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Securities Market and Its Stimuli: An Opportunity for the Financial Performance of Banks in the DRC

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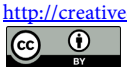

Abstract

This study explores the strategic role of the securities market in improving the financial performance of banks in the Democratic Republic of Congo (DRC). The central issue is to understand to what extent securities market stimuli influence banks' profitability, liquidity, and solvency in an underdeveloped economic context. The study adopts an econometric approach based on the Ordinary Least Squares (OLS) method applied to panel data from the Central Bank of Congo. The results show that an increase in financial securities temporarily improves banks' profitability and liquidity in the short term; however, excessive management limits flexibility and harms financial stability in the long run. Macroeconomic conditions, particularly GDP, interest rates, and inflation, also influence bank performance. The study recommends structural reforms and the diversification of financial instruments to maximize the opportunities of the securities market. In conclusion, proactive and balanced management, supported by technological innovations and robust regulation, is essential to fully harness the potential of the securities market in the DRC and strengthen the competitiveness of the banking sector.

Subject Areas

Business Analysis

Keywords

Securities Market, Financial Performance, Bank Liquidity, Securities Market

Stimuli

1. Introduction

The financial market is an important instrument in the development of the global economy through its financing of companies, states and financial institutions. Through debt securities, economic actors can easily raise funds necessary for their development, while offering investors an opportunity to diversify their portfolios, banks, in particular, being necessary players in the market, not only as issuers, but also as financial intermediaries. Therefore, a confirmation that the securities market constitutes a central pillar of the financial system of any modern economy, regardless of the fact that in the Democratic Republic of Congo (DRC), this market remains underdeveloped [1] despite its obvious potential to catalyze economic growth.

In the global context, banks derive a significant portion of their financial performance from the returns generated by the securities they hold and trade. [2]. Good securities management impacts the liquidity of the latter, their solvency and their profitability. According to the work of [3] [4], the ability of banks to manage their financial asset portfolios is crucial to their stability and to the integrity of the overall financial system. [5]-[7]. In this sense, not only does the securities market represent a channel for financing the economy, but also a lever for the performance of financial institutions. The evolution of global financial markets, including the development of securities markets, is influenced by several factors, called stimuli. These factors include external elements such as interest rates [1] [8], the monetary policy of central banks [9], international financial regulations, and macroeconomic trends [9] [10]. These authors argued that expansionary monetary policies promote demand for debt securities, leading to higher returns for banks and good financial performance.

Stimuli can also be internal, linked to the strategic decisions of the banks themselves. The increasing efficiency of financial instruments, innovation in the management of related risks and portfolio diversification strategies can increase the profitability of banks through the good management of securities [11]-[13]. They point out that the asset allocation decisions taken by financial institutions can in one way or another reduce or increase their vulnerability to external shocks and improve their performance on the securities market. It should also be noted that the performance of banks is also closely linked to the transparency of securities markets and investor confidence. For some research such as that of [1] [14] [15], a transparent and well-regulated securities market is essential to attract investment and maintain financial stability. Better securities management, as seen during the 2008 financial crisis, can reduce devastating effects on the stability of banks and the global economy. [16] This crisis has highlighted the importance of credit risk management [17] and that of liquidity in the performance of banks [18], and

has stimulated reforms aimed at strengthening the regulation of securities markets. A bank's financial performance can therefore be enhanced by proactive management of financial securities, in particular, the profitability of banks which largely depends on their ability to use securities markets to optimize their asset and liability management [19] [20]. Banks that have successfully maintained well-diversified asset portfolios and leveraged returns from securities can generate high profits while effectively managing the associated risks. [5] The securities market, when properly exploited, thus represents a growth opportunity for banks on a global scale.

The DRC's securities market is still young [21] [22] and faces several obstacles that limit its effectiveness. Political volatility, economic fragility and lack of robust financial infrastructure are major challenges. Despite the introduction of some reforms, such as the creation of the Kinshasa Stock Exchange (BVMK), the securities market in the DRC suffers from insufficient depth, with a low number of financial instruments traded [23]. In addition, potential investors face high political risk [24] and economic uncertainty, which discourages participation in this market. For the financial securities market in the DRC to flourish and offer real opportunities to banks, stimuli must be put in place. According to [1], These stimuli include a series of macroeconomic reforms such as the inflation rate, a series of financial reforms such as corporate profitability and institutional reforms aimed at improving investor confidence and increasing the depth and liquidity of the market. One of the essential levers to stimulate this market lies in the reform of the banking sector, in particular through risk management and improving the profitability of banks. For [25] [26], the establishment of stricter regulations and better financial supervision by the Central Bank of Congo is essential to strengthening investor confidence and enabling better market structuring.

