

THE IMPACT OF COVID-19 ON THE CONGOLESE FINANCIAL SYSTEM : AN EMPIRICAL INVESTIGATION

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ABSTRACT

Purpose: The COVID-19 pass-through on the financial system moves at supersonic speed, undermining financial stability with a contraction of claims on the private sector, withdrawing deposits, and tightening the fiscal circumstances.

Approach/Methodology/Design: The primary goal of this research is to investigate the unprecedented influence of COVID-19 on the Congolese financial system. An autoregressive Vector Bayesian model is used to test the connection. The data utilized is a monthly series from December 2013 to October 2020. The results reveal that the COVID-19 pandemic has varying degrees of negative impact on the Congolese financial system.

Findings: The Congolese government should immediately adopt macroeconomic and financial policies by boosting and injecting liquidity into the banking sector to mitigate the negative consequences. At the same time, the expansion of Fintechs on the one hand and the expansion of cyberattacks on the other would enhance the financial system landscape.

Originality/value: To maximize the digitization of the financial systems and enhance the effectiveness of cybersecurity, financial institutions should implement intelligent policies and invest in research. This study is the first to be done in Congo to the authors' best knowledge and serves as a battery for further research in Africa and the world.

INTRODUCTION

Since the beginning of the year, the COVID-19 epidemic has spread globally. According to the World Health Organization's data map, there were 633,342,247 cases and 6,584,300 deaths until 25 Oct. 2022, with many people infected, particularly in the Democratic Republic of Congo (DRC). The perception of an uncontrolled pandemic has already prompted many people to change their daily lives. The resulting slowdown in economic activity worldwide threatens to plunge several countries into recession and jeopardize financial stability (Boot et al., 2020). There is still no formal vaccine against the virus. To prevent new infections, several governments have mandated strict measures to avoid unnecessary contact with already infected people, especially vulnerable segments of the population, the sick, and the elderly. This has caused the preventive closure of schools, universities,

factories, and businesses, casting a veil over the world in an unprecedented way for decades (Jordà et al. 2020 ; Taleb and Cirillo, 2020).

Adaptation to containment has pushed most countries into deep containment, resulting in a worldwide recession (Gopinath, 2020a, 2020b). The big lockdown saved lives, but it also seized the savings behind the desired recession, what we call the lockdown waste the effect that lockdown curbs accumulation factors of production and accelerates a spectacularly self-inflicted recession. This effect, which has the consequences - loss of income and exacerbation of uncertainty - is already a reasonably high cost for daily life and the poorest population. At the same time, the pandemic has led to a sharp increase in risk aversion, and the financial system has suffered a considerable impact following abrupt reductions in capital flows (Sandri, 2020). These incidents of the coronavirus crisis have undermined global financial stability (Adrian and Natalucci, 2020).

COVID-19 has overhauled and repositioned the financial system, impacting many complex and interconnected channels. Figure 1 provides a stylized overview. The degree of pass-through is exacerbated by high uncertainty, which weakens investor and consumer confidence (Malata and Pinshi, 2020; Pinshi, 2020; Kim and Woodward, 2020; Nguyen et al., 2020; Ibikunle and Rzayev, 2020; Poloz, 2020; Reutter and Gazette, 2020; Ettmeier et al., 2020).

