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Financial Performance and Economic Growth in Benin: Impact of Naira Exchange Rate Volatility

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Abstract: In the presence of frictions, the relationship between corporate profitability and economic growth can be altered. This article investigates the relationship between corporate financial performance and economic growth in Benin, focusing primarily on the impact of the volatility of the official Nigerian Naira exchange rate on this relationship. Aggregate data on 234 formal firms of all categories (small, medium and large), supplemented by data on the overall economy, ranging quarterly from 2013 to 2018, were used to estimate two error-correction models using the time-series econometrics technique. The results of these estimations show that corporate performance has a positive effect on growth when the exchange rate improves, whereas high exchange rate volatility worsens the effect. In terms of scope, these results recommend working to significantly mitigate the adverse effects of the Naira through constant improvement in the quality of institutions, notably through better regulation and governance, and an inflexible fight against corruption, while reinforcing the efficiency of financing for companies, 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 Classifications: G32-F31-O11

1. Introduction

Unanimously recognized as wealth creators (Mokhefi & Belaribi, 2015), businesses, particularly the most successful ones, are a major asset for the economic and social

development of developing countries. They are even seen as the engine of economic stability and growth, providing jobs, goods and services as well as high-value tax revenues that contribute directly to the economic health of countries (ITC, 2014). Thanks to significant tax payments (direct and indirect[1]), companies enable states to finance various sectors, particularly priority ones 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, earnings, payroll and sales (Chanterac & Renouard, 2012). Similarly, the jobs they generate are an essential factor in reducing unemployment and increasing production, important levers for economic growth. At the individual level, these jobs provide the financial security that improves living standards, increases productivity and consequently reduces poverty (Renders & Sleuwaegen, 2012). Finally, the goods and services provided by companies are also a vector in the fight against poverty, as their high availability ensures food security. A dense productive sector also enables an economy to be easily integrated into global value chains, improving its export performance and generating significant foreign currency earnings (Gravellini & Leon, 2021).

However, these different dimensions of a company's contribution to the economy are closely linked to its performance, which in turn depends heavily on its financial situation. Within the literature, access to finance is often highlighted as a central factor in business performance (Bloom et *al.*, 2010; Kersten et *al.*, 2017; Restuccia & Rogerson, 2017) and that limited access represents for them one of the greatest obstacles to their growth. Better still, in developing countries[2] like Benin, it is most often seen as the main barrier to business prosperity, particularly for small and medium-sized enterprises (Beck et *al.*, 2005).

In addition to this aspect, the literature also identifies uncertainties such as exchange rate volatility as potentially important factors exerting a strong impact on corporate performance (Naib & Guati, 2022, 2023). Exchange rate instability, in fact, confronts market players with cost and return insecurity, which, in turn, induces fluctuations in their financial performance (Burgess & Knetter, 1998; Gourinchas, 1999; Bahmani-Oskooee & Hegerty, 2007; Caporale et *al.*, 2015; Ahmed, 2017). Consequently, companies' market power depends not only on prices and product qualities, but also on exchange rate movements. By way of illustration, a volatile variation in the exchange rate influences firms' sales levels, which fall when the exchange rate appreciates and rise when it depreciates (Baggs et *al.*, 2011).

From an empirical point of view, the direct link between corporate 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 influence of exchange rate volatility on the relationship has been completely neglected. Research in this area has only examined the impact of volatility on either growth (Madene & Slimani, 2015; Avlekete & Igue, 2024) or performance. The latter, has even recently received an extended explanation from Kelilume (2016). The author suggested that international investors and companies base their investment decisions on the volatility of the exchange rate between the Nigerian Naira and the currency of their home country, the rate that is the subject of the present study. He emphasized the significant negative impact that variations in this rate have on company performance, particularly where its high volatility makes them less efficient and less successful.

