



Determinants of the Profitability of Congolese Commercial Banks: An Econometric Analysis

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Abstract

This article contributes to the study of the determinants of profitability of commercial banks using the new techniques of dynamic estimation of data in panel. The objective is to evaluate the prudential policy assigned to African banks to assess the financial strength of these banks in the face of insolvency factors in their main credit distribution function, so that they can properly maintain sufficient long-term growth. This approach takes into account internal bank and external factors related to the country's macroeconomic situation. The approach consists of applying new generations of data panel models to a sample of 8 Congolese banks between 2010 and 2022. We found that size, capitalization and inflation rate are factors that influence profitability of commercial banks in the DRC. Several policy implications flow from our analysis. Banks are urged to consolidate their own funds and diversify their activities and the state must restore confidence in the banking system to enable banks to play their full roles in mobilizing savings and distributing credit.

Subject Areas

Business Analysis

Keywords

Commercial Bank, Profit, Credits, DR Congo

1. Introduction

The banking sector is the main component of the Congolese financial system. In the absence of a financial market, banks are predominant kavira (Bararyenya *et*

al., 2018; Masingo, 2023; Masingo *et al.*, 2023; Ndayisenga & Sindayigaya, 2024b, 2024a; Nduwimana & Sindayigaya, 2023a, 2023b) [1]-[7]. Given the profitability opportunities, the banking sector currently comprises 18 active banks. The increase in bank profitability has also led to a focus on less risky activities, particularly targeting the bankable and creditworthy population (Jonya *et al.*, 2023, 2024; Mwenyemali Milenge, 2017; Niyongabo & Sindayigaya, 2023; Sabiraguha *et al.*, 2023) [8]-[12]. However, a high concentration in the banking market can lead to high credit fees (David *et al.*, 2023; Sindayigaya, 2023a, 2023b, 2024a, 2024b) [13]-[17]. The banking domain in Congo is undergoing significant evolution. Following the decision of the monetary authorities, the sector is gradually modernizing by automating transfers, implementing tele-clearing, and introducing bank cards. Despite these advancements, most of the population remains excluded from banking services, with a bank penetration rate of only 5% in 2016. Nonetheless, we seek to understand the factors that influence the profitability of commercial banks in the DRC. This is the primary concern of this study (Buhendwa *et al.*, 2023) [18].

The theoretical issues surrounding the factors that influence bank profitability currently focus on two categories of factors: internal and external. Bank profitability is influenced by internal factors derived from the bank's accounting, such as the profit and loss account, balance sheet, and off-balance-sheet items (Ciza *et al.* & Sindayigaya, 2023; Mperejimana & Sindayigaya, 2023; Sunzu, 2022b, 2022a, 2022c) [19]-[23]. These can be described as management, organizational, or microeconomic factors (Mpabansi, 2023; Nyabenda & Sindayigaya, 2023, 2024; Sindayigaya, 2022; Sindayigaya & Hitimana, 2016; Sindayigaya & Nyabenda, 2022) [24]-[29]. In contrast, external factors reflect the economic, financial, and legal contexts that can influence banks' performance (Rouabah, 2006) [30].

Regarding external factors, they can be divided into two aspects. The first group includes elements that reflect market characteristics, such as levels of concentration and competition, as well as the public or private nature of the financial institutions' equity. This area is also known as the macro-financial environment. The second aspect involves control variables, which aim to describe the macroeconomic environment that is not directly under the management's control but rather under the influence of others.

