

Monetary Policy Under Uncertainty: The Case of COVID-19 Health Crisis in Morocco

Amal Najab, Kaltoum Lajfari, and Oumniya Amrani

ABSTRACT

The COVID-19 health crisis marked the beginning of a series of shocks that are a source of uncertainty that impacts the decision-making process of central banks around the world. The aim of this paper is to analyze the conduct of Morocco's monetary policy in a context of uncertainty, that of the COVID-19 health crisis. The results of our analysis have shown that in a context of uncertainty, the central bank is called upon to increase its communication to better guide the expectations of economic agents and ensure better transmission of the various monetary policy measures to the real economy. In addition, it must show itself to be credible by transmitting clear signals to restore the confidence of economic agents. However, central bank action alone is not enough. Conditions must be met, on the credit supply and credit demand sides, to remedy the structural imbalances that are holding back the competitiveness of our economy and to counter uncertainty.

Keywords: COVID-19 Health Crisis, Monetary Policy, Uncertainty.

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A. Najab

Faculty of Legal, Economic and Social Sciences Souissi, Mohamed V University, Rabat, Morocco.

(e-mail: a.najab@um5s.net.ma)

K. Lajfari

Faculty of Legal, Economic and Social Sciences Souissi, Mohamed V University, Rabat, Morocco.

(e-mail: k.lajfari@um5s.net.ma)

O. Amrani *

Faculty of Legal, Economic and Social Sciences Souissi, Mohamed V University, Rabat, Morocco.

(e-mail: oumniya.amrani@um5r.ac.ma)

**Corresponding Author*

I. INTRODUCTION

From a health crisis causing significant loss of human life, the Corona Virus Disease of 2019 (COVID-19) was accompanied by an economic crisis characterized by the coexistence of supply and demand shocks. Indeed, this crisis has altered the behavior of economic agents and has led to a macroeconomic imbalance, thus creating a high degree of uncertainty about future economic prospects, linked mainly to the evolution of the health situation. Central banks are therefore faced with a constantly changing environment that will impact their decision-making process.

The economic literature has highlighted three forms of uncertainty that can influence the conduct of monetary policy. These are uncertainty about the state of the economy, uncertainty about the structure of the economy and strategic uncertainty. In this context, a central bank must consider the uncertain environment in which it conducts its monetary policy. Its role is to use appropriate instruments to identify the potential risks affecting the objective of maintaining price stability.

In response to the uncertainty generated by this crisis, and to support the economy, Bank Al-Maghrib (BAM) has taken a series of monetary and prudential policy measures to facilitate access to financing for households and businesses. Indeed, it has conducted a monetary policy based on a gradual lowering of its policy rate, but also on an improvement of the

financing conditions of Moroccan banks. On the prudential level, it has introduced measures to support banks and further strengthen their ability to lend. By committing to maintain a largely accommodating monetary policy, BAM shows its willingness to better guide the expectations of economic agents over the long term to limit the uncertainty linked to the current crisis.

In this context and in the face of this unfamiliar environment, how can the central bank act to better manage uncertainty?

Are the measures initiated by the central bank alone sufficient to deal with the uncertainties of the health crisis?

The objective of this paper is to analyze the conduct of Morocco's monetary policy in a context of uncertainty, that of the COVID-19 health crisis. First, we will review the literature on the consideration of uncertainty in the context of monetary policy. Then, an analysis will be presented of some of the uncertainty factors caused by the health crisis and how they are considered in the monetary policy decision making process. Finally, the challenges and prospects for reducing the uncertainty of the current crisis will be discussed.

II. LITERATURE REVIEW: UNCERTAINTY AND THE CONDUCT OF MONETARY POLICY

The objective of this section is to present a review of the literature on the conduct of monetary policy under

uncertainty. First, we present the main factors of uncertainty that can influence the implementation of monetary policy. Second, we present the consequences of uncertainty on monetary policy decisions. Finally, the challenges faced by the monetary authority in dealing with uncertainty will be outlined. These include communication and credibility, which are important tools for better influencing the economic agents' anticipations and improving their support.