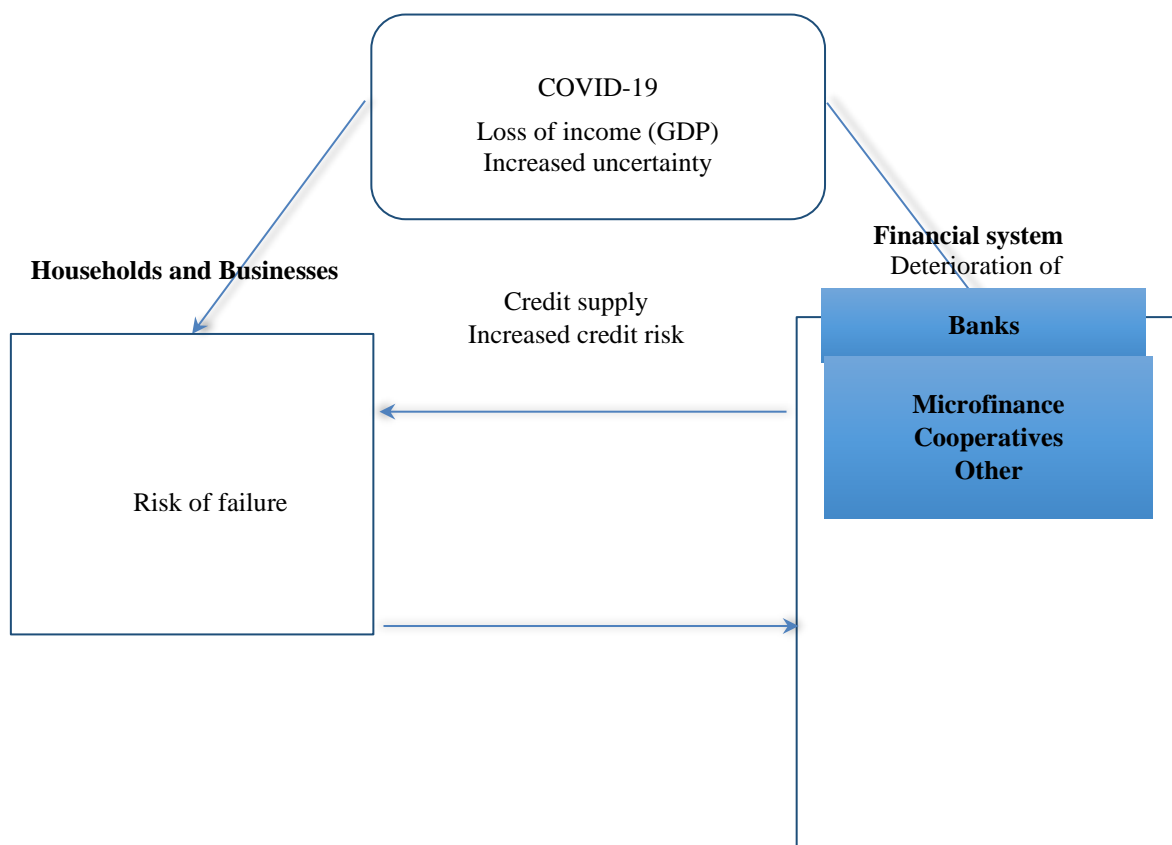


Figure 1 : COVID-19 impact on the financial system

Source: Adapted from Bank of Canada Financial System Review (2020)

The rapid rush to financial institutions is deteriorating the financial system’s liquidity and tightening financial conditions, limiting household and business credit access, thus affecting their ability to weather the shock. With dramatically reduced cash flow, companies find it difficult to pay their suppliers, employees, and ultimately, their bankers. Due to the coronavirus crisis, companies facing tight liquidity may suffer solvency once their stocks and cash reserves are exhausted. Some affected small and medium businesses that do not have ready access to finance may risk default and bankruptcy. In the DRC, the main creditors of companies are usually banks, which in turn must make

provisions for loan losses and will, therefore, suffer a deterioration in their capital adequacy positions. The main objective of this study is to investigate the unprecedented impact of the coronavirus on the Congolese financial system. The Congolese financial system has constantly been mistreated during exogenous shocks (Figure 3), and this has always had a significant impact on the financial system's health. In this context, we want to measure the intensity of the effects of COVID-19 on the Congolese financial system and propose a strategy to prepare short-term resilience and think about the evolution of the financial system in the future. Dominated by the banks (94% of the balance sheet total) (Figure 2), the Congolese financial sector has 17 approved banks, 18 Micro Finance Institution, 3 specialized financial institution, 5 E-financial companies, 72 financial couriers, 12 international couriers couples to banks, 27 exchange offices, 79 savings and credit cooperatives, One national insurance company (SONAS), and the National Social Security Institute (INSS) .

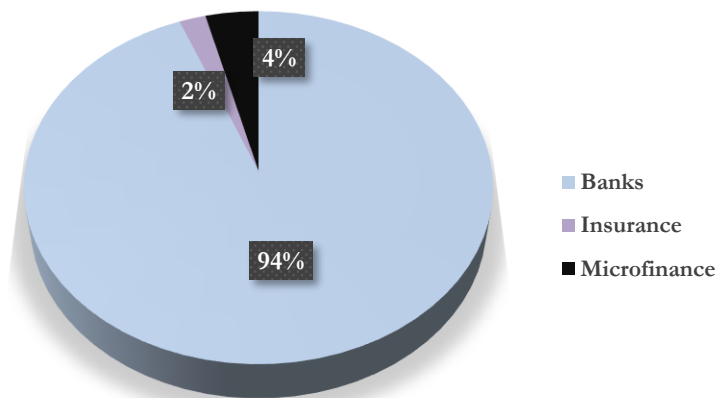


Figure 2 : The relative weight of sectors

Source: BCC, Financial Stability Report (2015)