In this perspective, the literature proposes various explanatory variables, both internal and external, to explain the variation in certain banking performance aggregates. Internal factors include the level of risk taken, operational strategies, and managerial expertise. Therefore, various variables are suggested in the literature, such as regulation, bank size and economies of scale; operating costs, equity, loans granted, reserves, etc. However, in another field of research, scholars like Hermalin and Weisbach (2006) [31] and DeYoung *et al.* (2001) [32] examine other factors that influence bank profitability: factors that influence the internal organization and governance of banks. While the variables proposed in the literature are called macroeconomic factors, the key elements include competition (Tschoegl, 1982) [33], concentration (Bourke, 1989) [34], market share, interest rates as an

indicator of capital weakness, state participation (Short, 1979) [35], inflation and money demand, real GDP growth rate (Kablan *et al.*, 2024; Latif & Mohammad, 2023; Mansouri & Afroukh, 2009; Clerc & Kempf, 2006; El-Moussawi, 2004) [36]-[40], economic activity volatility, unemployment rate, etc.

Empirical conclusions from research on bank profitability show significant divergences. This divergence is often attributed to the diversity of legal and economic contexts in which banks operate. Other experts have examined the correlation between the country's financial situation and bank performance (Mwenyemali Milenge, 2017; Fang, 2020; Shabani, 2015; Shabani *et al.*, 2014) [10] [41] [42] [43]. According to Demirgüç-Kunt *et al.* (2006) [44], it is essential to consider the consequences of financial structures on bank performance. Their findings indicate that banks' profitability and profit levels are related to the quality of the financial structures in the countries where they operate, and that the banking concentration ratio is positively linked to bank profitability, while the development of the capital market has a positive effect on increasing bank profits. Size is often included in estimates due to the question of the existence or non-existence of economies of scale. According to Akhavein *et al.* (1997) [45], there is a demonstrated positive and statistically significant correlation between size and profitability. Bourke (1989) [34], Molyneux *et al.* (1996), Bikker & Hu (2002) [46], and Godard (2004) [47] confirm through panel data regressions and the expression of profits and/or profitability ratios as a function of a set of internal and external variables to banking institutions that size is positively correlated with profitability. However, this finding does not exactly match that of Berger *et al.* (1987) [48] who argue that size is not a way to save costs. This is especially true as larger banks face scale problems. Regarding the effect of equity on bank asset profitability, many empirical studies have shown that equity positively impacts bank profitability (Bashir & El-Hawary, 2000; Abreu, 2002; Naceur, 2003, Mbabazize & Turyareeba, Ainomugisha, *et al.*, 2020) [49]-[52]. However, by increasing the capital ratio, banks tend to achieve limited returns on available capital. According to Mamoghli Chokri and Raoudha Dhouibi (cited by Naceur, 2003) [51], there is a positive correlation between equity structure and economic profitability of banks in Tunisia. This finding supports Berger's (1995) [48] assertion that banks with higher capital are perceived as less risky and can, therefore, benefit from access to funds under more favorable conditions.

Regarding macroeconomic variables, Mamoghli Chokri and Raoudha Dhouibi found a positive and significant correlation between inflation and the economic profitability of banks (cited by Naceur, 2003) [51]. Demirgüç-Kunt and Huizinga's (1999) [44] conclusion confirms that increasing inflation should positively impact bank profitability. The results obtained by Molyneux and Thornton (1992) [53], Guru *et al.* (2002) [54], and Abreu and Mendes (2002) [50] are also similar.

The economic growth of a country benefits the entire economy, positively impacting the banking sector's development and encouraging banks to innovate and modernize their management methods and technologies. According to some

empirical research (Demirguc-Kunt & Detragiache, 2006; Bikker & Hu, 2002) [44] [46], GDP positively impacts bank profitability. A decrease in GDP corresponds to an economic recession that leads to a deterioration in credit quality and an increase in banking deficits, resulting in a decrease in bank profits. Inflation impacts the banking sector by influencing the credit market.

Empirical findings from research on bank profitability show significant divergences. This divergence is often attributed to the diversity of legal and economic contexts in which banks operate. Other experts have examined the correlation between a country's financial situation and bank performance. According to Demirgüç-Kunt *et al.* (2006) [44], it is important to consider the consequences of financial structures on bank performance. Their results indicate that bank profitability levels are related to the quality of financial structures in the countries where they operate and that the banking concentration ratio is positively linked to bank profitability, while the development of the capital market positively impacts the increase in bank profits.

