Bank Responses to COVID-19: Systematic Risk and Capital Adequacy

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Abstract. Capital adequacy ratio could be regarded as a resiliency buffer added to the bank's balance sheet. It helps to absorb risks and prevent potential losses for banks. This paper briefly introduces the development history of the capital requirement in the Basel accords. And highlights the importance and effectiveness of the capital adequacy ratio by comparing its role against systematic risk in the example of the 2008 Global Financial Crisis and the 2020 COVID-19 pandemic crisis. Moreover, this paper builds up a comparative analysis of the financial system and finds that banking is more able to fit in the revised capital regulation that matches the increasing risk level than non-bank institutions. The study also dissects the applicable conditions of capital adequacy ratio, which could possibly expose to greater shock coming from the crisis in the emerging country than the developed country, and that would lead it out of compliance with the minimum requirement of Basel regulation. Furthermore, the study is supported by the point that, shadow banking sector would undermine the intention of Basel regulations to withstand the systematic risk. Besides, the methods taken in respect to the COVID-19 pandemic are also discussed in this paper.

Keywords: Banking Sector, Capital Adequacy Ratio, Systematic Risk.

1. Introduction

The COVID-19 crisis draws attention to systematic risk since 2008. Compared with uncontrollable risk, regulatory measures are relatively more important. Basel committee on banking supervision(BSBS) is a committee authority established in 1974 that comprises central banks and bank supervisors from different 28 jurisdictions. It establishes worldwide norms through prudential legislation for banks and offers a standardized format for collaboration on banking supervisory issues. [1]. Regulatory sectors revise policies and requirements continually in response to rising risk and shifting market conditions. Hence, the authority published a set of Basel accords in 1988, 2005 and 2008 respectively. Risk-weighted assets (RWA) was firstly mentioned in Basel I, it is used to ascertain the minimum capital amount that banks or other financial institutions are require to hold in order to reduce the risk of insolvency. Such capital requirements are different due to types of banks sustaining different level of risk. The more risk that a bank is taking, the higher capital requirement would be set in order to protect the depositors. Banks that are acknowledged as global systematically-important banks (G-SIBs) are required to abide by extra requirements for the loss absorbency and that of total loss-absorbing capacity. Basel II introduced three pillars, which are minimum capital requirement, supervisory review, and market discipline. The first pillar (minimum capital requirement) upgrades the calculation of the RWA ratio. It classified the assets of banks based on liquidity and risk level, which include Tier1 capital and Tier 2 capital. Tier 1 capital is of the higher quality. A combination of Tier 1 capital and Tier 2 capital should at least account for 10.5% of RWA under Basel III. Basel II restricted banks to hold at minimum 8% reserves and the half (4%) should be tier1 capital, and further developed the concept of Capital Adequacy Ratio (CAR). CAR also called capital to risk-weighted asset ratio. It is calculated by dividing a bank's capital by its risk-weighted asset. Its bank's capital on the numerator equals to Tier1 capital plus Tier2 capital, which developed in Basel II. CAR could be regard as an indicator of a bank's soundness. It functions as a buffer for bank's balance sheet. Meanwhile, capital buffer is an mandatory regulation in the minimum capital requirement. As such, CAR attributes to the first pillar (Minimum capital requirement) and determine the minimum capital required for liquidity that need to be held by banks or other depository institution

to cover unexpected loss. It was set based on the weighted risk associated with each type of asset, also aimed to restrict bank's investment activities that could increase the risk of default, ensure institutions have sufficient capital to sustain and support fulfill withdraws. So that might be able to ensure banks to absorb the lose bought by systematic risk prevent to be insolvent. The capital regulation of Basel I and II was inadequate. Thus, it may not resist the serious consequence cause by systematic risk. Basel III published right after global financial crisis (GFC) in 2008. It increased the Tier1 capital from 4% to 6%, and also regulate banks to hold extra capital buffer, and increase the total capital amount to 13%. The CAR should be maintain around 8% [2]. Moreover, the publish of Basel IV was postponed by COVID-19 crisis from January 1, 2022 to January 1, 2023. It has been confirmed to reform RWA, and the CAR would thus be upgraded with the reformation of RWA [3].

