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# Claims, Deposits and Financial Conditions in DR Congo: Impact of COVID-19 on the Financial System?

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## **Abstract**

The COVID-19 pass-through on the financial system runs at supersonic speed and undermines financial stability with a contraction of claims on the private sector, withdrawal of deposits, and tightening the financial conditions. The main objective of this study is to investigate the unprecedented impact of the coronavirus on the Congolese financial system. An autoregressive Vector Bayesian model is used to test the relationship. Monthly series data from December 2013 to April 2020 is used. The results show that the COVID-19 pandemic negatively affects the Congolese financial system at different magnitudes. To reduce the negative impact, the government of Congo should quickly adapt macroeconomic and financial policies by boosting and injecting liquidity in the banking sector. At the same time, the financial system landscape would be enhanced by the expansion of Fintechs on the one hand, and the expansion of cyberattacks on the other. To make the most of the digitalization of the financial system and enhance the effectiveness of cybersecurity, financial institutions should implement smart policies and invest in research. This study is the first to be done in Congo to the best knowledge of the authors and is considered as a battery for further research in Africa and the world.

**Keywords:** COVID-19, Claims, Deposits, Financial conditions, Congolese Financial system, uncertainty

## 1. Introduction

Since the beginning of the year, the COVID-19 epidemic has spread around the world. With many people infected, especially in the Democratic Republic of Congo (DRC), there are 7,378 cases and 181 deaths until 05 July 2020, according to the data map of the World Health Organization. The perception of an uncontrolled pandemic has already prompted many people to change their daily lives. The resulting slowdown in economic activity around the world threatens to plunge several countries into recession and damage 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 people who are already infected, 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 a manner unprecedented in decades (Jordà et al. 2020; Taleb and Cirillo, 2020).

Adaptation to containment has pushed most countries into deep lockdown, which has led to a global recession (Gopinath, 2020a, 2020b). True, great 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 in itself a significant cost for daily life and for the poorest population. At the same time, the pandemic has led to a sharp increase in risk aversion, the financial system of several countries 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 carried out a major overhaul and repositioning on the financial system, impacting through 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). Some effects are amplified by the financial vulnerabilities previously caused by the decline in capital flows, the exogenous shock of commodity prices, the slowdown in domestic production, macroeconomic and monetary instability (Pinshi, 2018). Falling incomes and increasing uncertainty surrounding the development of the Congolese financial sector make lending to households and businesses riskier for banks, microfinance institutions, and others.

The sudden general rush to financial institutions is worsening the liquidity of the financial system and tightening financial conditions, limiting household and business access to credit, and 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. Companies facing tight liquidity due to the coronavirus crisis can quickly face a solvency problem once their stocks and cash reserves are exhausted.