In the Democratic Republic of Congo (DRC), dominated by banks in the context of financial intermediation, the absence of a fully developed securities market limits the diversification of financing sources and the financial performance of banks. Stimuli, such as monetary policies and institutional reforms, and the macroeconomic situation, favor the creation and expansion of this market, according to empirical studies. However, the question remains: to what extent do these stimuli contribute to improving the financial performance of banks in the DRC and promoting a sustainable and competitive financial system? In other words, how does the development of the securities market influence the key financial performance indicators of banks in the DRC? For this question, a null hypothesis is reformulated such that the development of the securities market has no significant effect on the key financial performance indicators of banks in the DRC. The objection to this paper is based on the idea that securities markets and their stimuli, when well structured, increase the sources of funding available to banks, thus reducing intermediation costs and diversifying risks. Consequently, their development is expected to improve indicators such as profitability (ROA, ROE), liquidity and solvency of banks. This position is supported by examples from emerging

countries where similar reforms have led to improved financial performance in the banking sector.

2. Methods and Methodology

Considering the endogenous and exogenous variables of the study, we can recall the specialty of ARDL models as follows:

$$Y_t = \alpha + \sum_{i=1}^{p} \beta_i y_{t-i} + \sum_{j=0}^{q} \gamma_j X_{t-j} + \varepsilon_t \quad (1)$$

So it's about:

$$Rnet_t = \alpha + \sum_{i=1}^{p} \beta_i Rnet_{t-i} + \sum_{j=0}^{q} \left(\gamma_j TCA_{t-j} + \gamma_j BONBCC_{t-j} + \gamma_j Txch_{t-j} + \cdots + n_j Acti_{t-j} \right) + \varepsilon_t \quad (2)$$

Here is the explanation of the financial performance in its profitability aspect of the banks in the DRC and so on.

$$RLGt_t = \alpha + \sum_{i=1}^{p} \beta_i RLG_{t-i} + \sum_{j=0}^{q} \left(\gamma_j TCA_{t-j} + \gamma_j BONBCC_{t-j} + \gamma_j Txch_{t-j} + \cdots + n_j Acti_{t-j} \right) + \varepsilon_t \quad (3)$$

$$RSG_t = \alpha + \sum_{i=1}^{p} \beta_i RSG_{t-i} + \sum_{j=0}^{q} \left(\gamma_j TCA_{t-j} + \gamma_j BONBCC_{t-j} + \gamma_j Txch_{t-j} + \cdots + n_j Acti_{t-j} \right) + \varepsilon_t \quad (4)$$

Considering that the financial performance of banks is a system, the set of ARDL models above forms a system of equations represented in matrix form as follows:

$$Y_t = \alpha + \sum_{i-1}^{p} \Phi Y_{t-i} + \sum \Gamma_j X_{t-j} + \varepsilon_t \quad (5)$$

Or Y_t represents the vector of explained variables of the system;

Φ Represents the coefficient matrices for the lags of the explained variables;

$X_{t-j} = \begin{bmatrix} TCA_t \\ Pib_t \\ \vdots \\ Acti_t \end{bmatrix}$ be the vector of independent variables of the system;

Γ_j = is respectively the coefficient matrix for the delays of the independent variables of the system;

ε_t = is the vector of error terms of the financial system of banks in the DRC.

The system of Equation (5) can be specified in a complete ARDL system as follows considering the model for each variable explained:

$$\begin{bmatrix} Rnet_t \\ RLG_t \\ RSG_t \end{bmatrix} = \alpha + \sum_{i-1}^{p} \begin{bmatrix} \phi_{11,i} & \phi_{12,i} & \phi_{13,i} \\ \phi_{21,i} & \phi_{22,i} & \phi_{23,i} \\ \phi_{31,i} & \phi_{32,i} & \phi_{33,i} \end{bmatrix} \begin{bmatrix} Rnet_{t-i} \\ RLG_{t-i} \\ RSG_{t-i} \end{bmatrix} + \sum_{j-1}^{q} \begin{bmatrix} \beta_{11,j} & \cdots & \beta_{1k,j} \\ \beta_{21,j} & \cdots & \beta_{2k,j} \\ \beta_{31,j} & \cdots & \beta_{3k,j} \end{bmatrix} \begin{bmatrix} TCA_{t-j} \\ \vdots \\ Acti_{t-j} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1,t} \\ \varepsilon_{2,t} \\ \varepsilon_{3,t} \end{bmatrix} \quad (6)$$

The ordinary least squares method (OLSM) will consist of minimizing the errors of the system in such a way that $\sum_{i-1}^{p}\varepsilon_t = 0$, where $\sum_{i-1}^{p}\varepsilon_t = Y_t - \hat{Y}_t$. Specifically, the method comes to minimize the errors for each model such as:

$$\varepsilon_{Rnet_t} = Rnet_t - \left(\alpha + \sum_{i-1}^{p}\phi_i Rnet_{t-i} + \sum_{i-1}^{q}\beta_j X_{t-j}\right) \tag{7}$$

$$\varepsilon_{RLG_t} = RLG_t - \left(\alpha + \sum_{i-1}^{p}\phi_i RLG_{t-i} + \sum_{i-1}^{q}\beta_j X_{t-j}\right) \tag{8}$$

$$\varepsilon_{RSG_t} = RSG_t - \left(\alpha + \sum_{i-1}^{p}\phi_i RSG_{t-i} + \sum_{i-1}^{q}\beta_j X_{t-j}\right) \tag{9}$$