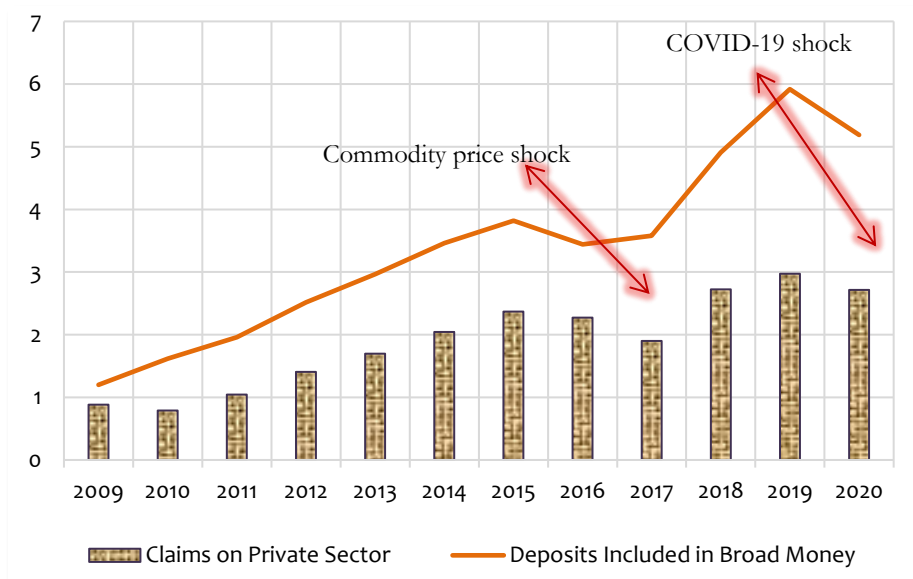


Figure 3 : The landscape of the Congolese financial system (Billion, USD)

Source : IMF, International Financial Statistic (2020); BCC; Authors

Like the Achilles heel, the Congolese financial system is more fragile and vulnerable to exogenous shocks (Figure 3). Behaving pro-cyclically concerning exogenous shocks, Figure 3 plots credit rationing and the massive withdrawal of deposits whenever there is an exogenous shock, especially with the fall in commodity prices and the COVID-19 crisis. As a result of this procyclical behaviour, financial circumstances tighten (Figure 4). This raises the cost of credit and makes borrowing less appealing. The Congolese financial system is disrupted by the COVID-19 crisis, which is characterized by a lack of depth (Pinshi and Kabeya, 2020) and unstable balance sheets.

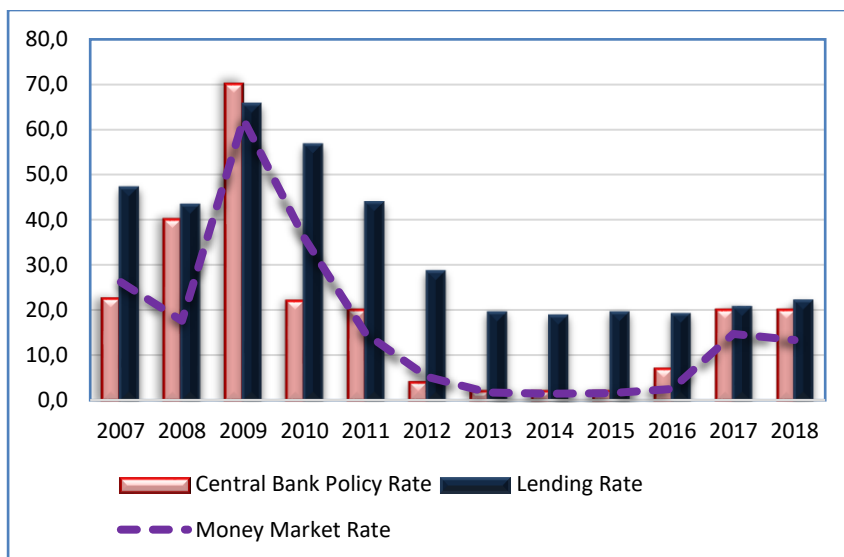


Figure 4 : Financial conditions

Source : IMF, International Financial Statistics (2020)

However, it should be noted that the coronavirus shock is incomparable to previous crises. The substantial homogeneity of the current crisis considerably diminishes the role of concerns linked to the asymmetry of information, if not to its great vagueness, which prevented coordinated action and risk-sharing. Uncertainty in the financial system could be exacerbated on the deposit side as well. In the absence of credible Congolese deposit insurance, the resilience of implementing a national deposit insurance system guaranteed by the Central Bank of Congo could be questioned, especially for the poorest households. Deposit withdrawals, credit rationing, and financial conditions affected by the current health crisis can lead to a full-blown financial crisis in DRC.

These figures have traced the exposure of the financial system to the exogenous shock, in particular the current health crisis, which is disrupting the Congolese financial system. Beyond this financial disruption, the Congolese financial sector must expect a growing development of Fintechs, which could help level the financial service in terms of effectiveness and efficiency while respecting social distancing and confinement measures. However, such expansion would require innovative policies that is, hardening computer systems to prevent cyber-attacks.