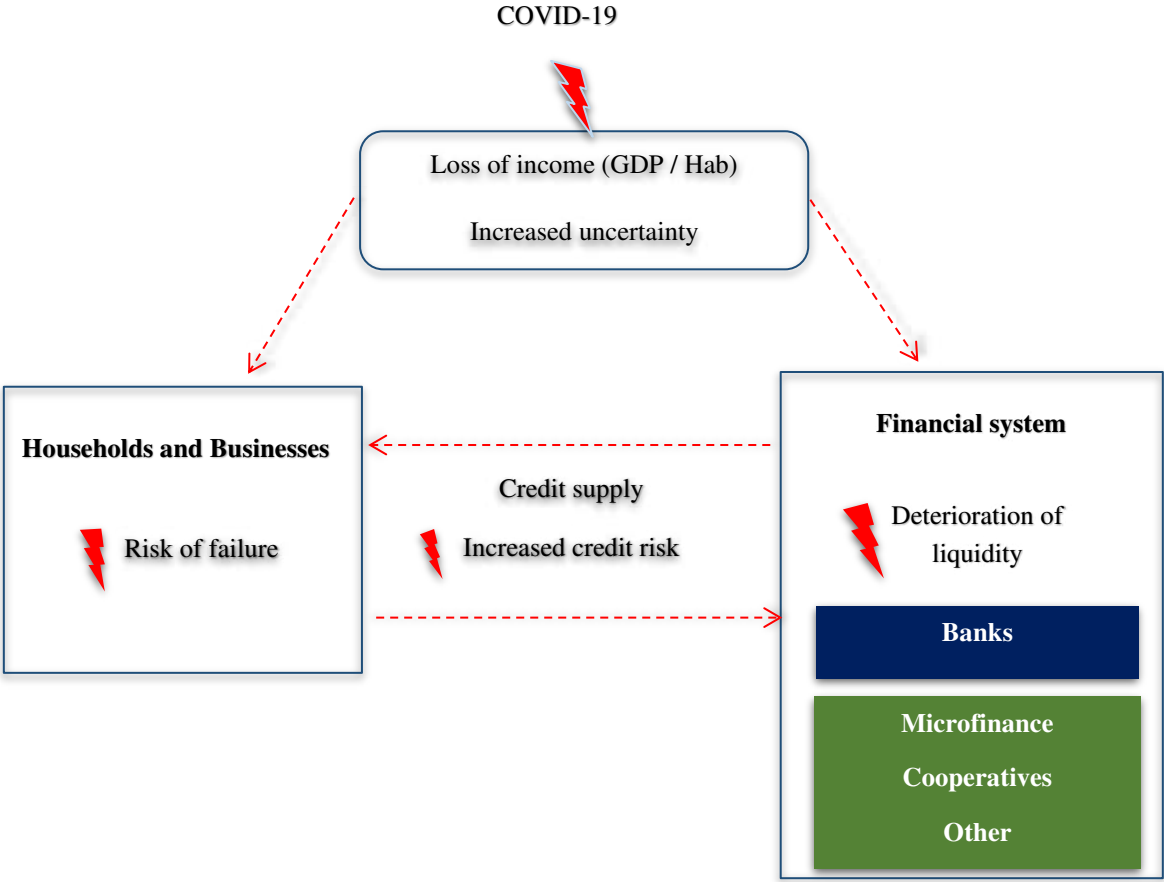


Figure 1. COVID-19 impact on the financial system.

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

Some affected small and medium businesses that do not have ready access to finance may be at risk of 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 always been mistreated during exogenous shocks (Figure 3) and this has always had a great impact on the health of the financial system. It is in this context that we want to measure the intensity of the impact 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 Institutions, 3 specialized financial institutions ,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)<sup>1</sup>.

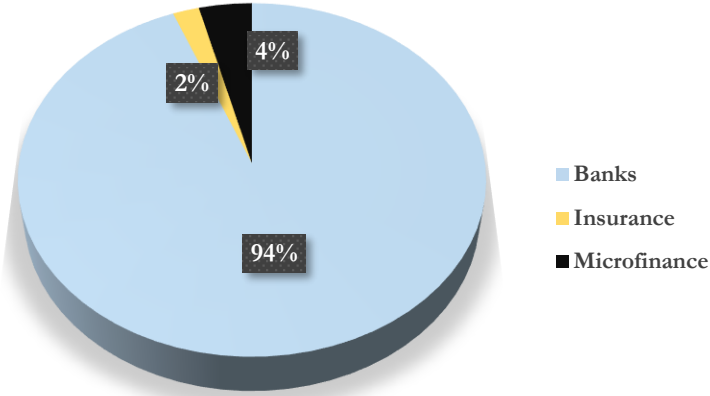


Figure 2. Relative weight of sectors  
 Source: BCC, Financial Stability Report (2015)