And as the study revolves around a system of financial performance of banks in the DRC, we therefore have a system of errors relative to our dependent variables under study, namely:

$$\varepsilon_t = \begin{bmatrix}\varepsilon_{1,t}\\ \varepsilon_{2,t}\\ \varepsilon_{3,t}\end{bmatrix} = Y_t - \left(\alpha + \sum_{i-1}^{p}\phi_i Y_{t-i} + \sum_{i-1}^{q}\Gamma_j X_{t-j}\right) \tag{10}$$

Dependent and independent variables for the study:

Table 1 below highlights the dependent variables selected to better inform the opinion, such as the profitability and financial stability of banks, and the independent variables, represented here by the size of the securities market, macroeconomic factors, and regulation.

Table 1. Study variables.

No.	Type of Variables	Variables	Nature in the Model	Expected Effect
01	Financial performance indicators of banks in the DRC	Profitability: Net results	VD	-
		Financial stability: Liquidity ratio	VD	-
02	The stock market stimuli are the factors influencing these performances.	Size and depth of the securities market: Volume of securities traded.	VI	+
		Macroeconomic factors: Interest rates. Inflation rates. Economic growth (GDP).	VI	Will depend
		Regulation and governance: Central Bank Monetary Policy (Exchange Rate)	VI	+

03	To isolate the effects, one could include	Bank size (total assets)	**Control Variable**

Similarly, Table 1 shows the expected effects including a positive contribution of market stimuli to bank performance, while the impact of macroeconomic factors remains uncertain depending on the specific conditions.

3. Theoretical Framework on the Determinants of the Financial Securities Market

To build a theoretical framework on the determinants of the financial securities market, the researcher relies on several economic, financial, institutional, and behavioral theories to explain the factors intervening in this market. These different theories offer an understanding of the related mechanisms that influence the dynamics of supply, demand and valuation of financial securities.

1) Efficient Market Theory

Proposed by [27] [28], the efficient market theory states that financial markets are efficient, which implies that the prices of securities in the market reflect all available information. According to this approach, any exogenous stimulus, such as economic news or public policy announcements, is immediately incorporated into asset prices. It has been supported by [29] [30]. For this theory, market fluctuations are most often attributed to the arrival of new information regardless of whether inefficiencies due to irrational behavior or information asymmetries may be noticed.

Along the same lines, the theory of market efficiency has also been teased by [31]-[33], which broadens the concept by distinguishing several levels of efficiency including: weak, semi-strong and strong. This researcher emphasizes that it is impossible for an investor to achieve abnormally high returns consistently based solely on public or historical information in an efficient market. These ideas meet those of [34] [35], who mathematically demonstrated that asset prices in perfect markets follow a probabilistic movement, thus validating the hypothesis that prices fully reflect available information. For [36], highlight the limits of perfect efficiency while supporting the fundamental tenets of the theory. These researchers argue that if all information were embedded costlessly in prices, then there would be no incentive for agents to collect information. Thus, they introduced the idea of "relative efficiency" where prices reflect information to the extent that the costs of obtaining it are justified. These nuanced perspectives have enriched the debate around Fama's theory, while emphasizing that markets, although efficient, are not always perfect.

2) Portfolio Theory

The portfolio theory advocated by Markowitz in 1952 in his renewed research [37]-[39] posits that investors seek to maximize their return for a given level of risk or minimize risk for a given return. This implies that risk- and return-related stimuli, such as market fluctuations or monetary policy fluctuations, directly in-

fluence investor decisions. Here, these researchers point to the key concepts of "diversification and reducing non-systemic risks" and "market volatility, interest rates, and macroeconomic conditions" as the stimulus for the securities market. Recent researchers have continued work on clarifying portfolio theory by integrating modern perspectives. Here, [40] leverages the use of specific factors, such as company size, value and momentum, to optimize portfolios based on the company's expected risks and returns. In addition, [41] in their collection prioritize the importance of classifying alternative assets, such as intangible assets and cryptocurrencies, in portfolio diversification. To conclude, [42]-[44] discuss the implications of global markets and currency risk management in investment strategies, highlighting that external stimuli such as international market volatility increasingly influence investment decisions.

3) Institutional Theory

Studies have shown that the quality of financial institutions and regulatory frameworks are essential for the stability and attractiveness of financial markets. Authors such as [45]-[47] emphasize the importance of financial institutions in reducing uncertainty and encouraging investor participation. That is, they call for transparency of institutions to reduce the risks perceived by investors, with stimuli: regulations, investor protection, and financial infrastructures. Recent research has highlighted the important role of financial institutions and regulatory frameworks in financial markets. Researchers such as [48]-[50] demonstrate that legal systems and investor rights directly influence the depth and liquidity of financial markets. [51] focuses on ensuring sustained economic growth and stable financial markets. However, some explore the impact of institutional reforms and governance on the development of financial markets, while showing that strong institutions promote investment attractiveness [52] [53].