This paper makes a contribution to the literature review mainly by comparing the systematic event to the similar case. That is, the current on-going COVID-19 pandemic. This paper firstly make comparison base on the heterogeneous business model of market participants in the financial system, in order to find out how financial institutions assimilate the capital regulations, and also researches the effectiveness of CAR in the scenario of different countries in the COVID-19 crisis. Some of the policies to rescue the financial market will be introduced. The paper also explore the element that would hinder the implementation of Basel capital regulation. In the end, the limitations of this paper would be discussed.

2. Literature review

Since the debut of Basel capital accords was issued in 1988, the significance of bank capital has already been evident. If banks hold more capital, they could better absorb loss with their own assets rather than seeking help from the asset of the public sector or becoming bankrupt. In addition, the minimum capital requirement could effectively restrain the bank's incentives of taking excessive risk action that created by limited liability and amplified by deposit insurance and compel the bank managers to participate in the "skin in the game" [1].

The 2008 Global Financial Crisis demonstrated that previous capital regulation, regardless of its devise or implementation, was inadequate for addressing the systematic risk that spread in the financial industry. Numerous banks that were rescued were discovered to be in compliance with the minimum capital requirement prior the crisis. In that disaster, governments around the world in succession to intervene for preventing the collapse. In the following years of revising the Basel accords, capital control continuously played a great role. It was evidenced that, the difference of initial capital affects the stock return during the crisis. (particularly significant for large banks around the world) and better capitalization is associated with greater shock resistance, aligned with the spirit of Basel capital regulation. To be more specific, in 2008 GFC, better capitalized banks were more capable of withstanding the shocks than poorly capitalized banks, as its stock price did not drop as much as that of the poorly capitalized banks. Therefore, it concludes with a model that bank capital did contribute to restraining bank's risk-taking incentives and absorbing losses [4]. BSBS further substantiated this theory in 2010. The stronger capital buffer, the lower probability for bank crisis, and less severe cost.

The literature regarding the COVID-19 pandemic that outbreak in 2010 and its implication for banks has not been consummated [5]. But the effect is similar to the past globally spilled-over systematic financial crisis in 2008. The systematic risk could be regarded as systematic events that are external to the banking system, including the war, pandemics, environmental catastrophe, economic recession, or political upheaval, and could have additional detrimental effect on the performance of the banking sector. Those might cause banks to bankrupt in extreme circumstances, for example, the Lehman Brothers case in 2008. In the 2008 GFC, the specialists use the word "epidemiology" to analogy the financial crisis due to its outcome being contagious like a pandemic. The crisis generated a ripple of volatility and financial instability among the financial institutions though the interrelations in the financial system.[6, 7]. Consequently, the Covid-19 pandemic as well

as the global or sizeable systematic crisis could be considered as contagious, and those financial bubbles should be managed similar [8, 9].

3. Analysis

The COVID-19 pandemic causes turmoil in the global financial system. As corona virus spreads from one country to another, more and more governments adopted measures like lockdown and keep social distance. It resulted in halted production, rose of unemployment, households cut spending and increase precautionary savings. Meanwhile, it caused large decrease in asset prices, severe financial market turbulence and economic contraction. Even though the timing of COVID-19 outbreak in countries are different, the interrelation between the economy and the financial market led to the repaid spread of shock through the global market. It reflects the systematic nature of COVID-19 crisis which is similar to that of in 2008 Global Financial Crisis. Investors' concern about the trajectory of the pandemic and its impact on economic growth sharply reduced their risk appetite.