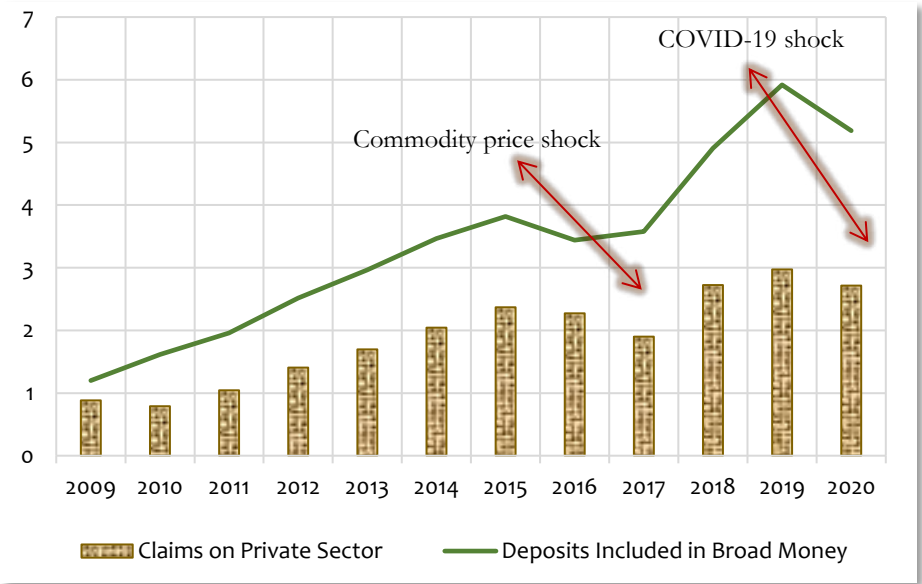


Figure 3. Landscape of the Congolese financial system (Billion, USD)  
 Source: IMF, International Financial Statistic (2020); BCC; Authors

Like the Achilles heel, the Congolese financial system is more fragile and vulnerable to exogenous shocks (Figure 3). Behaving pro-cyclically with respect to 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. This procyclical behavior is followed by a tightening of financial conditions (Figure 4). This makes the cost of credit even more expensive and

<sup>1</sup> See Central Bank of the Congo (BCC) (2018).

discourages borrowing. The COVID-19 crisis disrupts the Congolese financial system, which is characterized by a lack of depth (Pinshi and Kabeya, 2020), fragile balance sheets.

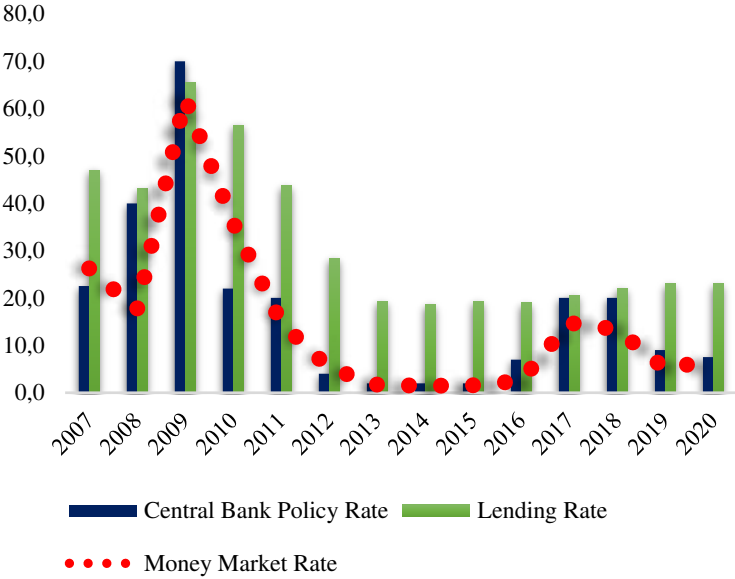


Figure 4. Financial conditions

Source: IMF, International Financial Statistics (2020)

It should however be noted that the shock of the coronavirus cannot be simply compared to previous crises, the strong exogeneity of the current crisis considerably reduces 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 also be exacerbated on the deposit side. In the absence of credible Congolese deposit insurance, the resilience of adopting a national deposit insurance system guaranteed by the Central Bank of Congo could be questioned, especially for the poorest households. Withdrawals of deposits, credit rationing and financial conditions influenced 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, efficiency while respecting the measures of social distancing and confinement. However, such expansion would require smart 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 shocks exogenous in the Congolese financial markets. The rest of the paper is structured

as follows. Section 2 presents the literature review on the impact of COVID-19 on the financial system. Section 3 identifies the basic model used to measure this impact. Section 4 discusses the results. The conclusion and policy implications are made in section 5.

## **2. Literature review**

The spread of COVID-19 has caused an immeasurable shock in almost every economy through uncertainty and lost income or declining GDP. This literature review focuses on three angles. 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 impact of the coronavirus on the financial system.

### **A. Former exogenous shocks**

Exogenous shocks have significant economic effects that spill over into the economy and the financial system as a whole and often affect production, financial stability, monetary stability, unemployment, debt and poverty. An exogenous shock to the financial system is often linked to 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 harden financial conditions. Such a shock would send a negative signal to the national financial system (Karpavicius, 2012). Likewise, for Alege et al. (2012) who studied the impact of the exogenous shock in Nigeria, they found that global shocks made Nigeria's economy unstable, affecting the country through links in the financial system.

