Chapter 6
Macroprudential Policy and Institutional Arrangement

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Abstract Experience shows that various economic and financial crises, including the COVID-19 pandemic, pose complex challenges for the central bank when it comes to implementing macroprudential policy. From a broader perspective, macroprudential policy consists of three pillars—balanced intermediation, system resilience and inclusion—which correspond to the problems that need to be addressed by central bank policy. In the future, macroprudential policy will encounter challenges associated with digitalization and the surge of fintech and bigtech, increasing social inequality, and climate-change risks, all of which will embolden policy transformation and the innovation of its instruments.

Keywords Macroprudential · Systemic risk · Intermediation

Introduction

After the Global Financial Crisis (GFC) in 2008, there was a significant change in financial sector policies previously known as microprudential policies and prudential regulation. Macroprudential policies became increasingly necessary after the GFC, a crisis that spread from the financial sector to the global economy.

The GFC crisis occurred because of subprime mortgages that encouraged people to purchase homes by obtaining funds not only from banks but also from other financial institutions. Debts in these financial institutions were securitized, or backed up by a bonafide financial institution, with their securitization traded on financial markets not only in the US but also in global markets. When there was a downturn in the economic cycle, housing prices tumbled, non-performing loans and unemployment rose, and defaults by insurance companies began spreading. These conditions forced the government to adopt a quantitative easing policy. At the same time, these issues also made the authorities more aware that the use of monetary or microprudential

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policies was not adequate to solve problems in the economy and financial sector. Another policy with the ability to connect monetary and microprudential policies was required, in the form of macroprudential policy.

The prolonged trade war between the US and China after the GFC which affected many other countries, particularly developing economies such as Indonesia, also emphasized the importance of macroprudential policies in complementing existing policies. Macroprudential policies even also intersect with macroeconomic policies, such as fiscal and other external policies related to capital flows. The objectives of macroprudential policy are predominantly related to financial stability and economic activity, although there are several countries which include the employment aspect as one of the policy's goals.

The GFC also provided valuable lessons about the mandates and practices of central banks in carrying out monetary policy complemented by macroprudential and other policies, and their ability to maintain financial system stability while simultaneously boosting growth. Changes in central bank policy objectives have evolved a lot since the GFC. Before the GFC, the banking policy function of observing idiosyncratic risk or individual bank soundness still lay with the central bank in almost all countries. However, after the GFC, some of the functions of central banks shifted to financial services supervisory authorities that focus on bank soundness or microprudential policies. With this, the functions of the central bank became more concerned with monetary policy, payment system policy, and macroprudential policy—three policies that inevitably interact with each other. An example of this is the transmission of interest rate policy that still requires micro-orders, such as the bank's process of setting loan interest rates. The transmission of interest rate policy needs to be seen from the monetary, macroprudential and microprudential side. This can serve as the basis for determining the formulation of a more effective monetary policy transmission. On the macroprudential side, it is necessary to build a more efficient system that is capable of encouraging credit growth, while on the microprudential side, policies aimed at encouraging efficiency are needed.

Bank Indonesia itself defines macroprudential policy as a policy that is established and implemented to prevent and reduce systemic risk, promote a balanced and quality intermediation function, and improve financial system efficiency and financial access in maintaining financial system stability, as well as to support both monetary and payment system stability (Warjiyo & Juhro 2019).

In general, the perspectives of economic agents around the world vary on economic issues. Similarly, the perspectives of financial authorities from the period before the GFC differ from those after it. In the 2000s, all authorities believed that issues could be solved by using just one policy; for example, problems with financial stability could be overcome by monetary policy related to interest rates, or by using microprudential policies oriented towards the health of individual banks, with idiosyncratic risk in them, such as the policy of easing Risk Weighted Assets (RWA).

On the other hand, the problems that occurred in the macroeconomy were not able to fully describe what happened to the condition of financial system stability. On the contrary, problems with financial system stability can also have an impact on the macroeconomy. Macroeconomic stability cannot be achieved if financial

system stability is not maintained, meaning that macroeconomic and financial system stability are two components inextricably interrelated one to another.