A. Uncertainty Factors

The economic literature has highlighted three categories of uncertainty that can influence the conduct of monetary policy. These are uncertainty about the state of the economy or additive uncertainty, uncertainty about the structure of the economy, or multiplicative uncertainty and strategic uncertainty.

1) Additive uncertainty or uncertainty relative to the state of the economy

When preparing its monetary policy decisions, it is important for the central bank to assess the current state of the economy. However, this exercise becomes more difficult due to the continuous changes in the economic environment. Drumetz *et al.* (2015) have distinguished three levels of uncertainty regarding the state of the economy, known as the additive levels of uncertainty:

- Imperfect information on the evolution of the state of the economy: There are often imperfections in the information on which the assessment of the state of the economy is based. These shortcomings may relate to both real and financial variables. While some data may be available on a continuous basis, others may be available with delays and are subject to revisions. Also, data reliability and availability differ from one variable to another;
- For its assessment of the state of the economy, the monetary authority resorts to collecting data that may be unobservable (potential output, steady-state interest rate, etc.). An example is a potential GDP, whose estimation is linked to forecasts. In this case, the measurement of these data is the result of assumptions that may be a source of uncertainty;
- The quality of the shocks affecting the economy is identified at the third level. Uncertainty related to shocks can manifest as a slowdown in economic activity and a shift in the reaction of economic agents to unexpected situations. For this reason, it is important for the central bank to identify the nature of the shocks (internal or external, temporary, or lasting, supply or demand shocks), which are sometimes difficult to assess.

2) Multiplicative uncertainty or uncertainty in the structure of the economy

The second dimension of uncertainty is related to the economy's structure. In particular, the monetary authorities must consider changes in the structure of the economy and analyze them in order to deal with any threat that might influence the objective of maintaining price stability. This form of uncertainty may result from the choice of models to describe the functioning of the economy and to explain its evolution (Becker *et al.*, 1986).

Among the models used in recent years are backward-looking models without microeconomic foundations (Rudebusch & Svensson, 2002), forward-looking models without microeconomic foundations (Fuhrer & Moore, 1995), and forward-looking models with microeconomic foundations (Rotemberg & Woodford, 1997). Although these models have contributed to a better understanding of the phenomena studied, their results are different depending on the selected model. This can lead to biased projections and consequently to monetary policy errors.

Moreover, uncertainty can also be linked to the parameters of the equations determining the empirical models (Brainard, 1967; Kimura & Kurozumi, 2007). The uncertainty in question relates to the relationship between economic variables within a given model and is associated with the estimation of the model's parameters. In fact, the uncertainty may result from an inaccurate estimate of the parameters following an inappropriate use of econometric techniques or from invalid data. In addition, it may be caused by temporal variations in the parameters as a result of structural changes in the economy.

3) Strategic uncertainty

The third form of uncertainty concerns the role of the expectations of private agents (households and firms) about future developments and economic policy measures, which can influence the monetary policy transmission mechanism. In practice, there may be uncertainty about the reaction of agents to the central bank's communication following its decisions.

According to the literature, in an uncertain context, the transmission of monetary policy to the real economy is adversely affected. The financial crisis of 2008 is an excellent example of where this transmission mechanism was weakened. In this regard, we can cite the following studies (Illes *et al.*, 2015; Hristov *et al.*, 2014; Gambacorta *et al.*, 2014) that have highlighted bank-specific characteristics (market structure, increase in risk premia on bank resources...), as well as other factors relating to structural or institutional changes to explain the decline in the dynamics of monetary policy transmission, and the increase in uncertainty.

B. Consequences of Uncertainty on Monetary Policy Decisions

Uncertainty has important implications for the making of monetary policy decisions. Several studies have analyzed and evaluated the conduct of monetary policy in an uncertain environment (Brainard, 1967; LeBihan & Sahuc, 2002; Brock *et al.*, 2004). The debate around these implications has progressed from discussions of traditional principles (the principle of certain equivalence and the prudence approach) to new perspectives around reaction functions and monetary policy rules.