To analyze the effect of an exogenous shock on the behavior of the financial sector, Ibrahim and Alagidede (2016) examined the relationship between financial development and volatility due to exogenous shock in 23 countries in sub-Saharan Africa 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 as well as adopting inflation targeting, can be very important in examining the right levels of financing and price stability needed to smooth out economic fluctuations.

Moreover, 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 found that the Indonesian financial system was influenced by the evolution of US economic growth and Asian countries' economic growth. In addition, they concluded by showing that internal factors have a strong influence on financial stability. Therefore, the central bank should respond quickly and correctly to changes in the external and internal financial landscape, for endogenous factors through monetary policy.

In 2019, Gonzalez became 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 where governments can issue domestic and foreign debt and decide to selectively default on the debt. Due to financial frictions, the issuance of domestic debt crowds out capital investment. By calibrating his model, he decomposed the effect of external and internal shocks on output volatility and found that financial development decreases 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 resulting from the massive outflow of bank deposits and the overall liquidity shock associated with the US tapering. His results suggest that lending relationships can ease funding costs during idiosyncratic liquidity shocks, while central bank liquidity helps mitigate the impact of aggregate liquidity shocks. Its results have implications for both financial stability and the transmission of monetary policy.

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, deterioration in balance sheets, rising credit spreads, and decline in real economic activity. They built a new Keynesian DSGE model of a small open economy with a banking sector that has access to domestic and foreign funding. Using the calibrated model, they showed that the optimal Ramsey policy is used as a benchmark and that the optimized interest rate rules respond to the real exchange rate, 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, by evaluating using the VAR model, he demonstrated that the Congolese financial system was at the door of a large-scale financial crisis.

## **B. Uncertainty**

The international financial crisis has sparked a wave of research into the measurement of uncertainty and its effects 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; however, he specified that differences in financial development play a critical role in generating amplified responses in underdeveloped countries.

Economic and financial disruptions usually coincide with heightened uncertainty. In DRC, uncertainty has increasingly increased with political friction (Yahaya and Bello, 2020) and other exogenous shocks.



This uncertainty has 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 expectations of an unknown and uncertain future. Research has analyzed the impact of uncertainty overtime on the economy and the financial system. Results have been mixed so far, Bonciani and Van Roye (2015) study 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 to 1889. From a financial system point of view, they note that uncertainty has gained great 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 understanding of the role of uncertainty and its effects 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 largest euro area economies. They conclude that the uncertainty indicators contain useful information about the potential build-up of vulnerabilities in the financial system. Ludvigson et al. (2019) wonder about the different sources of uncertainty whether it is 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 periods of recessions, and is often an endogenous response to output shocks, while uncertainty about the financial system is a likely 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 mostly insignificant in normal times. Uncertainty shocks emanating from China itself have been the main sources of volatility in Chinese financial systems, and uncertainty in US economic policies has emerged as the most important 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 in normal times. They admit that economic recovery will depend on the degree of uncertainty. They conclude that, from a policy perspective, the behavior of the financial system is important for appropriate policy responses to uncertainty shocks.

### **C. COVID-19 Pandemic**

Researchers have analyzed these effects from several perspectives, including, Aldasoro et al. (2020), who analyzed the effects 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 difficulty of the financial conditions 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 sector. banking, particularly of its most risky 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) draw attention to the urgency of targeted mitigation strategies at the European level and suggest taking coordinated budgetary measures to provide liquidity to affected companies, because 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 in a typical US monetary easing cycle, borrowers from emerging and underdeveloped countries will experience an increase in the volume of loans from foreign banks. 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 greatest 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, to encourage new share issues, and to 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 to inform policy interventions and responses. Its results show that the pandemic has an impact on both the balance sheet and the income statement of banks. It identifies an immediate need for liquidity for banks so that they can comfortably meet the needs of customers. He concluded that the profile of the banks will 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 important 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 serious 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.