Macroprudential policy aims to maintain financial system stability by limiting the increase in systemic risk (IMF 2011). This definition shows that systemic risk must be managed so that it does not have a bigger impact beyond the control of the authorities. Macroprudential policy is also aimed at limiting the risks and costs of a systemic crisis (BIS 2011). Risk restrictions can also affect the cost of a crisis, whereby the greater the risk, the higher the costs incurred. Macroprudential policies are also intended to maintain overall financial system stability, including strengthening financial system resilience and reducing the buildup of systemic risk so as to ensure the sustainability of the financial sector's contribution to economic growth (European Systemic Risk Board 2013).

Systemic risk appears as a common thread in these various definitions. Systemic risk refers to the potential instability caused by contagion to some part, or the whole, of the financial system due to interactions from the factors of size, complexity, and interconnectedness between institutions and/or financial markets, as well as the behavioral tendency of financial players or institutions to excessively follow the economic cycle, or procyclicality.

The characteristics of macroprudential policy can be seen from two dimensions, namely the cross-sectional and time series dimensions. The dimension between subjects, or cross-section, is how risk is distributed across the financial system in a certain period, thereby necessitating more aggregate regulation and supervision. There are several characteristics of a financial system that can trigger systemic risk in the cross-sectional dimension, including:

(a) Interconnectedness among actors in the financial system where assets in one institution are liabilities for other institutions, and problems in one institution can affect the performance of other institutions.
(b) The existence of institutions that have a systemic impact or are *too big to fail*, where the impact of risk spillover in the financial system will be even worse if the source of failure is a bank with a systemic impact.
(c) The existence of common risk factors between elements of the financial system. If the elements of the financial system share similar risk factors, then a shock to the sector can have an impact on financial system stability.

As for the time series dimension, risk in the financial system evolves over time. This encourages the need for system-oriented regulation and supervision, including cross-sectional and time series dimensions. Financial institutions tend to move in a procyclical fashion, meaning that their risk taking behavior is in line with the ups and downs of the economic cycle. Figure 6.1 illustrates that when economic conditions are good, financial institutions will expand and increase their risk taking behavior, while when economic conditions take a downturn, financial institutions tend to hold back on expansion and reduce risks—including withholding lending. The health of financial institutions that are assessed at a certain time is not able to describe the evolution of risks that exist in these institutions.

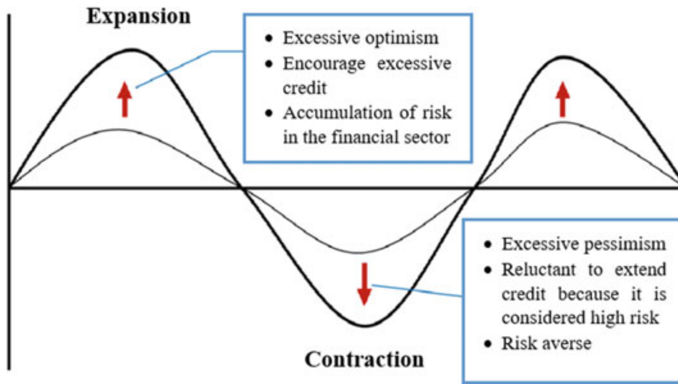

Fig. 6.1 Behavior of financial institutions dependent on economic condition

The Role of Macroprudential Policy in Maintaining Financial System Stability

Macroprudential policy aims to limit the increase in systemic risk by reducing vulnerability and increasing resilience in the financial system. Macroprudential policies are implemented as a part of a policy mix accompanied by other policies that have an impact on financial system stability.

Bank Indonesia implements macroprudential policies with a mandate to maintain a balanced and quality intermediation function related to procyclicality. In most countries, the main mandate of macroprudential policy is to monitor and address systemic risk, while in Indonesia there is also an additional mandate of promoting the financial system.