In the particular context of Benin, where the franc of the African Financial Community (CFA)[3] is in use, the stall between the Naira and this currency is having a significant influence on the performance of companies and, by extension, their contribution to the growth of the country's economy. Indeed, the official Naira/CFA franc rate[4] went from 0.4 in 2016 to 0.52 in 2017 and 0.55 in 2018, before dropping to 0.52 in 2019. It recovered, reaching 0.71 in 2021, only to fall again to 0.68 in 2022, rebounding to 0.94 in 2023 (CBWAS, 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), describing the strong imbalance in bilateral trade. At the same time, Beninese companies saw their sales fall from over 773 billion CFA francs in 2017 to around 597.6 billion CFA francs in 2018, a decline of almost 29.35% over the period (INStaD, 2022). These statistics reflect the financial vulnerability of Benin's businesses, which is linked to the fluctuation of the Naira and will undoubtedly have repercussions on the growth of the country's economy. As evidence of this, the tax collected, for example, on corporate earnings during the same period has regressed 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 influence the relationship between corporate

financial performance and economic growth in Benin? The answer to this question will enrich the literature in two ways. Firstly, by providing evidence of the impact of exchange rate volatility in the interaction between financial performance and economic growth. Whereas most existing studies, document 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 first papers to establish a direct link between financial performance and economic growth for the specific context of Benin while highlighting transmission channels.

The rest of the article is as follows: Section 1 reviews the theoretical and empirical literature on the subject. 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. Corporate 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 corporate performance and economic growth is generally based on transmission channels. Tax revenues, employment and production through value-added are, to a large extent, the main channels through which corporate performance affects a country's economic growth.

2.2. Tax revenue channel

The impact of taxation on economic growth depends on the theoretical framework adopted (neoclassical or endogenous growth models), the production factor subject to taxation (capital tax or labor tax), production techniques and the human capital accumulation process (Brun & Chambas, 1998). Thus, in his neoclassical growth model, Solow (1956) suggests that taxation has no long-term impact on economic growth, whereas it does and even has permanent effects in Barro's (1990) endogenous growth models.

Furthermore, the theoretical literature on taxation concludes two divergent effects (negative and positive) which both influence economic growth. The positive effect is linked to tax rates appropriate to agents, generating sufficient revenue

to finance public spending, a potential source of economic prosperity (Engen & Skinner, 1996); whereas the negative effect emanates from 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).

2.1.2. Job channel

Job creation is a powerful tool for fuelling overall economic growth. This assertion is based on Okun's law (1962), considered as the starting point for this relationship. Theoretically, this law is the link between the supply curve and the Phillips curve[5], stipulating the existence of an inverse relationship between the unemployment rate and growth. In other words, a significant reduction in the unemployment rate leads to an increase in output, and vice versa. On the other hand, significant absorption of unemployment requires substantial job creation. In this sense, Seers (1974) establishes that the development of countries in general, and developing countries in particular, in terms of economic growth, depends to a large extent on the availability of jobs, the creation of employment opportunities and the increase in their level. Several authors (Dunkelberg & Cooper, 1982; Kirchhoff, 1991) maintain 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.

2.1.3. Value-added channel

Defined as the difference between the production value of goods and services (sales) and intermediate consumption (value of goods and services used in the production process), value added is a determining factor in a country's gross domestic product. As such, it is likely to have a positive or negative influence on economic development. Indeed, when a partnership approach is favored with suppliers, added value contributes substantially to the national production of wealth (Brodier, 2013). Also, when greater emphasis is placed on the non-price attractiveness of goods and services, it helps 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 influence the supply of domestic factors.

On the basis of the above exhibits, we simplify the relationship between corporate financial performance and economic growth with a focus on the currency risk factor (Figure 1).