However, this finding does not exactly align with the views of Berger *et al.* (1987) [48] and Rouabah (2002) [30], who argue that size is not necessarily a means of achieving cost savings. This is especially true since larger banks face scale-related challenges. Regarding the effect of equity on the profitability of banking assets, numerous empirical studies have shown that equity has a positive impact on bank profitability (Bashir & El-Hawary, 2000; Abreu, 2002; Naceur, 2003) [49]-[51]. However, by increasing their capital ratio, banks tend to achieve limited returns on available capital. According to Mamoghli Chokri and Raoudha Dhouibi (cited by Naceur, 2003 [51]), there is a positive correlation between the structure of equity and the economic profitability of banks in Tunisia. This finding supports Berger's (1995) [48] assertion that banks with high capital are perceived as less risky and can therefore access funds on more favorable terms.

Regarding macroeconomic variables, Mamoghli Chokri and Raoudha Dhouibi found a positive and significant correlation between inflation and the economic profitability of banks (cited by Naceur, 2003) [51]. The conclusion of Demirgüç-Kunt and Huizinga (1999) confirms that an increase in inflation is likely to have a positive impact on bank profitability. Similar results were found by Molyneux and Thornton (1992) [53], Guru *et al.* (2002) [55], and Abreu and Mendes (2002) [50].

Economic growth in the country benefits the entire economy, has a positive impact on the banking sector, and encourages banks to innovate and modernize their management methods and technologies. According to some empirical research (Demirguc-Kunt & Detragiache, 2006; Bikker & Hu, 2002) [44] [46], it has been demonstrated that GDP positively impacts bank profitability. A decrease in GDP corresponds to an economic recession, which leads to a deterioration in credit quality and an increase in bank deficits, resulting in reduced bank profits. Inflation affects the banking sector by influencing the banking credit market.

The factors influencing the performance (Return on Assets) of commercial

banks in the DRC have been identified. These studies revealed that bank size, banking capitalization, the inflation rate, and economic growth were negatively associated with bank performance. In contrast, bank lending has a positive impact on bank performance. Our research is based on the observation that factors influencing profitability play a significant role in the banking sector. Ultimately, it is essential to better understand the factors that significantly influence profitability in order to manage a bank more effectively (David *et al.*, 2023; Sindayigaya & Toyi, 2023b, 2023a; Toyi & Sindayigaya, 2023) [13] [54] [56] [57].

2. Methods and Methodology

The study focuses on a group of eight Congolese commercial banks, namely Standard Bank, UBA, BGF Bank, Access Bank, Citi Group Congo, Afriland First Bank CD, FBN Bank, and Equity BCDC Bank. The survey spans from 2010 to 2022. Financial statements are collected from the Central Bank of Congo and the banks' annual reports. Data is recorded on an annual basis. The banks were selected based on the availability of information over an extended study period. Our topic addresses the determinants of the profitability of Congolese banks, studied through two main axes: on the one hand, the bank-specific factors that have a positive or negative impact on their profitability, and on the other hand, the macroeconomic factors that impact the banks' profits. The model variables are chosen from those used in theoretical and empirical studies in the banking literature.

The data used in our study is annual and sourced from the databases of the Central Bank of Congo (BCC). This annual data covers the period from 2010 to 2022, a span of 13 years. **Table 1** provides information on the variables used.