In terms of traditional principles, the economic literature on the implications of uncertainty for the conduct of monetary policy is organized around the following approaches:

- The Theil's (1958) so-called certainty-equivalent principle states that additive uncertainty does not affect the optimal policy of the central bank. In other words, in a context of uncertainty, the monetary authorities act in the same way as in a certain context;

- The Brainrad (1967) principle, for which uncertainty concerns the transmission mechanisms of monetary policy, and which argues that the monetary authorities adopt a prudent or gradualist approach in such cases.

In the context of additive uncertainty, the principle of certainty equivalence is recommended. It stipulates that the presence of uncertainty related to the state of the economy does not necessarily lead to the implementation of prudent monetary policies. The central bank proceeds as if it is certain to achieve the target value it has set for itself. Thus, uncertainty will not affect the optimal rule.

However, an alternative approach is recommended in the presence of uncertainty about the key parameters that describe the transmission mechanisms of monetary policy. This is the practice of adopting a “gradual” approach to monetary policy. This approach, known as the “Brainrad (1967) principle of conservatism”, explains the policy of “small steps” in setting key rates by the monetary authorities, due to a lack of information. Indeed, Brainrad (1967) notes that in the presence of this form of uncertainty, the monetary authorities must act cautiously in the face of variations in the policy instrument.

Moreover, the analysis of strategic uncertainty is based on the role of monetary policy rules. Among the rules used and stated in the economic literature, we cite the rules of the type Taylor (1993). However, other approaches with a forward-looking orientation to monetary policy have been used to deal with the limitations of a policy based on the Taylor rule. This is the case of economic policy modeling. In this framework, the optimal policy rule is represented by an optimization procedure to guide monetary policy decisions (Svensson, 1999).

The debate about the implications of uncertainty for the conduct of monetary policy has moved from monetary policy rules to an analytical framework that examines several variables relating to the monetary, financial, and real spheres. Overall, there now appears to be no consensus in the literature on the impact of uncertainty on monetary policy decisions. This impact remains dependent on the nature of the rule adopted and the form of uncertainty considered (Senegas, 2002).

C. Communication and Credibility: Challenges in the Face of Uncertainty

In an uncertain environment, communication and credibility are extremely important. Indeed, in times of crisis and uncertainty, communication is a strategic tool that allows monetary authorities to better manage economic agents' expectations regarding their decision-making.

Several researchers have examined the importance of communication in managing economic agents' expectations (Issing, 2005; Baskaya *et al.*, 2008; Yellen, 2011). Good communication about the objective of monetary policy and its strategy not only enhances the transparency of the central bank, but also guides expectations (Weidman, 2018). Thus, to reduce uncertainty, the central bank should clearly define the objective of its monetary policy and communicate about its instruments to enhance actors' decisions (Cukierman, 1992).

Moreover, communication is a means of increasing the

credibility of the central bank. Indeed, credibility is also a necessary condition for the success of the monetary policy. Issing (2000) defines it as the ability to have one's own statements accepted as effective and one's own motives accepted as correct. According to this definition, a credible central bank is one that is willing to announce its objectives, the means used to achieve them, and the results it achieves in relation to the announced objectives. Therefore, it must send clear economic signals, deliver on its commitments, and instill confidence. Indeed, credibility is important because it helps to better guide economic agents' expectations and therefore long-term interest rates.

III. THE OPERATIONAL FRAMEWORK OF MONETARY POLICY IN THE CONTEXT OF UNCERTAINTY LINKED TO THE COVID-19 HEALTH CRISIS: CASE OF THE CENTRAL BANK OF MOROCCO

In times of crisis, the uncertainty that a central bank must deal with increases. As a result, the central bank is challenged to make several adjustments in its overall approach to help stimulate economic activity without compromising its objective of maintaining price stability.