4) Financial Innovation Theory

Some studies like those [54] [55] show that financial innovations, such as fintechs and blockchain and many others are necessary in an economy because they transform financial securities markets by reducing costs and increasing the speed of transactions. Tufano explores how these innovations influence the supply and demand of securities. Other recent research confirms the importance of financial innovations in the transformation of financial markets. For [56] [57], analyze how financial technologies can reduce transaction costs by improving market efficiency, and highlight their role in democratizing access to finance. In the same vein, [58]-[60] revolve around the impact of fintechs on the restructuring of traditional financial models, notably through blockchain, which guarantees faster and more secure transactions.

5) Investor Sentiment Theory

Many authors have put [61]-[63] light on the influence of investor sentiment on financial markets. Irrational optimism can lead to speculative bubbles, while fear can cause stock market panic. Contemporary researchers have tried to further study the influence of investor sentiment on financial markets, and eventually they

have confirmed the initial observations of Shiller and his colleagues. [64] [65] explored the impact of cognitive and emotional biases on financial decision-making, particularly in their prospect theory. [66]-[68] have put forward an investor sentiment index, demonstrating that collective emotional fluctuations influence stock market returns, particularly in environments of high uncertainty. More recently, [69] [70] conducted a study on irrational behaviors that generate speculative bubbles and crashes, finally their studies highlighted psychological effects as factors of volatility. We can confirm that this work strengthens the understanding of the non-negligible role of emotions in market dynamics.

6) External Shock Theory

Geopolitical events, natural disasters and pandemics influence markets by creating significant uncertainty. [71] [72] Their analyses show that these shocks are susceptible to anticipated modification by investors and affect security prices. Recent researchers also confirm that geopolitical events, natural disasters, and pandemics profoundly influence financial markets by amplifying securities market uncertainty while altering investor expectations, as suggested by Reinhart and Stein. [73]-[75] prove that the geopolitical crisis and its repercussions on trade and financial flows lead to fluctuations in asset prices. [76] quantified the economic uncertainty related to these events and highlighted its significant impacts on stock markets and investment decisions. During the COVID-19 pandemic, [77] examines global economic impacts and notes marked effects on market volatility and investor behavior. These analyses, therefore, strengthen the understanding of the interactions between exogenous events and financial market dynamics. To support the various theories exploited above, researchers have attempted to address the issue of the securities market and its stimuli. A study conducted by [78] [79] on the impact of monetary and fiscal stimuli on financial market dynamics has placed particular emphasis on the role of financial securities in emerging economies. These authors analyze how policy interventions influence the liquidity and volatility of securities. Analyzing the effects of investor behavior, such as risk-taking and response to economic policies, on the securities market [80] [81], show a direct correlation between economic incentives and securities market fluctuations. For [1] [82] [83] in their analyses of the impact of stimuli on the financial market, particularly interest rates and monetary policies, reveal that stimuli play a crucial role in the stability and attractiveness of securities, particularly in transition economies.

4. The Securities Market and Bank's Financial Performance in the DRC

4.1. Characteristics of Variables

Table 2 gives the results of the statistical description of the different action variables for our research.

The data in the table above present the descriptive statistics of variables of interest over a period of 19 years, from 2005 to 2023. The observed means here

indicate the general trends of the variables, such as the Gross Domestic Product (GDP) with an average of 15.9 million, reflecting the performance of the overall economy. The standard deviations in Table 2, show the variability of the

Table 2. Descriptive statistics of the variables.

Variables	Symbol	Obs	Average	Standard Deviation	Min	Max
Gross Domestic Product	GDP	19	1.59e+07	2.70e+07	5,670,065	1.27e+08
Debt Securities	TCA	19	200.1022	261.1658	0.001	1006
Average Interest Rate	TxiMo	19	15.39842	16.02787	1.61	66.5
Net Result	Rnet	19	38.37421	38.26736	−2.8	122.3
Inflation Rate	TxInfla	19	8.124263	10.73403	0.001	42
Exchange Rate	Txch	19	1215.445	605.6494	437.07	2501.2
BCC Voucher	BONBCC	19	1559.652	1429.968	125.3	5048.5
Overall Liquidity Ratio	RLG	19	124.44	13.97623	109	161.1
Solvency Ratio	RSG	19	21.00263	6.64435	10.3	30
Total Assets	Acti	19	3954.238	4073.151	622.38	13,530

Source: author (our estimates on Stata 18).

variables, such as the average interest rates (TxiMo) and the exchange rates (Txch), which present considerable variability, indicating significant fluctuations. We can say that these data are of paramount importance in assessing the relationships between the dependent and independent variables and their impact on economic and financial performance, particularly in the context of banks and the securities market.

4.2. Stationarity of Series

In this section, we will use the ADF test and the results obtained after testing show the following Table 3:

Table 3. Stationarity tests of series with ADF and maximum lag of variables.

Variable	P-value (level)	P-value (1st Difference)	Constant	Lag
RLG	0.6038	0.0000	I(1)	1
TCA	0.8371	0.0000	I(1)	1
GDP	0.0013	-	I(0)	0
TxInfl	0.0629	0.003	I(1)	0
Rnet	0.9018	0.0006	I(1)	1
TxiMo	0.0345	0.0000	I(1)	0
Txch	0996	0.0083	I(1)	1
Acti	0.9988	0.0272	I(1)	0

Source: author (our estimates on Stata 18).