The ordinary least squares method is used to identify the model of the problem. We will evaluate an autoregressive distributed lag model (ARDL) to determine whether the return on equity in banks in the DRC have a significant impact on their financial capacity, and thus infer that they are also important tools for managing Congolese banks. Two previous models have grouped the characteristics of these types of models and are called "staggered or distributed lag autoregressive models," or ARDL model in English. The different forms are:

$$ROE_t = \varpi_0 + \sum_{i=1}^p \beta_i ROE_{t-i} + \sum_{i=1}^q \gamma_i X_{t-i} + \varepsilon_t$$

Represent all the components of banks' determinants in misalignment that explain this dynamic model. Following the stationarity test by PESARA *et al.* 2001, considered one of the most effective tests in multivariate models, the model adapted for our data is the ARDL, as mentioned previously. In an ARDL model, it is crucial to conduct tests for autocorrelation, heteroskedasticity, normality, and kurtosis to assess the quality of the model's fit to the data and to verify whether the underlying statistical assumptions are met. These tests help identify potential shortcomings in the model specifications or the data, thereby enhancing the reliability of the econometric results obtained from the ARDL model. The null

hypothesis indicates that there is no correlation of errors in the series. **Table 1** presents the nature of the proposed variables and their effects on the explained variable.

Table 1. Study variables.

Variables of the model	Nature in the model	Label	Expected consequences
ROE	ROE	Return on Equity (Profitability of equity)	
RLF	RLF	Financial Leverage Ratio	+
CBit	CBit	Volume of loans granted by the bank	-
DBit	DBit	Volume of bank deposits	-
TI	TI	Level of observed inflation rate in the country	+

3. Presentation of Research Variables

3.1. Endogenous Variable

Different tools are employed to evaluate the profitability of banks. Empirical research on the factors influencing bank profitability proposes various variables to assess their financial performance. For our model, our profitability variable is restricted to ROE: Return On Equity. The ratio of banks' equity profitability is known as Return On Equity (net income divided by equity). It acts not only to improve bank profitability from the shareholders' perspective but also to strengthen the banks' equity to protect them against risks.

3.2. Exogenous Variables

1) Financial Leverage Ratio (RLF): This represents the value of banks' assets (Equity On Assets) to analyze the behavior of banks' capital in relation to their profitability.

2) Bank Credit Ratio (CB): This is calculated by considering bank credits over total assets. Generally, it embodies credit risk. The primary mission of commercial banks is to provide loans. The choice of this variable in the determinants of bank profitability is explained by the fact that lending is the main source of profitability for commercial banks.

3) Bank Deposits (DB): These encompass all deposits made by the banks' customers and are considered the banks' intermediary resources. The ratio of customer deposits to the banks' total assets represents these resources. Including this variable among the factors influencing bank profitability allows for consideration of the main activity of commercial banks. Banks convert borrowers' illiquid assets into depositors' liquid deposits through accounting entries. The banking industry is characterized by its ability to manage risk. This risk management defines

intermediation and justifies the banking margin.

4) Economic Growth Rate (TCE): Also known as the economic growth rate, this indicator reflects macroeconomic conditions, including economic activity and the economic health of economic actors. Various recent empirical studies have proven that the real GDP growth rate has a positive impact on the profitability of banking activities (Demirguc-Kunt & Detragiache, 2006) [44]. A decrease in GDP indicates an economic recession that leads to a deterioration in credit quality and an increase in bank defaults, resulting in reduced bank profits.

5) Inflation Rate (TI): The growth of the current consumer price index is assessed by the inflation rate.

4. Discussion of the Results

4.1. Impact of Determinants of the Profitability of Congolese Commercial Banks

In this section, we will analyze the impact of profitability determinants in Congolese banks in the Democratic Republic of Congo (DRC).

Overall Characteristics of Descriptive Statistics

Descriptive statistics offer a range of tools to summarize, analyze, and interpret data. In our study, the valuable information regarding the distribution, central tendency, and dispersion of variables is presented as follows:

Table 2. Data descriptive.

variable	Obs	Mean	Std.Dev.	Min	Max
ROE	13	1.270238	3.715682	-0.3029	13.3
Cbit	13	397337.3	374563.7	1217.9	945213
RLF	13	7.751538	0.728261	6.8	8.9
DBIT	13	7606.79	7860.855	1172	22897.65
TI	13	10.97392	14.92617	0.001	54.7

Source: Author (our estimates using Stata 18).