### **3. Model and Data**

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 April 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  $\omega_t$  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,  $\Gamma_t$  is a financial uncertainty and volatility variable constructed specifically to track the uncertain behavior of the US financial system, since this variable has a systemic effect on most 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 from the database of the 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 estimate the BVAR framework with a diagonal matrix with the elements  $v_{ij}$  at lag  $p$ , the specification takes the following form:

$$v_{ij,p} = \begin{cases} (\lambda_1/p^{\lambda_3})^2 & \text{for } i = j \\ (\lambda_1 \lambda_2 \sigma_i / p^{\lambda_3} \sigma_j)^2 & \text{for } i \neq j \end{cases} \quad (2)$$

Where  $\lambda_i$  are hyper-parameters, and  $\sigma_i$  is the square root of the  $i$ th diagonal element of  $\Sigma$ .

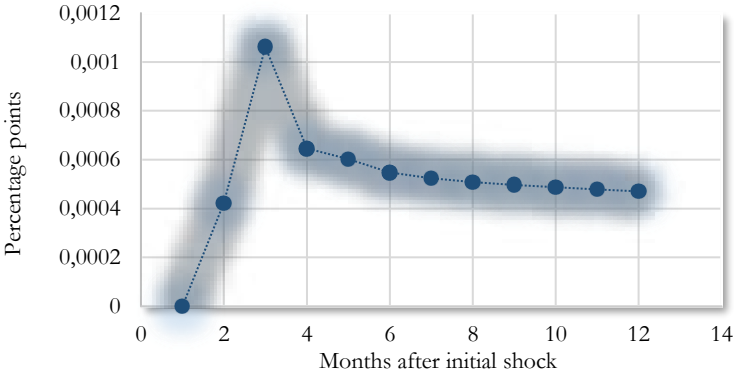
#### 4. Results and Discussions

This section presents the results of the estimation of the BVAR model. We analyze the impulse responses of financial variables on and shocks of uncertainty and loss of GDP. 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 shows 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 3<sup>rd</sup> 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 behavior is 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.

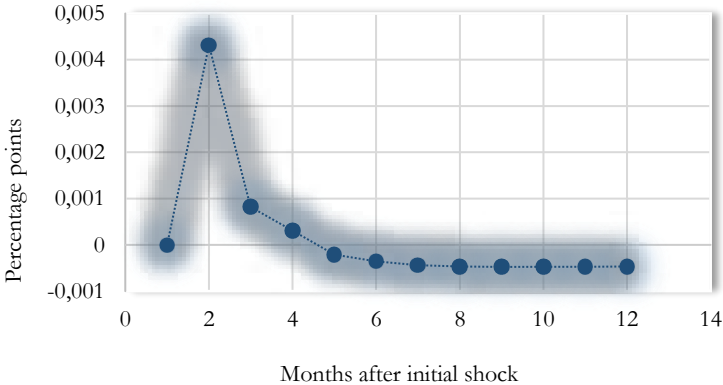
The drop in income does not seem to have affected the tightening of financial conditions (Figure F). However, due to the uncertainty of COVID-19, Figure C indicates that financial conditions have been

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 on the fact that the exogenous shock negatively impacts the financial sector.