During the crisis, governments and central banks adopt various policies and regulations to support financial institutions. The banking sector is of the most serve hit not only because they suffer a broad range of risks, but also due to its nature of closely related to other financial institutions. It acted as both source of stress and spreader of it. And also banks, compare to other financial institutions, are more well fit in the increase of capital regulation in response to the systematic risk [10]. In the crisis period, long-term interest rate would be lower, which cause non-bank lenders to suffer higher risk. On the other hand, banks would accommodate that by originating the riskier loan, as firms in any period would seek for yield and survival [11]. The financial system will assuredly become more vulnerable to severe economic shocks if the capital requirement is extended to non-banks. Also, a study in 2010 further reveals that other financial institutions (like hedge funds) are less risk-averse than banks in front of systematic risk. Since these institutions prioritise returns over a resiliency buffer and risk management, the stipulation of increasing the capital level are presumably to raise the degree of threat inside the lending market. Therefore, even while the likelihood of default for the average borrower lowers, tail risk is still likely to rise in the system. In addition, banks so far in this COVID-19 crisis remain resilient and keep offering key financial services to the real economy, in response to the sudden downturn and complementary support to the authorities and jurisdictions [10].

Basel regulations set for strengthening the resiliency of the banking system by constraining banks' activities. Banks would suffer greater losses if Basel regulations were not been adopted. The 2008 Global Financial Crisis revealed the issue of having insufficient capital buffer. The capital buffer was not commensurate with risk-taking. The COVID-19 crisis, on the other hand, has efficiently learned from the global crisis by following the revised Basel regulation, which increased a substantial amount of capital and liquidity compared to Basel II. The overall reliance on the banking system in the COVID-19 pandemic performed better than that in the 2008 global crisis. In accordance with the Basel revision, the global banking system in this COVID-19 crisis has been able to support the monetary and fiscal policies to stabilize economic activities and its robustness. According to BSBS report published in June 2021, the banking system kept resilient in the COVID-19 pandemic [12]. The report indicates that there was no shutdown of international banks or required public sector funding. In contrast to 2008 GFC, long with the shutdown of Lehman Brothers, the financial market collapsed followed by the world economy. Moreover, most banks in this crisis maintained capital ratios above their minimum requirement and buffer. The reason could be relevant authorities timely reduced the capital requirement and buffer in response to the COVID-19, as well as restricted capital distribution from dividend payments and share buybacks to retain bank's capital, which further evidence the importance of setting CAR requirements to deal with the crisis. The immediate temporary measures response to COVID-19 could be grouped into three main components. These counter-cyclical interventions helped banks in meeting liquidity and credit demands from borrowers, and therefore mitigate the impact of economic downturn and stabilize certain markets. First, the measure to enhance the availability of bank's funding and liquidity, contains central bank term

funding, liquidity for the lending and schemes and swap lines. Also, the method to regulate bank resources. Like request to use liquidity and capital buffers, mitigate the increase in risk-weighted capital requirement and reasonable reductions in certain capital and leverage requirement and buffers. Finally, the policies also include conserve capital, like loan guarantees, restriction on distributions, and extending the transaction period for deduction of provisions from capital. Since Q2 2020, market risk appetite in the US improved significantly and asset prices recovered. The CAR at the same time recover to the pre-crisis level and rose gradually till Q2 2021 reaching the highest of 15.52% in recent years, provided by CEIC data [13].