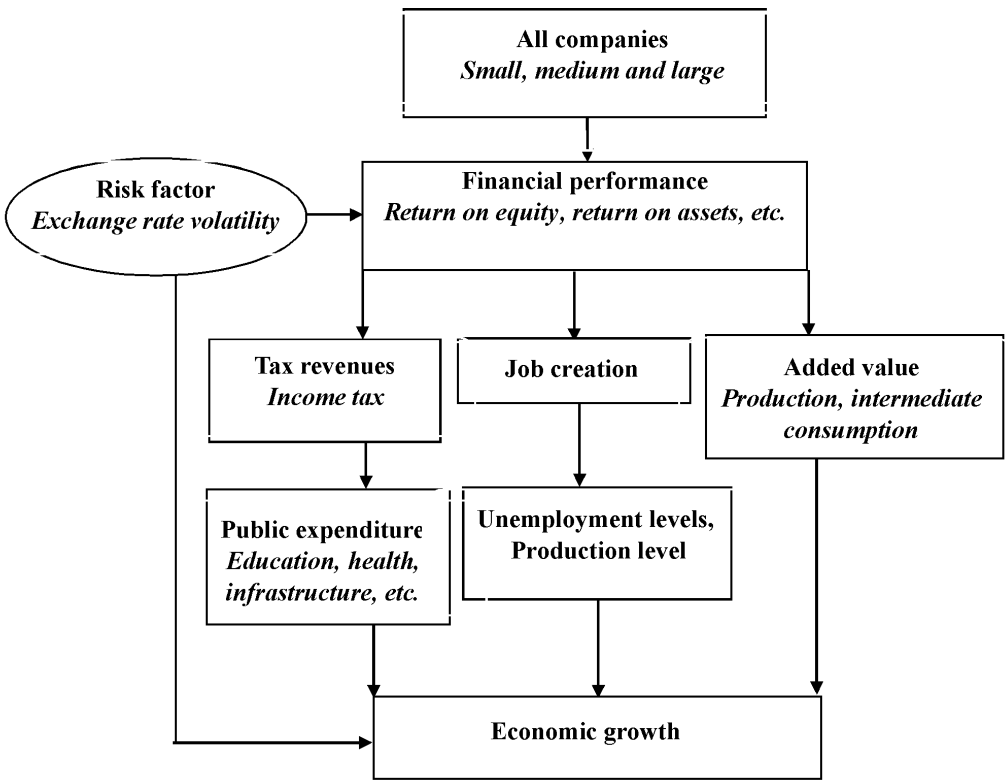

Figure 1: Conceptual link between companies' contribution to economic growth as a function of shock

Source: Authors.

2.2. Empirical literature

In line with the theoretical analysis, this literature can be divided into three respective channels for transmitting corporate 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 validate a negative relationship between the two variables. Scully (1996) and Haddouchi et *al.* (2023), in estimating the optimal tax threshold in the New Zealand and Moroccan economies respectively, find that optimality of the tax rate generates substantial resources that boost economic activity. In a similar vein, Zellner and Ngoie (2012), using a Marshallian macroeconomic model applied to the US economy, reach a similar conclusion. The authors' results point to a nearly 3% increase in per capita GDP growth, attributable exclusively to the 5% reduction in corporate tax rates. Better still, this tax policy is corroborated when tax structures are taken into account. In this respect, the work of Lee and Gordon (2005) clearly demonstrates that a reduction in the corporate tax rate of 10% leads to an increase in the growth rate of 1 to 2%. Similarly, in assessing the effect of each type of tax on growth, Macek's (2014) research reveals that taxes on business and personal income significantly boost economic growth in OECD countries.

Other empirical contributions report interesting results. This is evidenced by Babatunde et *al.* (2016) having carried out work on the effect of taxes in Africa. Their conclusion reflects a positive correlation between tax revenues and economic growth. The same is true of Maïga et *al.* (2023), where with an ARDL, showed that tax policy instruments ensure growth in Mali. Thus, any drop in investment due to a shock will cause a drop in revenues and, ultimately, economic growth (Khumbuzile & Khobai, 2018).

By associating shocks with this relationship, studies that are not very cross-sectional find negative links. 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, price volatility of imported raw materials reduces tax revenues from international trade taxes, while that of exported raw materials reduces revenues from direct taxation.