**A. Response to Claims on the Private Sector**



**B. Response from Bank Deposits and other financial institutions**



**C. Response to the Financial Conditions**

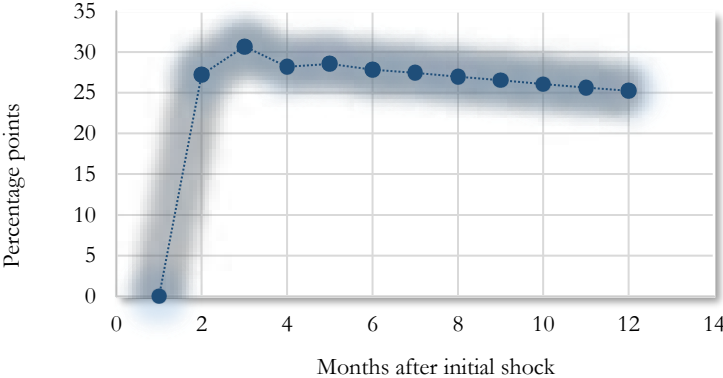
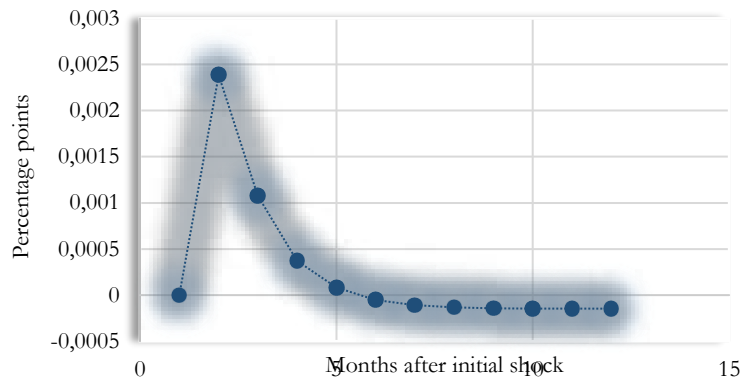
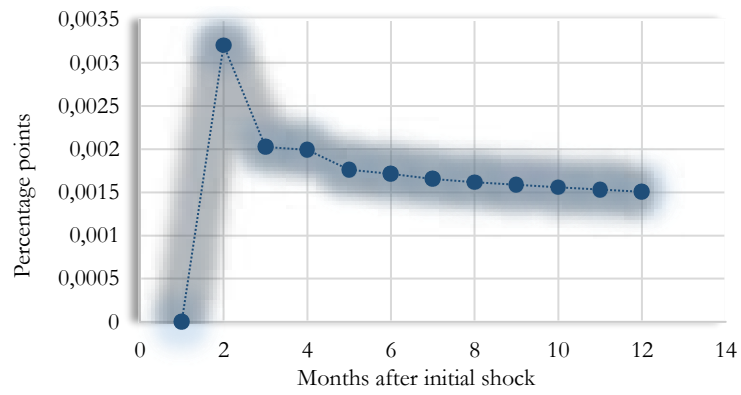


Figure 5. Financial system responses to the shock of COVID-19 uncertainty (A, B, C)  
 Source: Bayesian vector estimation prior Litterman/Minnesota ( $\lambda_1 = 5$ ;  $\lambda_2 = 0,99$ ;  $\lambda_3 = 1$ )

#### D. Response to Claims on the Private Sector



#### E. Response from Bank Deposits and other financial institutions



#### F. Response to the Financial Conditions

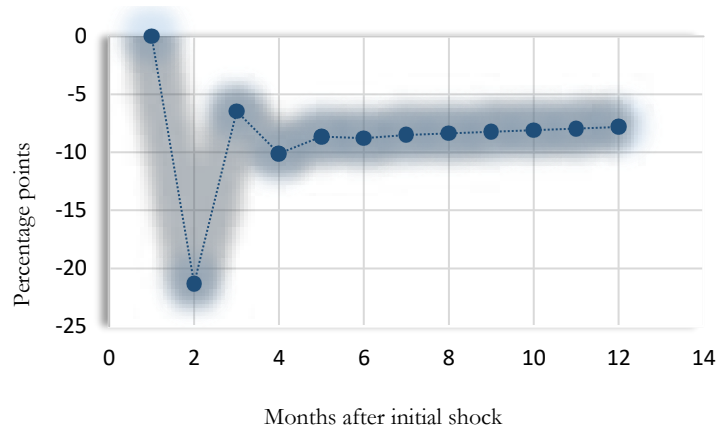


Figure 6. Financial system responses to the shock of loss of income (GDP / Hab) (D, E, F)  
Source: Bayesian vector estimation prior Litterman/Minnesota ( $\lambda_1 = 5$ ;  $\lambda_2 = 0,99$ ;  $\lambda_3 = 1$ )

## 5. Conclusion and Policy Implications

Macro econometric results supported the reality and theoretical predictions of the COVID-19 Pass-through on the financial system. The impact is imminent with the shrinking of private sector claims, massive withdrawals from deposits and tightening of financial conditions at supersonic speed. To counter this speed of the Pass-through, we would need a counter-current like 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 allow a rebound in claims on the private sectors. The short-term effect should allow banks and microfinance institutions to support SMEs and micro-enterprises. In the longer term, this effect could be used as financing to support economic recovery.

All in all, the landscape of the financial system should be rethought after the great confinement. To reverse the mortality curve, containment measures will be preserved, which will put additional 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 be successful, smart policies must be implemented to reap the maximum benefits and enhance the research and effectiveness of cybersecurity.

The limits of this paper lie in the fact that it did not cover the literature review on Fintechs, cyber securities and financial innovation. In future research, it would be important to include in detail both theoretical and empirical work on these advances. However, this article would provide a background for future papers on the impact of the exogenous shock on the financial market and the financial system in the DRC.

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