The added value of this article is that it is the first article to empirically study the impact of COVID-19 on the Congolese financial sector and will serve as a pillar in the literature review for future research on the impact of exogenous shocks in the Congolese financial markets. The rest of the paper is organized in the following manner. The literature review on the impact of COVID-19 on the financial system is presented in Section 2. The basic approach used to measure this impact is described in Section 3. The results are discussed in Section 4. Section 5 contains the conclusion and policy implications.

REVIEW OF LITERATURE

The spread of COVID-19 has caused an immeasurable shock to almost every economy through uncertainty and lost income or declining GDP. This literature review focuses on three perspectives . We begin by identifying the impact of old exogenous shocks on the financial system. Then we will try to list the studies on the impact of uncertainty in the financial system. Finally, we will cite recent studies on the effects of the coronavirus on the financial system.

Former exogenous shocks

Exogenous shocks have significant economic consequences that spill over into the economy and the financial system as a whole and often affect production, financial stability, currency stability, unemployment, debt and poverty. An exogenous shock to the financial system is often associated

with a credit crunch and a sharp deterioration in liquidity, which is compounded by a widespread loss of confidence due to uncertainty (Blejer et al., 2002). Alternatively, this exogenous shock could also aggravate financial conditions. Such a shock would send a negative signal to the national financial system (Karpavicius, 2012). In a study of the impact of the exogenous shock in Nigeria, Alege et al. (2012) found that global shocks made Nigeria's economy unstable, influencing the country through links in the financial system.

To analyze the effect of an exogenous shock on the behaviour of the financial sector, Ibrahim and Alagidede (2016) examined the association between financial development and volatility due to exogenous shock in 23 sub-Saharan African countries over the period 1980-2014. By estimating cointegration by the panel, they found that a well-developed financial sector mitigates the volatility of the business cycle. However, in the long run, unbridled financial development can amplify fluctuations. Strengthening financial sector supervision, including cross-border supervision, and adopting inflation targeting might be critical in examining the proper levels of financing and price stability required to smooth out economic fluctuations.

Furthermore, Vunus and Kusairi (2017) studied the effects of exogenous and endogenous shocks on the stability of the Indonesian financial system from 2004 to 2014. They discovered that the evolution of US economic growth and Asian countries' economic growth impacted the Indonesian financial system. They further concluded by demonstrating that internal factors have a significant influence on financial stability. Therefore, the central bank should respond quickly and correctly to external and internal financial landscape changes, particularly endogenous factors through monetary policy.

In 2019, Gonzalez grew concerned about the vulnerability of emerging countries to fluctuations in international interest rates. He estimated that the level of financial development of domestic markets is positively related to the share of total public debt held in the domestic market by building a model that integrates a domestic banking sector into a sovereign default model in which governments can issue domestic and foreign debt and selectively default on the debt. Due to financial frictions, domestic debt issuance is an overwhelming capital investment. By calibrating his model, he decomposed the effect of external and internal shocks on output volatility and found that financial growth diminishes the vulnerability of emerging economies to external shocks. In the same year, Sarmiento (2019) examined the impact of the exogenous shock on the unsecured interbank market caused by the massive outflow of bank deposits and the overall liquidity shock associated with the US tapering. His findings imply that lending relationships can ease funding costs during idiosyncratic liquidity shocks, while central bank liquidity assists mitigate the impact of aggregate liquidity shocks. Its results have implications for financial stability and monetary policy transmission.

Mimir and Sunel (2019) documented the exogenous impact of the global financial crisis of 2007–09 on the exposure of emerging market economies. Using a DSGE model, they found that the crisis exposed emerging economies to a negative feedback loop of capital outflows, exchange rate depreciation, balance sheet degradation, and rising credit spreads. Furthermore, decline in actual economic activity. They built a new Keynesian DSGE model of a small open economy with domestic and foreign funding access in a banking sector. Using the calibrated model, they demonstrated that the optimal Ramsey policy is used as a benchmark and that the optimized interest rate regulations respond to the actual exchange rates, asset prices, and credit spreads.

Regarding the DRC, Pinshi (2018) assessed the impact of the exogenous commodity price shock in 2015 on the macroeconomic and financial sectors. Regarding the impact on the financial system, he established that the Congolese financial system was on the verge of a large-scale financial crisis using the VAR model.

Uncertainty

The international financial crisis has sparked a wave of research on measuring uncertainty and its impacts on economic performance and the evolution of financial systems. Increasingly, economists and financiers believe that increased uncertainty has adverse effects on macroeconomic, microeconomic, and financial system performance (Jackson et al., 2019) and is prompting reactions from monetary, fiscal, and regulatory policymakers. Chatterjee (2018) also agrees with this but points out that disparities in financial development play a critical role in generating amplified responses in underdeveloped countries.