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 linearly positive relationship between employment and real GDP in Nigeria. The same result is obtained in Morocco with Ezzahid and El Alaoui (2014). These results underline the importance of the volume of employment, where its improvement favors the

growth of activity; job creation being one of the particularities of companies. Elabjani and Cherkaoui (2018), using a matching model on the case of Morocco, suggest that business creation is a policy that contributes to the economy by generating jobs that reabsorb the unemployment rate. More specifically, the authors point to small and medium-sized enterprises as the easiest economic entities to create, the most dynamic and the most effective means of economic development. On the other hand, N'guessan's (2022) study serves as an empirical justification among the few studies addressing the non-linearity of the positive employment-growth relationship. The author, based on an ARDL of 42 branches as a sample in Ivory Coast for the period 1996-2016 concludes that the long-term relationship between employment volume and output growth is asymmetric. The sensitivity of firms to shocks justifies the nature of this relationship.

Finally, there are the studies of value added. Although there is an abundance of work examining the contributions of the firm, only a few have looked at the influence of value added on economic growth. The few existing studies have been limited to the effects of value added in agriculture, industry, manufacturing and services on economic growth (Tufaner, 2021). Tufaner in Turkey, for example, assesses the contribution of sectoral value added to economic growth. The result indicates the services sector, followed by industry and agriculture, as those that most promote economic expansion. The effect of sectoral value added is also found in Zambia, but in the long term by Muyambiri (2023) with an ARDL bounds test over 1994 to 2021.

All in all, the literature shows that there are no studies directly linking corporate performance, particularly financial performance, to economic growth. The present study on Benin focuses on this issue, while highlighting the impact of exchange rate volatility shock, which to our knowledge has not yet been addressed in this relationship.

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 modeling

The model to be developed should make it possible to examine the relationship between corporate financial performance and economic growth, as well as the

impact of exchange rate volatility on this relationship. To this end, we refer to the work of Some and Maiga (2021) and Avlekete and Igue (2024), and adopt as our analytical framework the economic growth model below, which will be modified to take account of our objective.

$$Y = f(Perf, X) \quad (1)$$

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

In line with our objective, in examining the association between economic growth and corporate profitability, we investigate whether relatively higher exchange rate volatility affects the contribution of corporate returns to economic growth. Thus, following Khan et *al.* (2017) and applying the logarithm (*l*) of the variables, we specify the following models depending on whether we are in exchange rate trend or in its volatility (Avlekete & Igue, 2024):

Exchange rate trend:

$$IGDP_t = \beta + \beta_1 Perf_t + \beta_2 RER_t + \psi X_t + \varepsilon_t \quad (2)$$

Exchange rate volatility:

$$IGDP_t = \beta_0 + \beta_1 Perf_t + \beta_2 VolRER_t + \beta_3 (VolRERt * Perf_t) + \psi X_t + \varepsilon_t \quad (3)$$

where *VolRER* is the volatility of the real exchange rate (RER) and the interaction between *VolRER* 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 the techniques of time series econometrics, namely the analysis of series stationarity and the analysis of possible cointegration relationships between series. The outcome of these analyses will enable us to make the appropriate specification. Thus, if the variables are stationary in level, a VAR (*vector autorgression*) model in level is estimated; if the variables are stationary in first difference and there is a cointegrating relationship between them, an ECM (*error correction model*) is estimated; if the variables are stationary in first difference, but no cointegrating relationship exists, a VAR in first difference is estimated; if the variables are stationary in different orders of integration, a VAR is estimated by harmonizing

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 is made up 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) from 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 fairly limited number of companies selected is constrained by the regular availability of data. Macroeconomic data are linked to the global economy. The temporal 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 harmonization, and in particular in view of our objective, we aggregate data relating to companies, as their microeconomic nature does not allow us to reliably answer 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 gives the definitions and sources of the various variables.

We recall that the financial performance captured by the rate of return on equity is the ratio of profit after tax to equity (Naib & Guati, 2022, 2023); exchange rate volatility is measured using the standard deviation of the real Naira/CFA franc exchange rate (Avlekete & Igue, 2024). Following the literature (Khan et *al.*, 2017), other firminternal variables (channels) include: income tax, value added, number of employees; the macroeconomic variables retained, following 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 synthesized into an index of institutional quality (IQ) using the Principal Component Analysis (PCA) method of formula following the example of Dadegnon (2020):

$$IQ_i = \sum_{i=1}^{k} \rho_i X_i \qquad (4)$$

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)	Refers to 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)	This is the number of employees hired 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 on the basis of corruption control, governance effectiveness and regulatory quality using the PCA method	Calculating authors from WGI

Source: Authors.

