



# The Research on the Effects of Bank Leverage and Capital Regulation

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**Abstract.** Since the 2008 financial crisis, regulation of the financial sector has been strengthened, including the establishment of strict standards for leverage regulation. At present, the global regulatory policy is gradually improved and developed under the Basel III framework. Basel III establishes a combination of microprudential and macroprudential financial regulatory models, including higher capital requirements for banks and globally consistent regulatory standards for liquidity and leverage. One of the most important implements is the complementarity of the Tier 1 leverage ratio and the risk-weighted capital leverage ratio. In addition, jurisdictions have set leverage ratios in more detail, such as the supplementary leverage ratio in the U.S. With globalization efforts, systemic risk has been somewhat reduced and financial markets have developed more maturely. Unpredictably, the ongoing epidemic, the outbreak of the Ukraine war, and the continuing high inflation make regulatory policy challenged. Moreover, the expansion of shadow banking, the rise of cryptocurrencies, and changes in payment methods still need to be tackled. However, the urgent issue that needs research is whether the existing regulatory framework is adequate to handle the challenges. And there are indications that the regulatory policy needs to be reformed.

**Keywords:** leverage regulation · capital requirements · economic · covid-19 · Basel II

## 1 Introduction

The global economy is under challenge. As the effects of the epidemic subsided, the outbreak of war in Ukraine and sudden inflationary pressures necessitated a re-examination of the financial regulatory system. National or regional regulators around the world have created thousands of standards and policies in an attempt to reduce systemic risk across the financial industry, but the complexity sometimes leads to higher risk. In any case, the regulatory policy has to some extent achieved the objectives for which it was established, such as increasing liquidity and limiting leverage. As leverage has been one of the most widely discussed topics since the 2008 financial crisis, the re-examination and enactment of its regulation is a top priority for current research.

## 2 Current Requirements

Banks generally conform to plenty of regulations based on Basel III requirements to hold adequate levels of capital, liabilities, and assets. To decrease banks' funding costs, and bring risks more controllable, Basel III introduced a variety of leverage ratios and capital requirements within the international banking sectors [1, 2]. The Dodd-Frank Wall Street Reform and Consumer Protection Act has been integrated into the United States under the Basel framework, which is a further overhaul of financial regulation. Among the various regulation ratios, the leverage ratios have a significant and profound meaning in the capital requirement, especially after the 2008 financial crisis. The leverage requirements ensure that banks have a prescribed level of risk-absorbing capacity reconciled with the prevailing market.

### 2.1 Tier 1 Leverage Ratio

The tier 1 leverage ratio is calculated with tier 1 capital divided by the consolidated assets and multiplied by 100. The Tier 1 capital is the most liquid and stable capital in the bank (including common equity, retained earnings, reserves, and certain other instruments). The strict definition of tier 1 capital is one of the key points introduced in Basel III. All banks must hold at least a 4% Tier 1 leverage ratio, and at least 5% to be considered well-capitalized [3].

### 2.2 Risk-Weighted Capital Ratio

In contrast to the Tier 1 leverage ratio, the risk-weighted capital ratio weights the riskiness of capital to reflect different levels of risk, complementing the Tier 1 leverage ratio. Banks must maintain a minimum risk-weighted equity capital ratio of 4.5%, and 6% for capitals that include additional loss-absorbing instruments [4]. To be considered well-capitalized and free from capital distributions, banks should have an additional 2.5% capital conservation buffer [3].

In general, riskier assets have a higher expected rate of return for investors. Without the risk-weighted capital ratio, banks would be incentivized to hold more risky assets to get more assets. Thus, the use of Tier 1 leverage and risk-weighted leverage can be seen as a support to ensure that banks do not take on too much risk or raise too little capital.

### 2.3 Supplementary Leverage Ratio

The supplementary leverage ratio (SLR) is implemented for large banks in the U.S., which includes an off-balance sheet exposure measure [5]. The numerator is the same as the Tier 1 leverage ratio, but the denominator of the SLR includes both the on and off-balance sheets leverage exposures such as cleared derivatives, over-the-counter derivatives, and repo-style transactions. For banks that have more than \$250 billion in total assets and \$10 billion in foreign assets, they must maintain a minimum SLR of 3%. And a minimum 5% SLR must be held for banks that have more than \$700 billion in assets, or \$10 trillion in assets under management [5].

What's more, Dodd-Frank Act additionally requires a 15 to 1 ratio of liabilities to capital for banks that have more than \$50 billion in assets and systemically important institutions. The Dodd-Frank Act established prudent and robust regulatory policies that attempt to comprehensively cover systemic risks and avoid "Too big to fail" [3].

### 3 Current Regulation Status

#### 3.1 Adoption of Basel Standards

The Basel III leverage ratios are being implemented based on the 2014 exposure framework and the revised exposure measure in December 2017, which is set to come into effect on 1 January 2023. As of the end of September 2021, 27 jurisdictions have met the leverage ratio standards enacted in 2014; some jurisdictions have completed policy enactments or preliminary drafts based on the 2017 revised leverage ratio standards [6~7].

#### 3.2 COVID-19 Impact on Leverage

However, the adoption of the leverage is strongly affected by Covid-19 according to the research of the International Monetary Fund. According to model estimates, shocks from Covid-19 reduce leverage levels by 5.3%, relative to the pre-shock average of 19%, while debt maturity increases slightly [8]. The optimal level of corporate leverage has generally been significantly lower. And companies most affected by social distancing became overleveraged by maintaining previous levels of leverage and experienced a huge deterioration in credit risk [8]. The increase in credit risk will increase financial friction, and the requirements for projects will be more stringent. Lower borrowing capacity may reduce future investment in and spending on capital, all else equal, to lower realized economic growth and reduce long-term productive capacity [9].

