effects on capital accumulation, promotes economic growth, thanks to the undeniable role played by the quality of institutions in sustainable economic development (Barro, 1996b).

5. CONCLUSION

The aim of this study was to empirically assess the relationship between a company's financial performance and the Benin economy, highlighting the effect of volatile variation in the exchange rate of the Naira to the CFA franc on this relationship. Using a dataset of 234 companies across all categories, as well as data on the overall economy covering the quarterly period from 2013 to 2018, we applied time series techniques to estimate two error correction models. One taking into account the evolution of the exchange rate and the other its volatility. Furthermore, due to the nature of our data (microeconomic and macroeconomic) and the econometric technique used, the construction of our database required the aggregation of company data. This harmonisation made it possible to be in phase with the objective of the study.

The results of the various estimates show that, in the context of improving exchange rate trends, investors' return on equity has a positive impact on the growth of the Beninese economy, both directly and through other channels. This effect deteriorates when the exchange rate fluctuates sharply. Basically, the volatility of the Naira's exchange rate hampers companies' contribution to Benin's economic growth.

In view of these findings, two main policy recommendations can be made. First, given that Benin is part of a monetary union and wants to reap real benefits from business, it would be worthwhile for the country to strengthen its financial sector. The existence of a fairly well-developed financial market allows companies to cushion exchange rate shocks and provide instruments to protect themselves against exchange rate volatility. Second, for this commitment to be effective, good quality institutions must be promoted on a long-term basis. Its effectiveness will be reflected in better regulation and governance, and an unfailing and permanent fight against corruption.

Notes

1. Direct tax corresponds to corporate and personal income tax, while indirect tax relates to value-added tax.
2. Common currency of eight West African countries (Benin, Burkina-Faso, Ivory Coast, Guinea-Bissau, Mali Niger, Senegal and Togo), issued and managed by the Central Bank of West African States (CBWAS). It has a fixed parity, unlike the floating naira, Nigeria's own currency, managed by the Central Bank of Nigeria (CBN).
3. Real naira/CFA franc exchange rate for Benin.
4. Demonstration of an inverse relationship between unemployment and inflation.

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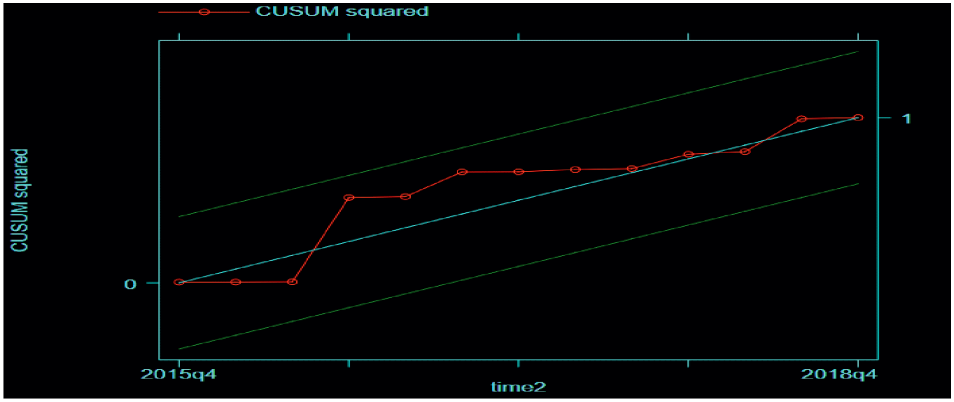
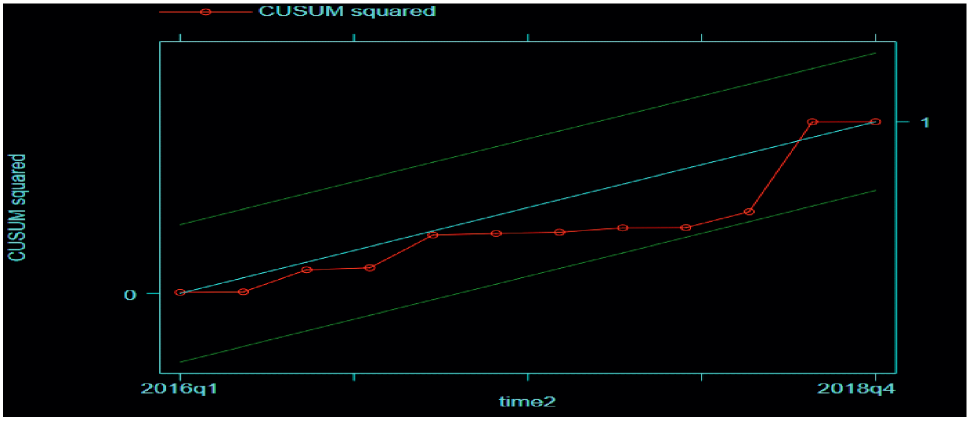
Appendix

CUSUMSQ Model Stability Test



Graph 1: For model 1 (trend)

Source: Authors using Stata 15.1.



Graph 2: For model 2 (volatility)

Source: Authors using Stata 15.1.