Table 2 provides a statistical description of all the variables under study. Analysis of this table shows that most company variables (income tax and value added) are highly volatile, with fairly high means and standard deviations. The same applies to some control variables, namely bilateral imports and exports. On the other hand, 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 preliminary tests.

4.1. Preliminary tests

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

4.1.1. Stationarity test

Studying the stationarity of a statistical series means detecting whether or not it contains a unit root. In this case, we use the standard Augmented Dickey-Fuller (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 under study, in other words, the non-stationarity of the series. Mckinnon's critical values are used to reach a decision. After running these tests in Stata, the results are compiled in table 3 below.

The results of the two tests carefully presented in this table are similar. They indicate that at the 5% threshold, the critical values of the different variables are lower than the statistical values in level. On the other hand, in first difference, the opposite is observed. Thus, we accept the null hypothesis of the presence of unit root for all series in the first case, and reject this hypothesis in the second. Consequently, the series in our models, namely lGDP, Perf, RER, VolRER, lIncotax, lVA, lEmp,

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 in Stata 15.1.

lXB, lIB, Devf and IQ, are not stationary at level (I(0)), but at first difference (I(1)). At this level, 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.

4.1.2. Cointegration test

Among the cointegration tests available in the literature, we adopt Johansen's test for this study. This test, based on the maximum likelihood method, allows us to test the existence of a long-term relationship in integrated time series and to obtain all the cointegrating vectors in a multivariate framework. In general, the cointegration proposed by Johansen is based on the results of two tests: the trace test and the

maximum eigenvalue test. When these tests lead to different conclusions, the results of the trace test are usually retained, since they 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 in 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 one-stage model, to capture the dynamic structure of the evolution of our series. We use ordinary least squares (OLS) to estimate long-term relationships between variables, followed by short-term relationships between them, taken as a 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.

4.2.1. Long-term Relationship Estimation Results

The long-run relationship between domestic output per capita and the explanatory variables, including firms' return on equity, is estimated using the ordinary least squares method, and the results are shown in table 5 below:

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 (RER trend model and 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 statistics indicate the significance of the models and therefore their good fit. Through these coefficients, 99% of the variability observed in GDP per capita is due to the exogenous variables in our models.

Furthermore, the unit root tests carried out 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 fixed threshold of 5%, the critical values are higher than the values of ADF and PP statistics in level (-3.000 > -3.726 and -3.000 > -4.953 respectively for models 1 and 2). The residuals of the long-term relationship are therefore stationary in level. Cointegration between the model variables is therefore truly confirmed. From here, we can move on to estimating the error-correction models (ECMs) used to analyze short-term dynamics between variables.

Table 6: Results of residual stationarity tests

	ADF	*PP*	*Conclusion*
	(1) (2)	(1) (2)	
Residues	-3.726* -4.953* (-3.000) (-3.000)	-3.726* -4.953* (-3.000) (-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 in Stata 15.1.

4.2.2. Short-term Relationship Estimation Results

Table 7 below presents the results of the short-term relationship. These are obtained by estimating, using the ordinary least squares method, the first difference of the model variables, 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 significant overall, as the coefficients of determination and Fisher test statistics meet econometric requirements.

4.2.3. Quality of model estimation

Before interpreting the various results, it is useful to judge the quality of the estimates by means of residual robustness tests. Thus, the normality tests of Skewness and Kurtosis, the heteroscedasticity test of White and the autocorrelation test of

Breusch and Godfrey (table 8) reassure us that, in all models, the residuals are normally distributed, homoscedastic and not autocorrelated. What's more, there is no evidence of instability in the model parameters, as the statistics do not exceed the critical 5% limits (graphs A1 and A2 in appendix). All these tests attest to the validation of the estimated models, whose results can now be interpreted.