In the current condition, where we are in the midst of the Covid-19 pandemic, capital flows are more limited, impacting not only financial institutions but also corporations and households—such that macroprudential relations with the non-financial sector are closer than what happened in the 1997 crisis. The performances of financial institutions and corporations are interlinked and influence each other. In macroprudential policy, the shock induced by the ongoing pandemic must be analyzed, as too must the vulnerability of the financial system, in order to be able to assess the resilience of financial institutions and the financial system as a whole (Fig. 6.2).

The growing trend of digitalization as well as other developments in the economy and financial system are driving the authorities to gradually develop macroprudential policy. Macroprudential policies are currently directed towards Macroprudential 4.0—that is macroprudential policies that lead to financial innovation by paying more attention to digital developments, economic inclusion, and green finance to support sustainable and resilient economic growth.

Taking into account the increasing growth of digitalization, as well as recently-emerged issues in the economy and financial system—including lessons learned

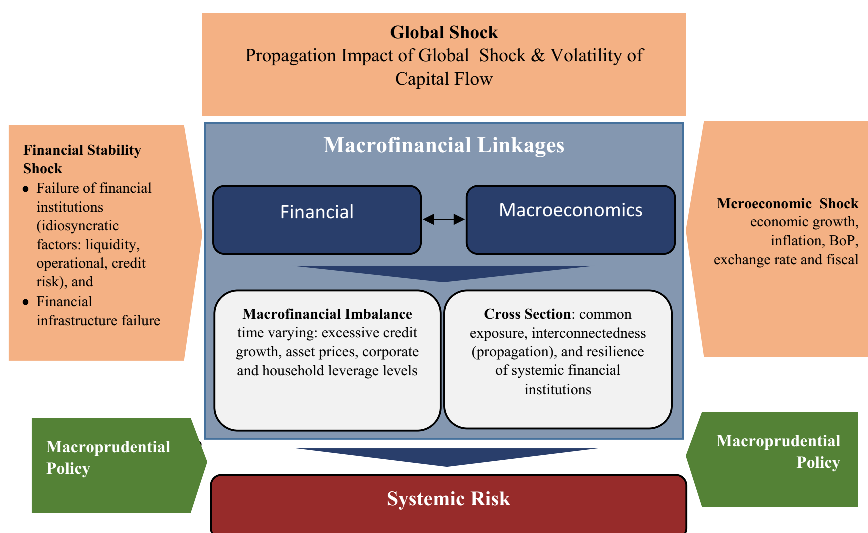

Fig. 6.2 Role of macroprudential policy in maintaining financial system stability

during the Covid-19 pandemic—the role of macroprudential policy in maintaining financial system stability is enhanced by:

(a) Strengthening policy formulations and innovative macroprudential surveillance supported by quality assessments and research, to maintain financial system resilience and balanced and quality financing growth. In a situation where the monetary policy space to continue lowering interest rates is more limited, macroprudential policy plays an important role in promoting economic recovery.
(b) Increasing policy effectiveness by strengthening the policy mix with monetary policy and the payment system, and by forging synergies with other authorities, so that the macroprudential policies issued have a greater positive impact in achieving their objectives. For example, the Loan to Value (LTV)/Funding to Value (FTV) policy is in synergy with the taxation policy for property and motor vehicles issued by the Government.
(c) Extending financial inclusion programs in order to support economic financing. Financial inclusion can help to expand financing and is one of the keys to the current economic recovery.
(d) Utilizing digital technology, including the use of big data and Machine Learning in the macroprudential assessment and surveillance process. An example of this is the mapping of inter-corporate financial transactions and the projected probability of default.

(e) Strengthening policy coordination with the Financial System Stability Committee and relevant Ministries/Institutions, as well as intensifying communication with stakeholders in an effort to increase the understanding of the substance of Bank Indonesia's policies to maintain financial stability.
(f) Strengthening the role of Bank Indonesia at the international level as a reference for the central banks, or other relevant authorities, of other countries in implementing macroprudential policies.