Furthermore, the fact that banking industry in different countries has different capital levels will result in different outcomes in response to the systematic risk. Developing economy, as well as emerging economy, has a higher possibility to encounter a worse scenario in the COVID-19 pandemic compared to developed economy. Not only because these countries lack of innovation and sufficient regulatory infrastructure, and inability to comprehend cutting-edge technology, but also meanwhile struggle with adverse selection and moral hazards issues that might be influenced by political interference [14,15]. The COVID-19 pandemic will put great pressure to emerging market's banks via CAR hitting. As in the case of Bangladesh, the banking industry has already been overstretched with a high default rate and the non-performing loan to asset ratio (NPL) that lead Bangladesh to be listed as one of highest NPL possessing countries in Asia and Pacific area [16]. The cumulative impact of the COVID-19 pandemic on this country is the increase of and decrease in the quality of banking assets. The persistent deflation will result in a decrease in the value of the bank asset. In turn, the lower value of RWA will decrease the bank's CAR, because banks may take action to use partly Tier 1 and Tier 2 assets to support their operation and financial stability. The lower CAR could, therefore, hardly affect a bank's ability of financial solvency, viability and sustainability. The study further illustrates that a 10% NPL shock (bought up by COVID-19) would force the capital adequacy of the banking industry in the country to fall below the minimum regulatory requirement of Basel III. Moreover, a shock of 13% or greater would result CAR level to zero or negative [10].

By restricting bank's activity with a profound aim to reduce financial systematic risk, the existence of shadow banking exceeded the expectation of the Basel committee. Capital regulations frequently update to deal with the increasing risk level and shifting market conditions. A tightening capital regulatory requirement may design to reduce systematic risk. However, the base of institutions subject to the capital requirement expanding might motivate financial institutions to take on additional risk, and in turn, increase the systematic risk. The regulations create incentives for banking and other financial institutions to expand shadow banking activities which are outside the banking system and thus, uncontrolled by authorities and their regulatory policies. It could resist the aim to withstand the crisis. Xiao's finding in 2019 elucidates that, the money flows(especially deposits) and market shares would transfer from commercial banks to shadow banks particularly during periods of monetary constraining. [17]. And this kind of transition in the financial industry from insured to uninsured contributes to the escalation of systematic risk. Regulators then after introduce a perspective that, in order to standardize this sector, shadow banking should be governed as an independent market instead of regulating as an extension of tradition banking system. It could complement many functions of the traditional banking system by providing capital amd redistributing risk [10].

This paper also has below limitations. First of all, the analysis in the paper are not completely conclusive and comprehensive as there is no explicit date when the COVID-19 pandemic would be over. The effect on the banking system may have not fully emerged yet. The data for this are missing and exclusive. And it is likely that some financial disruptions would happen in the future. Secondly, this paper overlook the types of bank, like cross-border banks. What has mainly discussed so far is commercial banks.

4. Conclusion

Revision of capital regulation has been one of the core design in defending systematic risk. The primary factor for the paper to analyze the banking sector rather than other non-banking institutions in the financial system is that, banking is better adapted to the increasing capital requirement that to match the rising risk level in the market. Non-banking institutions, like hedge fund, could neither bear with a low long-term interest rate that occurs in the economic downturn, nor underwritten loans to diversify their own risk. A tightening regulation would be a burden to increase their cost of survival and may not decrease the systematic risk as expected but on the other hand, increase it. Capital adequacy ratio is attribute to the first pillar of minimum capital requirement, it is instrumental as a capital buffer for banks to absorb shock to avoid future potential losses. This paper compares the on-going COVID-19 crisis on the literal base with the 2008 Global Financial Crisis. It was concluded that GFC failed with insufficient capital-at least not enough to cover the shock caused by subprime crisis-and resulted in severe consequences. In contrast, there is no evidence that any international banks shut down in this Covid-19 crisis. Furthermore, banks are likely benefit from CAR, as they recover to the previous conditions relatively fast. The higher CAR within Basel's reasonable range is proven to be more resilient against systematic risk. This paper also finds that the CAR in the emerging market may not as effective as in the developed country. The undeveloped financial system will put CAR to expose more systematic risk and fall below the Basel capital requirement. Lastly, the paper critical analysis one of the main factor that could obstruct the implementation of Basel regulation. Which is, the shadow banking. The rigorous capital regulation (for prevent relevantly equivalent risk level) could motivated shadow banking activities. The possibility of risking uncontrollable systematic risk might lead by expanding scale of shadow banking. Therefore, this sector should be standardized with necessarily.

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