The results of the above stationarity test reveal that the variables have different orders of integration. Variables such as Overall Liquidity Ratio, Financial Securities (TCA), Net Income of Banks, Average Interest Rate, Exchange Rate and Total Assets of Banks in the DRC are non-stationary at level (P-Value > 0.05) but stationary after a first-order differentiation (P-Value < 0.05), which means that they are integrated of order 1. In addition, the Gross Domestic Product is stationary at level (P-Value < 0.05), indicating that it is integrated of order 0, in other words this variable remains from 2005 until 2023 around a stable mean see Table 2. For other variables of the macroeconomic dimension such as Inflation Rate, although close to stationarity at level with a P-Value of 0.0629, it becomes fully stationary after a first differentiation. These results imply that the I(1) variables require differentiation to avoid problems related to non-stationary series, while the GDP variable can be used directly in an econometric analysis without further transformation.

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

Note that the cointegration test procedure is based on the verification of the null hypothesis $H_0 : \beta_1 = \beta_2 = \cdots = \beta_n = 0$ that there is no cointegration relationship between the variables examined, as opposed to the alternative hypothesis $H_1 : \beta_1 \neq \beta_2 \neq \cdots \neq \beta_n \neq 0$, which assumes that one or more cointegrating relationships are present. This test is usually performed using Fisher or Wald-type statistics.

Table 4. The limits of the Pesara test.

Variable		1%	5%	10%
RLG Rnet RCA TxiMo Txinfla Txch RSG TCA GDP Acti	**Calculated F-Stat is 18.181**			
	Lower terminal	3.41	2.62	2.26
	Upper limit	4.68	3.79	3.35
	Calculated student's T is −8.296			
	Lower terminal	−3.43	−2.86	−2.57
	Upper limit	−4.79	−4.19	−3.86

Source: author (our estimates on Stata 18).

Recall that the null hypothesis (H_0) tests the non-existence of a cointegration relationship between the variables studied, contrary to its alternative hypothesis (H_1) such that there is a cointegrating relationship between the variables, meaning that the long-run coefficients of the model are not all zero. The Pesaran test compares the computed F-statistic with critical values provided specifically for ARDL models (for both I(0) and I(1) order integrated variables).

Table 4 presents the results where the Snedecor file test is superior to all the

test limits, supported by the student t test, the study undoubtedly confirms the existence of long-term effects between the variables of interest and the economic ones. As discussed above, it will therefore be a question first of all, of trying to take a look at the correlation and causality between variables. In other words the matrix $\Gamma_j \neq 0$

$$\text{Selft} \begin{bmatrix} \beta_{11,j} & \cdots & \beta_{1k,j} \\ \beta_{21,j} & \cdots & \beta_{2k,j} \\ \beta_{31,j} & \cdots & \beta_{3k,j} \end{bmatrix} \neq 0$$

4.4. Analysis of the Financial Performance of Banks in the DRC

Our analyses are structured around three models forming a system of financial performance of banks in the DRC where the explained variables retained are such as financial profitability, the liquidity ratio, and solvency ratio of banks. (See Table 5)

Table 5. Models of financial performance of banks in the DRC.

	−1	−2	−3	−4	−5	−6	−7	−8	−9
VARIABLES	**ADJ**	**LR**	**SR**	**ADJ**	**LR**	**SR**	**ADJ**	**LR**	**SR**
TCA		−0.209*			−0.154**			0.036	
		(0.094)			(0.058)			(0.035)	
GDP		0.000**			0.000**			−0.000	
		(0.000)			(0.000)			(0.000)	
TxiMo		0.830			0.557*			−0.402**	
		(0.486)			(0.286)			(0.119)	
TxInfla		2.095			1.548*			−1.081*	
		(1.248)			(0.651)			(0.471)	
Txch		−0.046			−0.010			0.039*	
		(0.027)			(0.014)			(0.017)	
Acti		0.030**			0.012*			−0.008	
		(0.009)			(0.005)			(0.005)	
L.Rnet	−1.286**								
	(0.403)								
D.TCA			0.276**			0.185***			−0.040
			(0.076)			(0.037)			(0.030)
D.GDP			−0.000						
			(0.000)						
D.TxInfla			−1.293*			−0.912***			0.847*
			(0.548)			(0.219)			(0.384)
D.Txch			−0.251**			−0.131**			
			(0.084)			(0.043)			

D.Acti			−0.063**			−0.028**			0.022
			(0.021)			(0.009)			(0.012)
L.RLG				−1.218**					
				(0.422)					
Continued									
L.RSG							−1.558**		
							(0.572)		
D.TxiMo									0.474**
									(0.189)
Constant			15,454			132,379**			16,956
			(13,478)			(46,070)			(13.424)
Observations	18	18	18	18	18	18	18	18	18
R-squared	0.964	0.964	0.964	0.974	0.974	0.974	0.797	0.797	0.797

Source: Researcher's manipulations.