Economic and financial upheavals frequently coincided with heightened uncertainty. Political frictions (Yahaya and Bello, 2020) and other exogenous shocks have aggravated uncertainty in DRC . This uncertainty has also been exacerbated by the current COVID-19 crisis, which has resulted in a recession (Baker et al., 2020). Uncertainty now presents itself as a feature of most macro-econometric models, in which households, businesses, and financial institutions today make decisions based on assumptions of an unknown and unpredictable future. Research has analyzed the impact of uncertainty over time on the economy and the financial system. Results have been mixed so far. Bonciani and Van Roye (2015) investigate the effects of uncertainty shocks on economic and banking activity in the euro area using a dynamic stochastic general equilibrium (DSGE) model. Their studies show that credit supply frictions amplify the effects of uncertainty shocks on economic activity. This amplification channel comes mainly from the rigidity of interest rates on the bank loan. They conclude that this rigidity reduces the efficiency of the monetary policy transmission mechanism. Even, Pierdzioch and Gupta (2019) estimate the relationship of uncertainty and forecasts of a recession in the US economy using the Boosted Regression Trees model on a sample of monthly data that dates back to 1889. From the perspective of the financial system , they observe that uncertainty has gained tremendous importance on the financial system, more specifically towards the financial markets.

To strengthen theoretical predictions of the impact of uncertainty on the financial system, Hristov and Roth (2019) broaden the knowledge of the role of uncertainty and its impacts on the onset of financial crises. They examine the effects of exogenous changes in uncertainty on well-established predictors of financial crises in the four major euro area economies. They conclude that the uncertainty indicators contain helpful information about the potential build-up of vulnerabilities in the financial system. Ludvigson et al. (2019) wonder about the different sources of uncertainty, whether endogenous or exogenous. They develop the SVAR identification strategy to answer these questions via inequality constraints on structural shocks. They find that macroeconomic uncertainty is significantly higher during recessions and is often an endogenous response to output shocks, while uncertainty about the financial system is likely to be a source of output fluctuations.

Zhenghui and Junhao (2019) explore the effect of uncertainty shocks from global economic policies on China's financial conditions and analyze the sources of uncertainty shocks. The results showed that the spillover effects of global economic policy uncertainty on China's financial conditions were concentrated in times of crisis but primarily insignificant in standard times. Uncertainty shocks emanating from China have been the primary sources of volatility in Chinese financial systems, and uncertainty in US economic policies has emerged as the most crucial exogenous cause of China's financial conditions. The same results are proven by Caldara et al. (2016), via the SVAR model, that uncertainty shocks have a particularly negative economic impact on the financial system and strongly lead to a tightening of financial conditions in economies.

Nalban and Smadu (2020) examine whether the response of the euro area economy to uncertainty shocks depends on the state of financial conditions. They find strong evidence that uncertainty

shocks have much more powerful effects on macroeconomic fundamentals in times of stress on the financial system than regular times. They admit that economic recovery will depend on the degree of uncertainty. They conclude that, from a policy perspective, the behaviour of the financial system is vital for appropriate policy responses to uncertainty shocks.

COVID-19 Pandemic

Researchers have analyzed these effects from several perspectives, including, Aldasoro et al. (2020), who analyzed the impacts of COVID-19 on the European and American banking sectors. They discover that the scale of the COVID-19 crisis means that no bank will remain intact. The initial reaction of the financial system was a tsunami that engulfed many banks somewhat blindly. They also mention the financial constraints for granting loans. Despite the modest stabilization by macroeconomic and financial policies, the uncertainty weighing on the financial system increases distrust of the longer-term prospects of the banking sector, particularly of its most hazardous segments.

To understand the impact of the coronavirus on the stability of the financial system and the impact on economic activity, Boot et al. (2020) show that the spread of the virus leads to a reduction in economic activity worldwide, and the latter poses new risks to financial stability. This channel is accepted for the case of the DRC, according to which economic activity is a motor for the development of the financial system (Pinshi and Kabeya, 2020). Boot et al. (2020) indicate the urgency of targeted mitigation strategies at the European level and suggest coordinating budgetary measures to provide liquidity to affected companies. The cash interruptions linked to uncertainty COVID-19 could cause another large-scale financial crisis. They point out that monetary policy measures are unlikely to ease liquidity shortages at the individual firm level. Coordinated macroeconomic action is crucial to prevent financial systems from losing confidence in the resilience of banks, particularly in countries with limited fiscal capacity.

Likewise, Bräuning and Ivashina (2020) studied the impact of the US easing policy on emerging and underdeveloped market economies via loans from foreign banks denominated mainly in US dollars. They demonstrate a direct link between US monetary policy and the credit cycles of emerging and underdeveloped market economies. They believe that borrowers from emerging and underdeveloped countries will experience an increase in the volume of loans from foreign banks in a typical US monetary easing cycle. They realize that the robustness of the result applies to American and non-American lenders, including those with little direct exposure to the American economy. They conclude that lenders from emerging and local developing economies do not compensate for capital flows from foreign banks. Thus, monetary policy in the United States affects the credit conditions of companies in emerging and developing economies. They also show that the benefits are most remarkable in countries with deep and developed financial systems.