A. Uncertainty about the Current State of The Economy

The first form of uncertainty that the central bank faces is uncertainty about the state of the economy. In preparing its monetary policy decisions, the central bank has to make an assessment of various economic indicators. This analysis of the state of the economy on the part of the central bank is, however, characterized by three types of uncertainty, namely:

- The availability and reliability of several economic data, which may be subject to successive revisions;
- The uncertain nature of some indicators whose calculation is based on estimates;
- And the difficulty of defining the type of shock (demand shock and supply shock) that the central bank must face.

Thus, the reaction of the monetary authority in this crisis context relies on the taking into consideration of the various types of uncertainty that surround the relevance of economic data. The widely used indicator for assessing the current state of the economy is the output gap, which relates potential GDP to actual GDP. However, estimating this measure is difficult in real time, and is therefore a source of uncertainty.

While Morocco was expecting to record economic growth of 3.4% in 2020 instead of the 2.7% forecast for 2019 (HCP, 2020 Exploratory Economic Budget), actual GDP has shown a remarkable drop since the second quarter of 2020. This is due to the double shock of the COVID-19 pandemic and the weather conditions on the national economy. Inflation, on the other hand, has remained generally under control. However, in such a context marked by a shock to demand, there is a risk of deflation.

A comparison between BAM's macroeconomic projections for 2019 (and those for economic growth in particular) and the achievements of the year 2020, shows a remarkable gap between them, as shown in graphs 1 and 2. This lag has an impact on monetary policy and is an important source of uncertainty. Fig. 1 shows BAM's forecast of growth over the horizon from the third quarter of 2019 to the fourth quarter of

2021, year-on-year:

Similarly, Fig. 2 shows BAM's year-over-year growth forecasts from the third quarter of 2020 to the fourth quarter of 2022.

Furthermore, in the context of uncertainties about the state of the economy, the central bank faces the difficulty of defining the nature of the shock affecting the economy. The definition of the shock in question will determine the form of the central bank's reaction. While a supply shock does not require any particular response from the central bank, a demand shock requires a powerful response from the central bank. This was done in a gradual way because an immediate response from the central bank could have a negative impact on economic activity when the data on the state of the economy was uncertain.

B. Statistics and Data Analysis

To address this second form of uncertainty, BAM had to take several measures to respond to changes in the structure of the economy. In particular, the central bank used several instruments to encourage banks to provide regular credit to the real economy, while feeding their rising liquidity needs. In addition to expanding the collateral eligible for bank refinancing under the program that supports very small and medium-sized enterprises, BAM has made massive injections of liquidity to address the growing liquidity deficit caused by the increase in banknote circulation.

It is noteworthy that BAM used the repo instrument from March to September 2020. These long-term financing instruments proved their effectiveness during the 2008 crisis, according to the experience of central banks in advanced

economies. BAM has also been gradually lowering its policy rate since the second quarter of 2020, in order to reduce the cost of financing and support the real economy by encouraging banks to extend credit.

The analysis of the evolution of the volume of credit granted to the non-financial sector allows us to conclude that this sector has experienced a rather stable but modest evolution during the year 2020, despite an increase of 15.8% of the outstanding loans as shown in Fig. 3.

As with the uncertainty of economic data, and in the face of this second form of uncertainty, the credibility and gradual action of the central bank remains a sine qua non condition for managing these two types of uncertainty. BAM's approach during the health crisis has been gradual, particularly regarding its interest rate policy (Brainard's principle of moderation). Since March 2020, BAM has been active in its communication to reassure both households and companies. Also, the different BAM's reports emphasize the accommodative nature of monetary policy. Indeed, and as discussed above, since the beginning of the health crisis, BAM has undertaken several measures ranging from lowering its policy rate to massive injections of liquidity in order to boost economic activity.

C. Uncertainty about the Expectations of Economic Agents Regarding Economic Developments

Uncertainty about the expectations of economic agents, or strategic uncertainty, is the third form of uncertainty that the central bank faces.