The results of this research show that Debt Securities (TCA) have a contrasting impact on the financial performance of banks in the Democratic Republic of Congo (DRC), in the long term as well as in the short term. In the long term, the coefficient −0.209 indicates that an increase in financial securities is accompanied by a significant reduction in the net income of banks. In other words, an increase of one monetary unit in financial securities leads to a decrease of 20.9% in the long term in the results of banks. This direct and significant negative relationship reflects a reality according to which financial securities, although being safe assets, generate returns often lower than commercial loans and other more productive investments in the DRC. Furthermore, as the excessive accumulation of securities can reduce the financial flexibility of banks by limiting their ability to invest in activities with high financial profitability, this therefore underlines the importance of good strategic and balanced management of securities portfolios to avoid a prolonged effect on financial performance. However, despite a negative long-term relationship, in the short term, a decision to increase financial securities directly leads to a positive effect, with a positive coefficient of 0.276, suggesting that an increase of one monetary unit in securities leads to a temporary increase of 27.6% in bank profitability. Indeed, financial securities can quickly generate cash flows or short-term gains, especially in a context where market conditions are favorable. These results indicate a divergence between short- and long-term impacts, highlighting that the immediate benefits of securities must be balanced with prolonged negative impacts to ensure the sustainability of bank performance.

Regarding the liquidity ratio, the results also reveal a different dynamic between the long-term and the short-term as it is for the financial profitability above. In the long term, the coefficient −0.154 (significant at 5%) indicates that an increase in financial securities reduces the liquidity of banks. On the other hand, in the

short term, an increase of one monetary unit in financial securities leads to a momentary improvement in the liquidity ratio of 0.185. This result proves that, in the immediate term, financial securities can be used to manage cash flow needs, but this effect remains transitory in the DRC. These observations highlight the need for banks to adopt flexible and dynamic management of their securities portfolios in order to maintain a balance between profitability and liquidity in different time periods.

4.4.1. Financial Market Stimuli and the Financial Performance of Banks

The results of this research highlight a positive relationship between Gross Domestic Product (GDP) and banking performance in the Democratic Republic of Congo (DRC). With a coefficient of 0.000 (significant at 5%), GDP, as a key indicator of economic growth, has a marginally positive effect on bank profitability. This indicates that economic growth slightly boosts banks' financial performance, although this impact remains small. This relationship reflects the dependence of banking financial performance on the overall health of the national economy in the DRC, *i.e.*, during periods of economic expansion, banks benefit from growth in demand for financial services, such as credit and investment, as well as improved market conditions, which contributes to strengthening their profitability. Similarly, in the context of banks' overall liquidity ratio, GDP also acts as an improving factor, although marginally. An expanding economy, as measured by positive GDP growth, generates increased financial flows, such as increased bank deposits or increased monetary circulation in the DRC.

The results of the study show that the Average Interest Rate (TxMo), with a coefficient of 0.557 significant at 10%, has a positive causal relationship with the improvement of bank liquidity. Increased mobilization of credits, facilitated by a controlled interest rate, allows banks to better manage their resources and effectively meet their immediate obligations, reflecting optimal management and increased solidity in the short term. However, an increase in the interest rate, although it may initially improve the solvency of banks in the short term, has significant negative effects in the long term. Indeed, a 1% increase in the interest rate could reduce the solvency of banks in the DRC by 40.2%, increasing the risk of default. This duality underlines the need for a balanced approach in monetary policies, in order to reconcile the positive short-term effects on liquidity and solvency with the preservation of financial stability in the long term.

Regarding the analysis of the inflation rate on the financial performance of banks in the DRC, the research results show that inflation has differentiated effects on bank liquidity and borrowers' solvency, each according to its level. A moderate inflation rate, with a positive coefficient of 1.548 (significant at 10%) according to this research, seems to temporarily improve bank liquidity. In other words, a decision to improve the inflation rate by 1%, is likely to affect bank liquidity by 154.8% in the long term. This could be explained by an increase in borrowers' nominal income, strengthening their ability to honor their financial commitments, and indicating a moderate positive causal relationship in the long term in

the DRC. On the other hand, high inflation, illustrated by a negative coefficient of −1.081 (significant at 10%), reduces long-term solvency by increasing financial costs and decreasing borrowers' ability to repay their debts. It is also associated with a deterioration in bank liquidity. These dynamics highlight that, although moderate inflation may be beneficial in the short term by increasing income or the nominal value of bank assets, high inflation poses a major risk to financial stability.

Effect of exchange rate on liquidity ratio of (−0.251) The coefficient simply means that a one-unit increase in the exchange rate (e.g., a depreciation of the domestic currency against a foreign currency) leads to a 25.1% decrease in the liquidity ratio of banks in the short term, all else being equal, *i.e.*, depreciation of the Congolese currency leads to an increase in the costs of banks' foreign currency obligations, thereby decreasing their available reserves to meet liquidity requirements. However, currency depreciation in this sense may lead to increased volatility in financial markets in the long term, inducing banks to maintain less liquid assets. Similarly, the effect of the exchange rate on the solvency ratio (−0.131), implies that a one-unit increase in the exchange rate reduces the solvency ratio of banks by 13.1% in the short term and this suggests a robust relationship.