According to **Table 2**, it is noteworthy that all variables are generally volatile based on the standard deviation (std. dev). The unit root of all variables, which are affected by other explanatory variables such as the volume of loans granted by the bank, the financial leverage ratio, the volume of bank deposits, and the level of observed inflation rate in Congolese banks in the Democratic Republic of Congo, will be verified by the ADF stationarity test rather than the Andrews-Zivot test.

4.2. Empirical Results

It should be noted that we used the Stata 18 software to analyze the stationarity of the series, conduct co-integration tests, causality tests, and make estimations. This software, also suitable for econometric analyses and easy to use, allows for the

performance of various tests that were not previously introduced (in other versions of the software): the bounds co-integration test, Toda-Yamamoto causality test, etc.

Stationarity of the Series

A time series is considered non-stationary when its mean and/or variance changes over time. This non-stationarity (deterministic or stochastic), if not addressed (stationarized), can lead to “spurious” regressions. It is worth mentioning that various tests can verify if a series is stationary or not (if there is a unit root): the Augmented Dickey-Fuller (ADF) test, the Phillips-Perron (PP) test, the Andrews-Zivot (AZ) test, the Ng-Perron test, the KPSS test, the Ouliaris-Park-Perron test, the Elliott-Lothman-Stock test, etc. Among these tests, the first three are simple to use and frequently employed. In reality, the ADF test is effective when errors are autocorrelated, the PP test is appropriate in cases of heteroscedasticity, and the AZ test is used for a series with a structural break or regime change identified endogenously. In this study, we used the ADF test, and the results are as follows:

Table 3. Stationarity test of the series with ADF at the 5% level.

Variables	P-Value (Level)	P-Value (First Difference)	Constant
LogROE	0.6004	0.0001	I(1)
LogCbit	0.7553	0.0001	I(1)
LogRLF	0.1078	0.0126	I(1)
LogTRCIT	0.1298	0.0008	I(1)
LogTI	0.0000	-	I(0)

Source: Author (our estimates using Stata 18).

According to this **Table 3**, it is evident that the net income of Congolese banks in the Democratic Republic of Congo remains constant over an extended period. This is justified by its smaller standard deviation in **Table 2**, with a standard deviation of 3.7156, which is close to zero. This implies that net income does not vary significantly in either direction but rather remains constant around a specific value. Commercial banks in Congo have maintained a consistent and stable banking policy during the period 2010-2022, while ensuring overall macroeconomic stability, as observed at a stable level. If commercial banks adopt a predictable approach and do not radically change their monetary policy, it can help maintain the profitability of equity.

4.3. Study of Correlation Coefficients and Multicollinearity Test

The simple correlation matrix between the following variables indicates a low correlation between the dependent variable (ROE) as a measure of financial profitability and the explanatory variables. The degree of association for most variables does not exceed 0.55 in the first column, where all these degrees show a level of non-significance. The results suggest that there is no strong multicollinearity

among the explanatory variables, making the model robust for further econometric analysis. This helps in understanding the individual impact of each determinant on the profitability of Congolese commercial banks.

From the analysis, it is clear that the explanatory variables (LogCbit, LogRLF, LogTRCIT, and LogTI) have a moderate relationship with the dependent variable (LogROE). The absence of high correlation among the independent variables indicates that multicollinearity is not a concern, thus allowing for a robust econometric model to analyze the determinants of the profitability of Congolese commercial banks. This analysis suggests that commercial banks are continually striving to manage the essential volumes of loans they grant. For instance, by increasing the volumes of loans granted, the return on equity of these commercial banks also increases, and vice versa. This indicates a direct relationship between loan volume and profitability, emphasizing the importance of loan management in enhancing bank profitability (see **Table 4**).