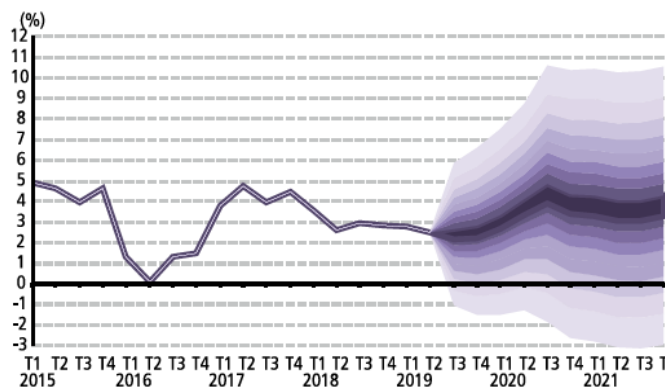


Fig. 1. Growth forecasts for the period Q3 2019-Q4 2021 (year-on-year)
Source: Bank Al-Maghrib Monetary Policy Report N°58/2021.

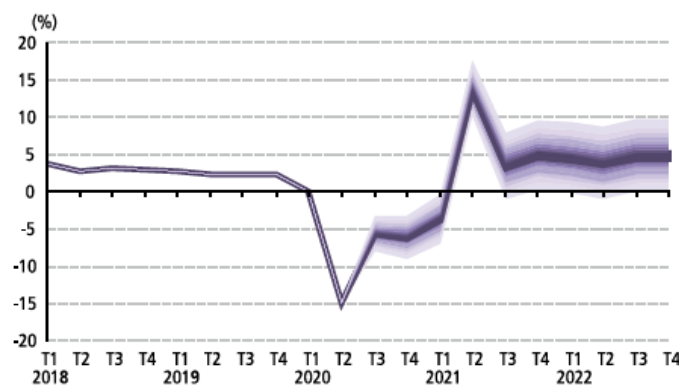


Fig. 2. Growth forecasts for the period Q3 2020-Q4 2022 (year-on-year)
Source: Bank Al-Maghrib Monetary Policy Report N°58/2021.

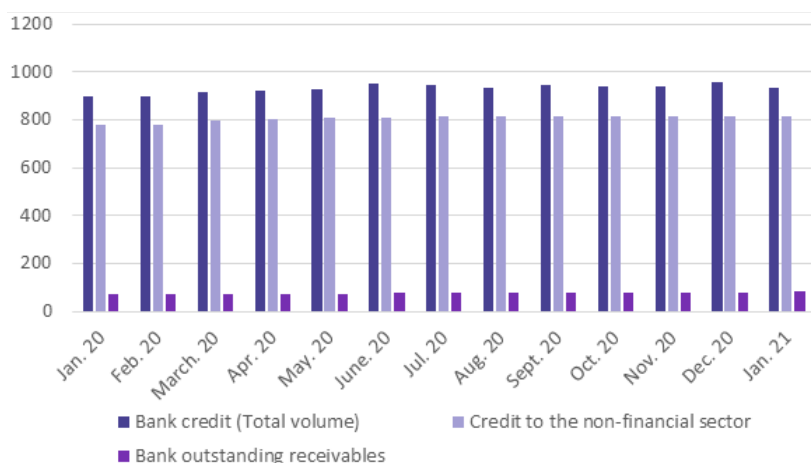


Fig. 3. Bank credit, non-financial sector credit and past due loans (aggregate volume)
(Source: Developed by the authors based on BAM's data).

This form of uncertainty focuses on the importance of expectations and their impact on both the transmission channels of monetary policy and on the estimation of economic variables. Therefore, the central bank uses models to anticipate the reactions of the latter following its announcements.

The evolution of lending rates has not followed that of the key interest rate (interest rates evolution applied to equipment loans in particular) in terms of the transmission of monetary policy decisions to the real sphere. Indeed, the shock impacted the state of health of the economy, pushing economic agents, and in particular companies and households, to revise their expectations. In this sense, the deterioration in economic growth in 2020 can be explained, among other factors, by the negative results of domestic demand, which fell due to the deterioration of household consumption and investment.