The results of this research where the total Assets of banks (Acti) presents a coefficient of 0.030, significant at the 5% threshold, indicate that an increase in bank assets positively stimulates their profitability in the long term. This causal relationship highlights a reality according to which the accumulation of favorable assets allows banks to generate sustainable profits, demonstrating a positive relationship in the long term. In addition, a decision to increase bank assets by one monetary unit leads to a 2.3% improvement in the overall liquidity ratio of banks, strengthening their financial solidity. It should be noted that this variable plays a role as a control variable in the models studied, contributing to a better understanding of the financial dynamics of banks.

4.4.2. The Cusum Robustness Test

The CUSUM squared curve below in **Figure 1**, allows us to test the stability of the parameters of our econometric model above over the period 2005-2023 and otherwise the robustness of our model.

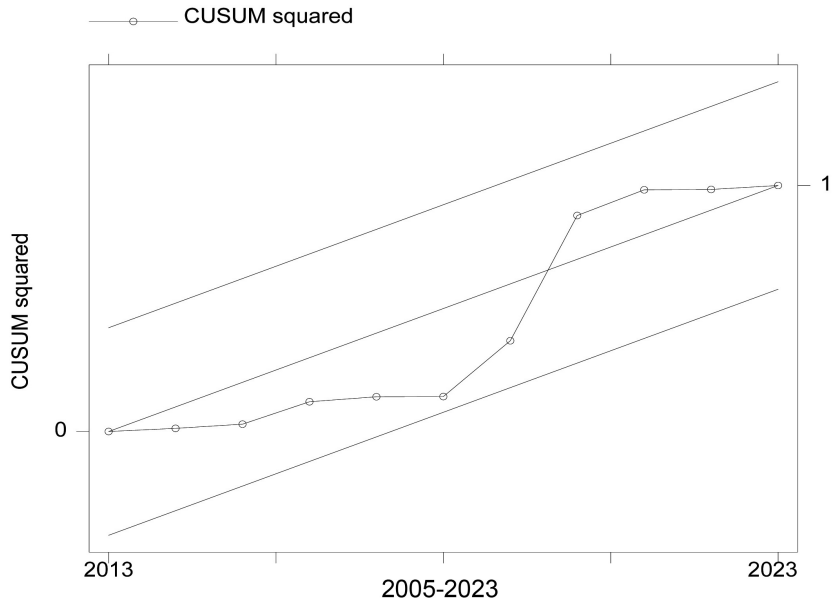

Figure 1. Robustness test.

The parameter stability test in **Figure 1** shows that the model parameters are generally stable over the studied period (2013-2023), as the CUSUM squared curve remains stable within the confidence bands. However, the increase in the curve after 2020 shows signs of fragility or structural disturbance in the data as the curve is closer to the test limits, and this can be predicted by either external shocks (economic crises, exchange rate changes) or by changes in economic policies or market conditions in the DRC.

4.4.3. Other Market Model Tests

Table 6 presents additional tests, necessary for the analysis of our model and for a good application.

Table 6. Other tests of the model of financial performance of banks in the DRC.

Hypothesis to Test	Hypothesis Tests	Test Statistic Value	Probability
Autocorrelation	Breusch-Godfrey	0.100	0.7518
	Durbin-Watson	2.024783	$1.9 \leq p \leq 3$
Heteroscedasticity	Breusch-Pagan-Godfrey	18.00	0.3888
Skewness	White	13.34	0.3446
Kurtosis	White	0.90	0.3420
Normality of residuals	Jarque Bera Test ε_1	0.2825	0.8683
	Jarque Bera Test ε_2	1.309	0.5196
	Jarque Bera Test ε_3	1.262	0.5322

Source: Author (our estimates using Stata 18).

The results in Table 6 of the tests carried out on the model of the financial performance of banks in the DRC, show that the necessary assumptions have an overall conformity to guarantee the reliability of the estimates of our models. The Breusch-Godfrey test, with a probability of 0.7518, indicates the absence of autocorrelation of the residuals, while the Durbin-Watson test gives a value of 2.024783, falling within the acceptable range ($1.9 \leq DW \leq 3$), further confirming this absence. Regarding heteroscedasticity, the Breusch-Pagan-Godfrey test displays a probability of 0.3888, suggesting that the residuals have a constant variance, an essential condition for the robustness of the model.

Regarding the normality of the residuals, the Jarque-Bera tests on three samples (ε_1, ε_2, and ε_3) reveal probabilities with respective values of 0.8683, 0.5196 and 0.5322, confirming that the residues follow a normal distribution. Furthermore, White tests for asymeskewness and kurtosis give probabilities of 0.3446 and 0.3420, indicating the absence of significant anomalies. These results validate the relevance of the econometric model and strengthen the credibility of the conclusions derived to analyze the financial performance of banks in the DRC.