Table 8: Robustness test results

Test null hypothesis	Tests	(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 in Stata 15.1.

4.2.4. Results Analysis and Discussion

The adjustment parameters are negative and statistically significant. The estimated coefficient of the error correction term for both models (-0.6672 and -0.3005 respectively for the trend and volatility models) is negative and significant at the 5% level. This reiterates 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 levels are resolved. Indeed, a shock affecting economic activity in a given year in Benin can be fully absorbed after around one and a half years (1.49 years) in the case of the trend, and around three and a half years (3.32 years) in the case of volatility. Error correction models are therefore valid.

As far as the elasticity results are concerned, 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, in both the short and long term, the coefficient of the financial performance variable is positive and significant at the 1% threshold. A one-point increase in return on equity for the companies in the sample leads to a 0.032 and 0.024 point increase in gross domestic product per capita in the short and long term respectively. As a result, Benin offers a favorable business environment, 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 the creators of wealth and the engine of economic growth (Mokhefi & Belaribi, 2015).

Among the company's internal variables, income tax and employment levels are those that significantly transmit company performance to economic growth. The relationship between these variables and economic growth is positive and significant at the 1% level, particularly in the short term. Generally speaking, developing countries, particularly those in Africa, are characterized by budget deficits and high unemployment (International Labor Organization & World Bank, 2022). One of the strategies they use to overcome these difficulties is often to encourage investors whose prosperous activities create sufficient jobs and increase government revenues, all other things being equal, to promote growth (Engen & Skinner, 1996; Elabjani & Cherkaoui, 2018). The positive significance of these company variables for the case of Benin is therefore understandable in light of these explanations.

The real Naira/CFA franc exchange rate has a significant negative effect on economic growth in both the short and long term. The exchange rate, through trade, influences economic activity. According to Ghosh and Ostry (2009), an appreciating exchange rate reduces the competitiveness of exports, which in turn undermines growth. Conversely, economic theory (Rodrik, 2007) postulates that a depreciation of the exchange rate stimulates investment to increase production, which in turn boosts exports and thus competitiveness, thus promoting economic growth. In our study, Benin-Nigeria bilateral imports and exports show a positive relationship with economic growth. These results therefore support the effective impact of the Naira exchange rate on Benin's domestic output per capita. However, the positive effect of imports may seem surprising and contradictory to exchange rate theory itself. However, this result finds a favorable echo in the particular context of Benin. Indeed, this country remains one of those African countries whose economic structure makes them heavily dependent on certain imports essential to the economy, notably 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, corporate profitability in Benin benefits economic growth over our sample period. Explicitly, a one-point improvement in return on equity is associated with an increase in economic growth of 0.022 and 0.02 in the short and long term respectively. However, the effect of corporate performance is inhibited when the real exchange rate RER fluctuates sharply. In this respect, the volatility of the Naira exchange rate acts as a brake on Benin's economic growth, as evidenced 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 overly turbulent exchange rate is a phenomenon that amplifies uncertainty about product prices on the market, which is detrimental to company profitability (Chi & Cheng, 2016; Kelilume, 2016), with serious repercussions for the economy. As a result, efforts to attract investors for sustained growth in Benin are undermined.

Furthermore, the interaction of the standard deviation of RERs with transmission channels such as income tax and employment levels shows similar effects (-0.2943 and -1.0340) on long-term economic output, respectively, to those above. This confirms the impact of exchange rate volatility on the effect of corporate performance on growth. It manifests itself in the lack of results and layoff policies within production entities (DGE, 2016).

However, financial development through credit supply and the composite index of regulation, governance and corruption maintain a positive and significant relationship with economic growth at the 1% threshold. These indicators are therefore important instruments on which Benin can rely, particularly in the face of shocks. It is in this sense that Levine (1997) asserts 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 corporate financial performance and the Benin economy, highlighting the effect of the volatile variation in the exchange rate of the Naira to the CFA franc on this link. Using a dataset of 234 companies of all categories, as well as data from 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 trend in the exchange rate and the other its volatility. Furthermore, due to the nature of our data (microeconomic and macroeconomic) and the econometric technique adopted, the construction of our database required the aggregation of company data. This harmonization enabled us to meet the objective of the study.