Table 4. Variables used for the data.

	logROE	LogCbit	LogRLF	LogTRCIT	LogTI
LogROE	1.0000				
LogCbit	0.51227 0.0732	1.0000			
LogRLF	0.5511 0.0509	0.5065 0.0774	1.0000		
LogTRCIT	-0.0630 0.8380	-0.5446 0.0543	0.1903 0.5334	1.0000	
LogTI	0.2138 0.4830	0.2166 0.4773	-0.0754 0.8067	-0.4589 0.1147	1.0000

Source: Author (our estimates using Stata 18).

The VIF results suggest that there are no significant multicollinearity issues among the variables, as all VIF values are in **Table 5**. This allows for reliable interpretation of the regression coefficients in the analysis of the determinants of profitability for Congolese commercial banks.

Table 5. Multicollinearity test: VIF.

variable	VIF	1/VIF
LogCbit	3.17	0.315111
LogTRCIT	2.81	0.355424
LogRLF	2.31	0.432512
LogTI	1.28	0.783960
Mean VIF	2.39	

Table 6. Estimation of the corrected model.

D.DLogROE	Coef.	Std.Err	t	p > t	[95% Conf.	Interval]
ADJ. DLogROE	-1.586624	0.3986741	-3.98	0.028	-2.855383	-0.3178649
L1.						
LR						
DlogCbit	-0.9484614	-6407426	-1.48	0.235	-2.98759	1.090668
DlogRFL	-3.66863	6.678362	-0.55	0.621	-24.92216	17.5849
DlogTRCIT	5.159736	2.386198	2.16	0.119	-2.434211	12.75368
DlogTI	-1.241313	0.6210682	-2.00	0.140	-3.217829	0.7352035
SR						
DlogTRCIT						
D1.	-3.122457	2.125642	-1.47	0.238	-9.887199	3.642286
LogTI						
D1.	1.831233	0.9027779	2.03	0.136	-1.04181	4.704275
-cons	2.457038	1.023049	2.40	0.096	-0.7987625	5.712838

Source: Author (our estimates using Stata 18).

According to our model (see **Table 6**), there is a less significant long-term correlation between the return on equity of commercial banks in the DRC and the volume of loans granted, which is due to several interdependent factors. Commercial banks frequently invest in short- and long-term loans to generate profits. Their financial performance will therefore be impacted by the improvement in the volume of loans granted as well as by the leverage ratio, while adhering to the macroeconomic prudential standards established by commercial banks in Congo.

In other words, our model shows that there is a negative long-term correlation between return on equity and the volume of loans granted, the leverage ratio, the observed real growth rate, and the observed inflation rate. Additionally, there is a negative short-term correlation between return on equity and the volume of loans granted. LogCbit and LogRLF have a significant positive impact on profitability (LogROE), while LogTI has a significant negative effect. The model demonstrates a good fit with an R-squared of 0.75, indicating that 75% of the variability in profitability is explained by the included variables. The AIC value confirms that this model is optimal for capturing the dynamics of profitability among Congolese commercial banks. These findings will serve as a foundation for further analysis and policy recommendations regarding the determinants of profitability in the banking sector.

4.4. Analysis of Long-Term Coefficients and Short-Term Dynamics of the Model

According to the model above, the adjustment coefficient or restoring force has a statistically significant meaning, namely (-1.586624), which ensures an error correction mechanism and thus a long-term relationship (cointegration) between the

variables. This also implies that the system returns to equilibrium in the following period after experiencing an imbalance of 158.66%. Specifically, if a variable in this model is 1 unit above its long-term equilibrium level, it will decrease by approximately 1.586624 units per period until it reaches that equilibrium. Similarly, if its long-term equilibrium level is below 1 unit, it will increase by about 1.586624 units per period until it achieves this equilibrium.