From a financial regulation perspective, Blank et al. (2020), drawing on lessons from the international financial crisis at Subprime and a simple conceptual framework, examine the response of US bank regulators to the COVID epidemic- 19. They argue that the current regulatory strategy of vigilant anticipation is the same as that used at the start of the Great Recession. This poses unnecessary risks to the financial system and the economy. For more careful management of the vulnerabilities created by the pandemic, they propose to promote a rapid recapitalization of the banking system, encourage new share issues, and rethink the additional measures to be taken in the short and long term. Similarly, Lelissa (2020) used the Input-Output framework to explore the impacts of the COVID-19 pandemic on the Ethiopian banking system and inform policy interventions and responses. Its results show that the pandemic impacts both the balance sheet and the income statement of banks. It identifies an immediate need for liquidity for banks to comfortably meet customers' needs. The paper concluded that the profile

of the banks would be of paramount importance for the lasting strength of the banking system. In addition, financial sector reform and restructuring programs should be considered to adapt to these changes and speed up the recovery process.

It is essential to point out that the rise of Fintechs in the financial world is no longer to be discussed since Fintech is one of the powerful weapons to strengthen the financial service, and therefore financial inclusion. Several authors have analyzed the issue of financial technology and the financial system (Frost, 2020; Thakor, 2019) and have found interesting results. We would like to spread these studies on the impact of Fintechs on the financial sector in detail, but we prefer to study it in detail soon .

The impact of the COVID-19 crisis on the financial system poses severe problems and challenges for the Congolese economic and financial health. Thus, this article aims to study the impact of COVID-19 on the Congolese financial system.

METHODOLOGY AND PROCEDURES

Theoretical preconceptions have shown that the impact of COVID on the financial system passes through several channels linked to uncertainty and loss of income. Following old and recent work (Carrera and Lanteri, 2007; Ramayandi, 2011; Fornari and Stracca, 2013; Caldara et al., 2016; Vinus and Kusairi, 2017; Boissay et al., 2020; Zabai, 2020; Malata and Pinshi, 2020), we use an econometric framework of autoregressive vector Bayesian to quantify the impact of COVID-19 on the financial system. We estimate the model using the monthly series from December 2013 to Oct. 2020. Empirical evidence has added credibility to the theoretical preconceptions of the transmission of the coronavirus epidemic on the financial system. The choice of BVAR is due to its flexibility in running the model without necessarily imposing restrictions on the coefficients and its reliability on the results.

The framework of the model is presented as follows:

$$Y_t = \sum_{i=1}^p \tau_i Y_{t-i} + \zeta_i \Gamma_t + \omega_t \quad \omega_t \sim N(0, \Sigma) \quad (1)$$

Where ω_t is a reduced form residual vector at time t . The vector Y_t contains claims on the private sector, deposits from financial institutions, financial conditions, the pandemic uncertainty index (WPUI), GDP / Hab. The VIX, Uncertainty Index, Γ_t is a financial uncertainty and volatility variable explicitly constructed to track the uncertain behaviour of the US financial system since this variable has a systemic effect on the majority of economies and their financial systems, including the Congolese financial system. Therefore, it is assumed to be exogenous as part of the model.

Financial sector data comes from the International Financial Statistics database of the International Monetary Fund and Central Bank of Congo. The VIX is taken from the Chicago Board Options Exchange Volatility Index database, and finally, the WPUI is taken from the database of Ahir et al. (2018) adapted from the COVID-19 pandemic.

We choose Litterman / Minnesota prior to estimating the BVAR framework with a diagonal matrix with the elements v_{ij} at lag p , the specification takes the following form :

$$v_{ij,p} = \left\{ \begin{array}{ll} \left(\frac{\lambda_1}{p\lambda_3}\right)^2 & \text{for } i = j \\ \left(\frac{\lambda_1\lambda_2\sigma_i}{p\lambda_3\sigma_j}\right)^2 & \text{for } i \neq j \end{array} \right. \quad (2)$$

Where λ_i are hyper-parameters, and σ_i is the square root of the i th diagonal element of Σ .