According to BAM's Monetary Policy Report of the year 2021, household consumption has decreased by 1.4% in the first quarter of 2020, by 21.2% in the second quarter of 2020, and by 10.5% in the third quarter. The Household Confidence Index (HCI) has experienced a sharp decline from 74.9 points in the second quarter of the previous year to 65.6 points in the same quarter of 2020. This deterioration in the HCI has continued in the third quarter of 2020, standing at 61.2 points compared to 77.8 in the same quarter a year earlier. For the full year of 2020, household consumption would have posted a 9.3% decline instead of a 1.8% increase in 2019. Also, according to the same source, investment has continued its decline that began in the fourth quarter of 2019, showing a drop of 7.8% instead of an improvement of 2.5% a year earlier. The quarterly business survey conducted by BAM in the industrial sector concludes that the business climate was described as "normal" by nearly half of the industrialists surveyed and "difficult" by 43% of them. Overall, in this particular context of a health crisis, the investment would have fallen by 8% over the whole of 2020.

The restrictions imposed as part of the management of the ongoing pandemic, as well as the containment measures, have put real pressure on final household consumption, according to the same BAM's report. Investment, for its part, has retracted, suffering from the strain of the health crisis as well as from unfavorable and uncertain weather conditions. Thus, despite BAM's multiple actions and considerable efforts, both on the key rate and in terms of improving the financing conditions of banks, it seems that the transmission of these measures to the real economy has been limited in the context of the current crisis.

IV. CHALLENGES AND PERSPECTIVES

The central bank has to deal with several challenges in managing uncertainty. Its policy must focus on both communication and credibility in order to ensure that its various measures are transmitted to the economy. In addition, the current context, which is an opportunity to rethink central bank's monetary policy objectives, is a strong reminder of the limits of monetary policy in stimulating the economy. Several measures must complement the central bank's actions to promote a recovery of economic activity.

A. Challenges for The Central Bank in Dealing with Uncertainty

In order to deal with the multiple forms of uncertainty, which may be further amplified by the effects of the health crisis, the central bank must address certain challenges related to communication and credibility. A central bank must be both clear and transparent about the setting and pursuit of its monetary policy objective. In this context, it can use several strategies.

In the uncertain current state of the economy, it must adapt its monetary policy to the new environment. Then, it must reinforce its credibility, without compromising the pursuit of its ultimate objective of controlling inflation. It must also strengthen its communication with economic agents to handle the uncertainty about the structure of the economy. The objective is to provide them with certain visibility that is essential for decision-making and thus facilitate the transmission of monetary policy.

Also, the central bank can increase its credibility by committing not to make the monetary policy a source of uncertainty, and by promising to preserve, over time, favorable financing conditions. Another determinant of central bank credibility is its transparency which requires that it share with the public all relevant information about its decision-making process. Also, it is supposed to make available all information relating to the data and models used in the formulation of its monetary policy.

B. Perspectives

In a context marked by uncertainty, the central bank must ensure that its monetary policy is transmitted to the real economy. Thus, the objectives of the latter can be rethought in such a context. The measures undertaken by the central bank alone may not be sufficient to revive the economy. The implementation of structural reforms, the action on demand and the role of banks are decisive.

1) Role of monetary policy

To maintain favorable financing conditions, the central bank must continue to support the economy by injecting liquidity and improving the financing conditions of Moroccan banks and companies. Nevertheless, it is also called to make the refinancing of banks conditional on their contribution to the financing of the economy. The objective is to direct the use of liquidity towards productive uses, to facilitate the transmission of monetary policy decisions.

2) Expanding the central bank's missions

The current context of limited inflation is an opportunity to rethink the objectives of monetary policy in Morocco by orienting it towards current priorities. To this end, the central bank would need to be innovative in terms of adapting its status to this new context. In this regard, the question of broadening its mandate to include an objective other than inflation is important to study, given the effects of this crisis, but also to better respond to current priorities, following the example of foreign central banks (FED, BoE, BoJ).