The results of the various estimates show that, in a 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 as soon as the exchange rate fluctuates sharply. Basically, the volatility of the Naira's exchange rate acts as a brake on companies' contribution to Benin's economic growth.

In view of these results, two main recommendations can be made in terms of economic policy. Firstly, given that Benin is in a monetary union and wants to take real advantage of business, it would be worthwhile above all for the country to strengthen its financial sector. The existence of a well-developed financial market enables firms to cushion exchange rate shocks and offer instruments to guard against exchange rate volatility. Secondly, for this involvement to be effective, good quality institutions must be promoted on a sustainable 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. The World Development Report 2005.
3. 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).
4. Real Naira/CFA franc exchange rate for Benin.
5. Demonstration of an inverse relationship between unemployment and inflation.

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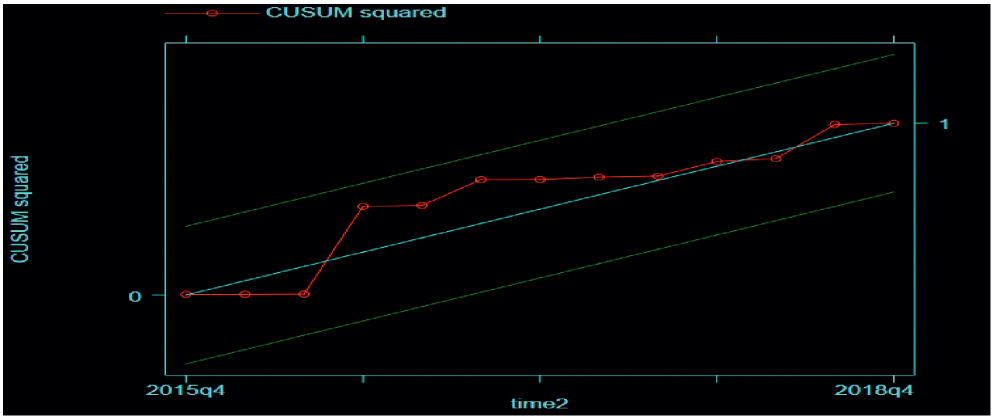
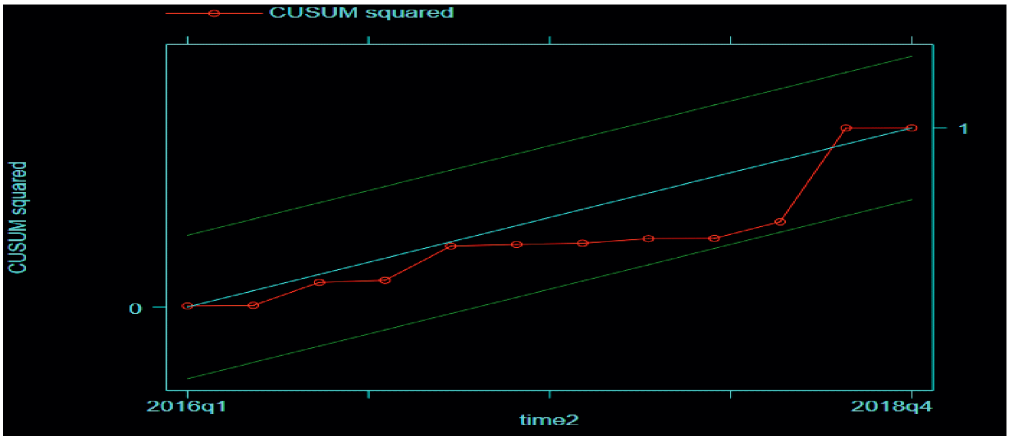
Appendix

CUSUMSQ model stability test



Graph 1: For model 1 (trend)

Source: Authors in Stata 15.1.



Graph 2: For model 2 (volatility)

Source: Authors in Stata 15.1.