RESULTS AND DISCUSSION

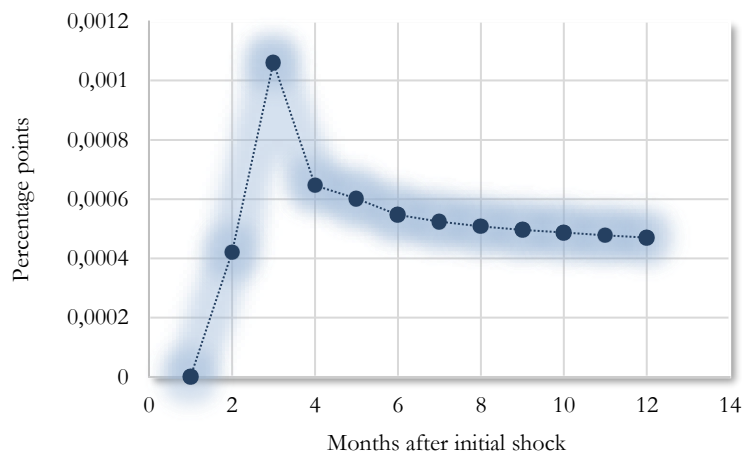
This section presents the results of the estimation of the BVAR model. We analyze the impulse responses of financial variables to uncertainty and GDP loss . In addition to measuring the size

of the effect of unit shocks on the observed variables, the analysis of the impulse responses also makes it possible to quantify the probable duration of shock absorption.

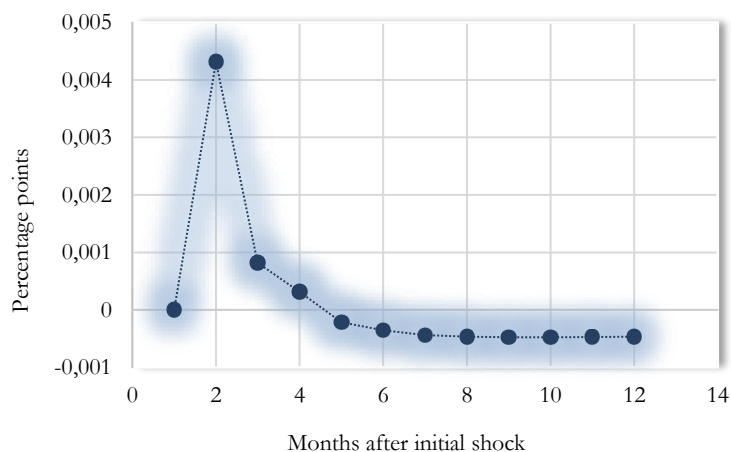
Figure 5 depicts the effects of an uncertainty shock on the financial system. Each figure displays the average in solid lines, with an average certainty of 95%. The uncertain effect of the pandemic leads to the rationing of claims on the private sector from the 3rd month after the initial shock of COVID-19 (Figure A). Similarly, for the shock related to loss of income, loans to the private sector have been taken out since the second month of the initial shock (Figure D). This behaviour is a corollary to the withdrawals of deposits following the uncertainty of COVID-19 and the drop in reviews (Figures B and E). This could translate into a banking crisis and a liquidity crisis.

The drop in income does not seem to have affected the tightening of financial conditions (Figure F). However, due to the uncertainty of COVID-19, Figure C indicates that financial conditions have been tightening with Sonic speed since the first month of the shock. This shock undermines financial stability, which is a public good that must be preserved at all costs. These results agree with most of the work cited in the literature review that the exogenous shock negatively impacts the financial sector.

Response to Claims on the Private Sector



Response from Bank Deposits and other financial institutions



Response to the Financial Conditions

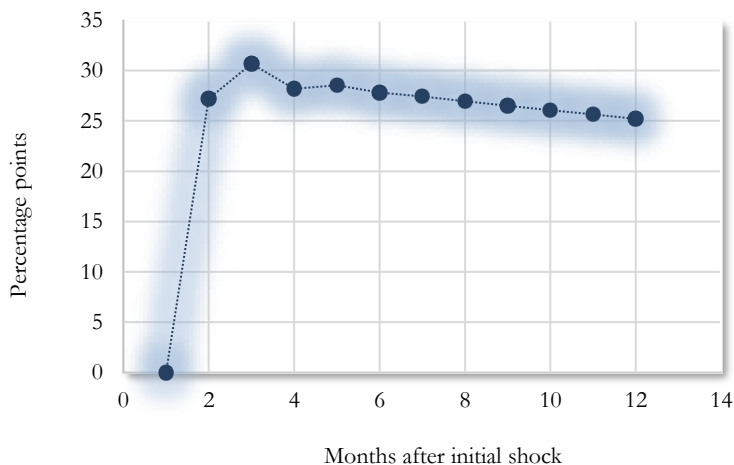
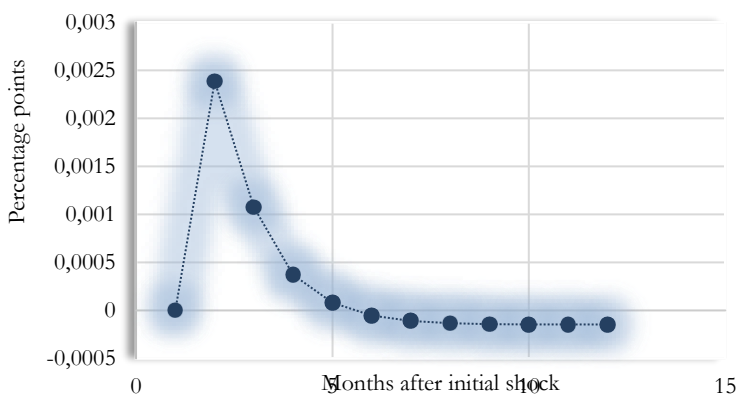