3) Coordination between monetary and fiscal policy and structural reforms

It would be important to review how monetary and fiscal policies should complement each other to address the growing fragilities of the Moroccan economy and to prepare

an appropriate institutional framework. The monetary stimulus will certainly have an important role to play in the short term, in the event of a tightening of financial and monetary conditions, in order to stimulate household and business confidence. However, its instruments could only have a favorable announcement effect and do not make it possible to strengthen the resilience of the economy in the medium and long term. Indeed, the central bank is not able to influence long-term growth expectations.

Moreover, the current crisis linked to COVID-19 has revealed the structural deficiencies that characterize our economy. Action on the supply of credit must be complemented by action on demand. It is important to provide targeted budgetary support, including measures to boost both purchasing power and production, to promote the recovery of the economy. This requires an increase in public investment. These investments are necessary for education, health, and the establishment of a social protection system. It also requires the implementation of progressive structural reforms that will promote the establishment of competitive productive structures which can absorb any future shocks.

4) Role of banks

Facilitating access to refinancing for banks was one of BAM's main priorities during the health crisis and justified the measures of lowering the policy rate and massive liquidity injections. In such a context, it is crucial that banks be capable of meeting the financing needs of the real economy and the productive apparatus, thus positively influencing the monetary policy transmission process.

The Moroccan economy is highly dependent on bank financing. It is necessary for banks to consider the particularities of the current context in their lending activity, even if their capacity to support economic activity is constrained by an increase in the cost of risk, unfavorable profitability results, and regulatory constraints.

The demand on the banking system to meet both the funding needs of the Moroccan economy and the numerous regulatory requirements in terms of solvency has been underscored by this crisis context. In order to relieve this burden on banks and provide long-term financing options, conditions that encourage access to the financial sector should be established.

V. CONCLUSION

Central banks have to deal with several forms of uncertainty in their monetary policymaking. Several elements are at the source of this uncertainty, and concern:

- Additive uncertainty or uncertainty about the state of the economy;
- Multiplicative uncertainty or uncertainty about the structure of the economy;
- Strategic uncertainty or uncertainty about the expectations of economic agents.

The year 2020 has been marked by a health crisis that has disrupted economies around the world. They have suffered an unprecedented shock, affecting both supply and demand. In this context of crisis, all the measures taken within the framework of the economic policy must reassure all the economic agents, as well as support the production and

consumption especially in period of confinement.

In response to the uncertainties about the state of the economy, BAM's action has been gradual because of the uncertainty that characterizes the indicators and data relating to the state of the economy. This gradual approach was also adopted to manage the second form of uncertainty, namely the uncertainty related to the structure of the economy. Also, the management of these two forms of uncertainty relies on the credibility of the central bank. In this sense, BAM has supported its communication policy aiming to reassure all economic agents, especially households and companies. Uncertainty about the expectations of economic agents, or strategic uncertainty, is the third form of uncertainty facing the central bank. Despite BAM's efforts in terms of lowering key rates and easing constraints on bank refinancing, it seems that the transmission of these measures to the real economy has been limited in the context of the current crisis.

Faced with these multiple forms of uncertainty, the central bank must take up several challenges: it is called upon to further increase its communication to enhance its credibility, and to ensure a better transmission of the various monetary policy measures to the real economy. Moreover, the current context constitutes an opportunity to rethink the objectives of monetary policy and to extend the missions of the central bank to other objectives in addition to price stability.

To address the imbalances in economic activity, the central bank's actions alone are still insufficient; they must be supplemented by focused fiscal policies that boost both consumption and production. The health crisis has also brought to light the reliance of the Moroccan economy on bank finance. Therefore, accessible funding is a must for an economic recovery, especially for small and medium-sized businesses. Moroccan banks are thus expected to take into account the specifics of the current economic environment in their financing activities.

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