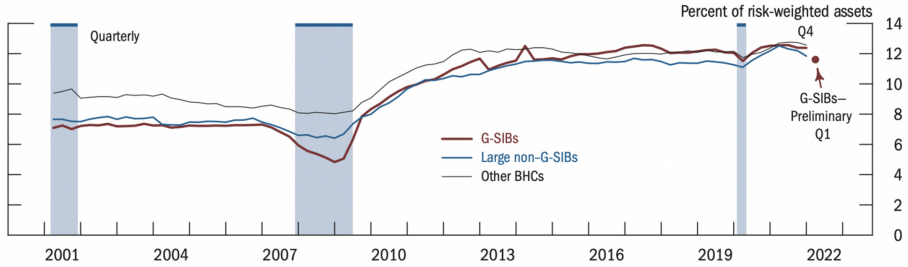
To ease the fiscal deterioration caused by Covid-19. The government has tried to ease leverage regulations and help companies borrow to meet the massive liquidity needs created by the epidemic. For example, the European Central Bank announced that euro area banks it directly supervises may continue to exclude certain central bank exposures from leverage. Such assets include coins and banknotes and deposits held by banks with central banks. The 3% leverage requirement, which originally expired on June 27, 2021, was extended to March 2022 [10].

From a policy point of view, the decline in leverage and the potentially massive wave of defaults could have a huge impact on systemic risk in finance. At the same time, it will also bring challenges to the implementation and adoption of leverage regulatory policies.

#### 3.3 Leverage in the U.S. Financial Sector

According to the financial stability report of the Federal Reserve published in May 2022, leverage remained low in banks and brokerages, but high in hedge funds [11].

Banks are still well-capitalized since the risk-weighted Tier 1 equity ratio remained at a high level. As the following Fig. 1 shows, leverage ratios of the companies with



**Fig. 1.** Common tier 1 ratio of banks

outstanding loans at large banks declined over the same period but remained elevated level relative to 2013 [11].

The leverage rate at broker-dealers remains at a historically low level since the 1990s. In contrast, the leverage at hedge funds continued to be elevated from the third quarter of 2021. And according to the data from the Securities and Exchange Commission, the growth has been driven mainly by the off-balance-sheet derivatives exposures [11]. However, since these measures are only available with a significant lag, it is difficult to monitor hedge fund leverage in real time.

## 4 Current Challenges

### 4.1 High Inflation

The biggest global problem at the moment is sudden high inflation. At first, higher inflation was considered temporary, reflecting relative price increases for a few pandemic-affected items. But it has proven to be persistent, expanding over time.

The higher inflation rate is the result of a complex of factors. First, the economy is recovering from covid-19 faster than expected. Supply chains could not keep up with the surge in demand, natural disasters, and political geographic blockades due to war-tightened supply, leading to significant price increases and increased volatility. In particular, supply in energy and other commodity markets was tight, leading to significant price increases and increased volatility. The outbreak of the war in Ukraine further disrupted global supplies of wheat, oil, natural gas, and other products.

The background and circumstances of the significant rise in global inflation bear a striking resemblance to the oil crisis of the 1970s. But today's inflationary environment is more moderate. First, oil prices, while rising, remain within their long-term average. In recent years, oil consumption has been reduced by more than half, and energy use has become more diversified, with a shift in reliance on oil toward other energy sources and fuels, such as natural gas, wind power, and kerosene [12]. Although natural gas prices have also increased slightly, they remain within the long-term normal range.

However, the greater challenge for banks is the tightening of monetary policy due to inflation. Most central banks raised interest rates. And the objectives of monetary policy may be at odds with regulatory objectives. The changing international situation and unforeseen circumstances make it very difficult to reflect on the policy. Whether the

central bank can design a policy response in the face of high inflation, and whether the systemic risk of the whole financial market is altered in the face of the new inflationary environment.

## 4.2 Policy Normalisation

The macroeconomic policy challenge is to achieve lasting policy normalization. While various governments have now responded to the market with multiple policies accordingly. For example, the Federal Reserve has raised interest rates several times, even announcing a 50 basis points hike, the largest single increase since 2000 [13]. But current policies are clearly lagging market changes and are not targeted.

An unexpected burst of inflation would erode the value of long-term fixed-income debt to some extent. Unexpected inflation could cause investors to demand a considerable risk premium. Higher interest rates raise the overall sensitivity of fiscal conditions, which may increase pressure on central banks and will make it more difficult to normalize fiscal policy.

## 4.3 Long-Term Future Pitfalls

In such a changing environment, we may need to revisit the financial regulatory system. There is no doubt that the regulatory system has evolved to make the current financial system stronger. But is the current regulatory framework still appropriate for future trends in financial development? For example, the basic standards set up by the currently adopted SLR do not even take into account the diversity of specific businesses. Currently, there is still a lack of regulatory policy for new products such as cryptocurrencies that are emerging in the market.

## 5 Conclusion

Through the efforts of Basel III and Reforms such as the Dodd-Frank Act., “Too Big To Fail” has been basically solved after years of development. New serious issues have now emerged, such as the development of shadow banking, regulatory policies for cryptocurrencies, cybersecurity, and effective regulation of payment systems [14]. As concerns about the 2008 financial crisis recede, do the resulting concerns about bank leverage regulation remain a regulatory priority? Overall, leverage ratio regulatory policies have ostensibly reduced risk in the financial system. But it is more likely that the risk has not actually been reduced but has been transferred outside of regulation. The regulation policy is not only focused on restrictions, but also on the financial industry taking responsibility.

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