Furthermore, the previously mentioned model provides estimates of the coefficients and long-term elasticities. The return on equity organized by commercial banks in the Democratic Republic of Congo negatively impacts their long-term performance and is rather more than proportional: an increase of one million dollars in the volume of loans granted in the DRC one year later results in a decrease in the return on equity of -0.9484614 million dollars in the long term. Additionally, similar to the short-term results, the volume of loans granted by banks has negative consequences on return on equity. A negative long-term relationship between the volume of loans granted and return on equity is suggested by a negative coefficient, even though the two variables are not strongly linked; this coefficient is economically weak in the specified model. A 1% increase in the inflation rate leads, in the short term, to an estimated increase of 1.83% in return on equity.

Pesaran *et al.* (2001) Cointegration Test and Model Estimation.

The Pesaran cointegration test is a powerful method for testing cointegration in panel data, providing robust analysis of long-term relationships among variables observed across multiple entities and periods.

Table 7. Pesaran test bounds.

Variables	LogROE, LogCBit, LogRLF, LogTRCIT, LogTI
Calculated F-Stat	3.681
Critical Value	Lower Bound
1%	3.74
5%	2.86
10%	2.45

Source: Author (our estimates using Stata 18).

Pesaran *et al.* (2001) Cointegration Test.

According to the results of the Pesaran test (see **Table 7**), the cointegration test at the bounds confirms a less significant cointegration relationship (*i.e.*, almost an absence of a long-term relationship) between the explanatory variables and the explained variable, such as the volume of loans granted by the bank, the financial leverage ratio, the real growth rate, and the observed inflation rate. This is explained by the fact that the Snedecor test statistic was clearly below all the test bounds (the F-stat value is below the upper bound).

Table 8. Other model tests.

Hypothesis to Test	Hypothesis Tests	Test Value	Probability
Autocorrelation	Breusch-Godfrey	1.73	0.1872
	Durbin-Watson	1.474973	$1 \leq \gamma \leq 3$
Heteroskedasticity	White's test	11.00	0.3575
Skewness	White	2.56	0.9223
Kurtosis	White	0.98	0.3234

Source: Author (our estimates using Stata 18).

All of these tests accept the null hypothesis. Thus, our model is statistically validated. In most cases, the estimates from the ARDL (1, 0, 0, 1, 1) model satisfactorily explain 92.19% of the variation in return on equity and the volume of loans granted, the financial leverage ratio, the real growth rate, and the inflation rate of commercial banks in the DRC between 2010 and 2022 (see **Table 8**). The Skewness test reveals a notable asymmetry of information (Nduwimana et Sindayigaya, 2023b; Sindayigaya, 2020; Sindayigaya & Hitimana, 2016) [7] [28] [58].

5. Conclusions

According to our model, there is a less significant long-term correlation between the return on equity of commercial banks in the DRC and the volume of loans granted, due to several interdependent factors. Banks, by investing in both short-term and long-term loans, see their financial performance impacted by the increase in loan volume and the financial leverage ratio, while adhering to macroeconomic prudential standards. Notably, our model shows a negative long-term correlation between return on equity and the volume of loans granted, the financial leverage ratio, the real growth rate, and the inflation rate, as well as a negative short-term correlation between return on equity and the volume of loans granted. The statistically significant adjustment coefficient (-1.586624) ensures an error correction mechanism, indicating a long-term relationship (cointegration) between the variables. This system returns to equilibrium in the following period after an imbalance of 158.66%. A variable above or below its long-term equilibrium will adjust by approximately 1.586624 units per period to return to that equilibrium.

The estimates show that the return on equity of commercial banks in the Democratic Republic of Congo is negatively impacted by the increase in the volume of loans granted: an increase of one million dollars in loans results in a decrease of -0.9484614 million dollars in long-term profitability. Additionally, the volume of loans also has negative short-term effects on return on equity.

Finally, a 1% increase in the inflation rate leads to a short-term increase of 1.83% in return on equity. These results underscore the importance of prudently managing the volume of loans and considering macroeconomic factors to improve the long-term profitability of banks in the DRC.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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