5. Discussion, Conclusion of the Work and Suggestion

5.1. Discussion

The results of the analysis of this research show a complex relationship between securities market stimuli and the financial performance of banks in the DRC. The empirical data relating to it reveal that, although financial securities can temporarily improve the financial performance of banks through their profitability and short-term liquidity, they exert a significant negative effect in the long term. It was understood here that an increase of one monetary unit in financial securities leads to a 20.9% reduction in long-term net results, a finding that illustrates the low flexibility of banks in a still underdeveloped market. These results are really not far from those of [1]. This contrast between short- and long-term impacts highlights the importance of balanced management of securities portfolios to maintain banks' performance while reducing their vulnerability. [84] [85] clarifies the importance of balanced portfolio management to reduce long-term liquidity risks, a relevant issue for banks operating in emerging economies such as the DRC.

On the other hand, macroeconomic factors such as GDP and interest rates also influence bank performance. An increase in GDP has a marginally positive effect on profitability and liquidity, reflecting the impact of economic growth on the demand for financial services. However, an increase in interest rates, although initially promoting solvency, may compromise the financial stability of banks in the long run by increasing the cost of lending and the risk of borrowers defaulting. These results suggest that the securities market in the DRC could benefit from structural reform and the introduction of diversified financial instruments to maximize its opportunities. Several other authors support the analysis of the complex relationship between securities market stimuli and the financial performance

of banks. The study conducted by [86] shows that information asymmetry in financial markets can limit the effectiveness of securities as financing tools, which impacts the profitability of financial institutions. [87] stress that the liberalization of financial markets promotes economic growth and improves banks' access to diversified resources, while increasing systemic risks. Furthermore, [88] finds that excessive expansion of the financial sector, as measured by factors such as GDP and interest rates, can have negative effects on the overall performance of banks, particularly in the long run. Finally, [89] argues that macroeconomic stability and appropriate structural reforms are also essential prerequisites for banks to take full advantage of securities markets. These studies support the need for structural reforms and diversification of financial instruments to maximize opportunities in the DRC.

The results of this study show that the impact of securities market stimuli on banking performance in the DRC is more volatile than in other emerging markets, primarily due to a shallow financial market, insufficient regulation, and limited diversification of financial instruments. Unlike countries such as Brazil, India, or South Africa, where bank profitability benefits sustainably from financial securities, in the DRC, the effect is positive in the short term but turns negative in the long term due to ineffective risk management [90]. Similarly, interest rates improve short-term liquidity by increasing the intermediation margin, but in the long run, they reduce banking solvency by increasing the risk of borrower defaults [91]. These results are similar to those observed in Nigeria and Ghana, but Congolese banks are more vulnerable due to their limited capacity to hedge credit risk. Inflation, while temporarily boosting bank liquidity, becomes a destabilizing factor in the long term, reflecting trends observed in Argentina and India, where banks must manage prolonged inflationary effects (Campos & Gonzalez, 2020). Additionally, the depreciation of the Congolese franc significantly affects banking solvency, a phenomenon less pronounced in countries with a structured interbank market and currency risk hedging instruments, such as South Africa and Indonesia [92]. By comparison, Congolese banks operate in a more fragile financial environment, which amplifies the impact of macroeconomic fluctuations on their stability. These findings highlight the need for structural reforms to enhance the depth of the securities market in the DRC and increase the banking sector's resilience to economic shocks.

5.2. Conclusions and Suggestion

This work highlights that the securities market in the DRC, although still nascent, represents a strategic opportunity to improve the financial performance of banks. Proactive and well-balanced management of financial securities, combined with macroeconomic reforms, can strengthen the stability and profitability of the banking sector. However, the contrasting impacts between the short and long term require an adaptive approach and better regulation to fully exploit this potential. Looking ahead, policymakers should prioritize policies that promote the diversi-

fication of financial instruments, market transparency, and robust regulation. These efforts, combined with technological innovations such as fintechs, could transform the DRC securities market into a real lever for sustainable economic growth.

The findings of this paper suggest that to improve the financial performance of banks in the DRC, it is crucial to diversify available financial securities and strengthen bank portfolio management capabilities. Banks should adopt balanced strategies to exploit the short-term benefits of financial securities while mitigating their long-term negative effects. Economic policymakers should also implement macroeconomic and institutional reforms aimed at stabilizing interest rates, controlling inflation, and encouraging sustained economic growth. Finally, efforts should be devoted to strengthening financial market infrastructure, promoting transparency, and integrating technological innovations, such as fintechs, to increase the efficiency and attractiveness of the securities market in the DRC context.

To improve financial stability and banking performance in the DRC, it is also essential to diversify financial instruments**,** strengthen the Kinshasa Stock Exchange, and facilitate access to preferential credit rates to stabilize interest rates and support the economy. Implementing currency risk hedging instruments and increasing the central bank's reserves will help reduce vulnerability to fluctuations in the Congolese franc. Finally, strengthening banking regulations with stricter prudential standards and enhanced oversight will limit systemic risks and boost confidence in the banking sector.

Conflicts of Interest

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

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