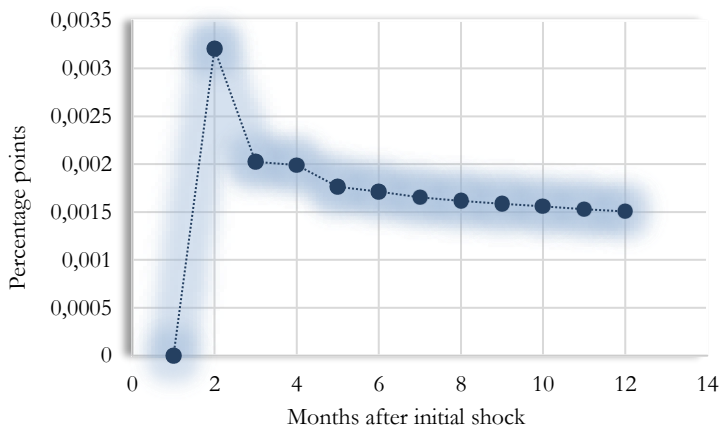
Figure 5 : Financial system responses to the shock of COVID-19 uncertainty (A, B, C)

Source: Bayesian vector estimation prior Litterman/Minnesota ($\lambda_1 = 5 ; \lambda_2 = 0,99 ; \lambda_3 = 1$)

Response to Claims on the Private Sector



Response from Bank Deposits and other financial institutions



Response to the Financial Conditions

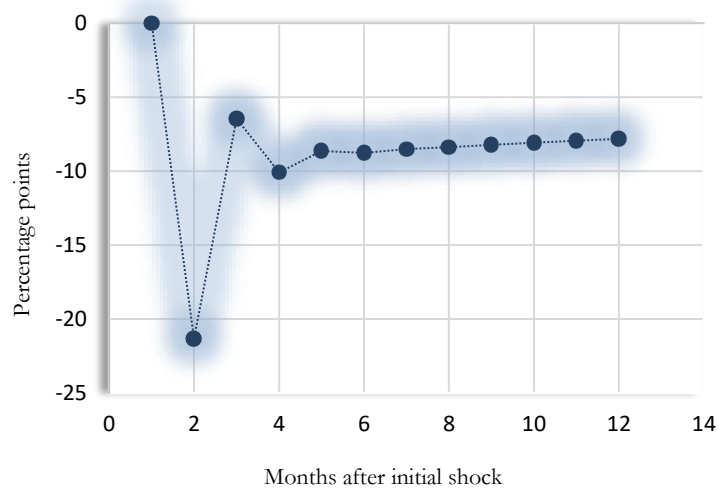


Figure 6: Financial system responses to the shock of the loss of income (GDP / Hab) (D, E, F)

Source : Bayesian vector estimation prior Litterman/Minnesota ($\lambda_1 = 5$; $\lambda_2 = 0,99$; $\lambda_3 = 1$)

CONCLUSION AND SUGGESTION

Macro econometric results supported the reality and theoretical predictions of the COVID-19 Pass-through on the financial system. The impact is imminent with shrinking private sector claims, massive withdrawals from deposits, and tightening financial conditions at supersonic speed. To counter this speed of the Pass-through, we would need a counter-current comparable to that of flash the vigilante on the part of the authorities. Macroeconomic and financial policies (central bank and government) should be implemented with liquidity bailouts to save institutions and rebound claims on the private sectors. The short-term effect should allow banks and microfinance institutions to support SMEs and micro-enterprises. This effect could be used as financing to support economic recovery in the longer term. Overall, the landscape of the financial system should be rethought after the great confinement. Containment measures will be maintained to reverse the mortality curve, putting more pressure on the digital economy and networks such as mobile banking, digital payments, and the digitalization of the financial sector, which implies the expansion of Fintech and Cyberattacks. To maximize the advantages and improve the research and efficacy of cybersecurity, intelligent policies must be implemented. The limits of this paper lie in the fact that it did not cover the literature review on Fintechs, cyber securities, and financial innovation. It would be essential to include theoretical and empirical work on these advances in future research. However, this work will serve as a foundation for future research on the impact of the exogenous shock on the financial market and the financial system in the DRC.

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