Box 1: Bank Indonesia's Integrated Macroprudential Policy Framework

Dynamic Integrated Macroprudential Policy and Surveillance Framework

Bank Indonesia established the Dynamic Integrated Macroprudential Policy and Surveillance Framework (DIMPS) to improve macroprudential policy in response to the increasing complexity in the financial system. In this integrated framework, all elements of the financial system, such as Banking, Non-Bank Financial Institutions and Financial Markets, and Corporations and Households, become objects of the assessment to ensure that all sources of risk can be covered and transmission due to linkages between financial elements can be captured, so that systemic risk measurements can be performed comprehensively. This integrated framework also allows interactions between policies to be carried out, especially with monetary policy and the payment system as part of the Bank Indonesia policy mix, green finance policy, financial inclusion, and market deepening - including aspects of Islamic finance policy.

This framework includes the following aspects:

- Dynamic to the movement of the financial cycle, limiting increases in risk due to procyclical behaviour; and policies are implemented in a manner that is forward-looking, ahead of the curve and pre-emptive.
- Integrates all elements of the financial system, both for financial and non-financial institutions; policy formulation is integrated with other policies; comprehensive assessments cover all risks that affect the financial system; and integrate surveillance results with policy formulation.
- Macroprudential Policy that aims to limit increases of systemic risk in the financial system, maintaining balanced, quality, productive and sustainable financing growth, including by encouraging the deepening of financial markets as well as improving economic and financial inclusion.
- Macroprudential Surveillance and Supervision in the context of identifying, monitoring and conducting assessments of increased systemic risk, either due to procyclicality or contagion, as well as monitoring financing developments, including those related to economic and financial inclusion.

The analysis of macrofinancial linkages within the framework of an integrated macroprudential policy is operated by using a forward-looking approach

and is oriented towards the use of frontier financial enhancement, both in the implementation of assessments and in the development of the financial system. Meanwhile, macroprudential policy formulation is carried out dynamically to reduce both over-optimism and over-pessimism as well as to suppress the materialization of risk due to the contagion effect in the financial system.

An example of this is the implementation of integrated macroprudential policy, including monetary policy through a reduction in the Minimum Reserve Requirement followed by an increase in the Macroprudential Liquidity Buffer to increase the Bank's liquidity resilience, and at the same time, the elimination of the Macroprudential Intermediation Ratio's current account disincentives.

The dynamics of the interaction of business cycles, financial cycles and capital flow cycles require policy responses that are similarly dynamic and integrated. In a contraction phase, such as the current Covid-19 situation during which economic activity has declined, the macroprudential policy stance is of course directed to be accommodative in order to encourage the acceleration of economic recovery.

Accommodative macroprudential policy has succeeded in accelerating several sectors, such as the property and automotive sectors, through the policy of easing the LTV/FTV ratio to 100% and Motor Vehicle Loan Advances of at least 0%. This policy is increasing in effectiveness, driven by synergies with fiscal policy and microprudential policy.

Pillars of Macroprudential Policy Implementation.

In general, the macroprudential policy framework consists of the following three pillars—balanced and quality intermediation, including sustainable finance; financial system resilience; and economic and financial inclusion, including Islamic banking, economics and finance. Various instruments used by Bank Indonesia are directed at those three dimensions and apply both for conventional and sharia banks.

The first pillar focuses on efforts to promote balanced and quality intermediation of potential sectors. For the intermediation pillar, there are credit-related instruments such as the CCB which is currently still being applied at 0%, LTV/FTV for property loans/financing, down payments for motor vehicles, and the Macropudential Intermediation Ratio (MIR). The MIR is used to promote balanced intermediation. It is designed to be within a range between a lower and upper limit, currently set at 84–94%. The Macroprudential Intermediation Ratio can exceed the upper limit as long as the bank concerned has a high capital ratio and a low level of Non-Performing Loans (NPL). This pillar also contains green macroprudential initiatives which are the policies that encourage green finance.

The second pillar is a strategy to encourage financial system resilience, which will be formulated and implemented through the Dynamic Systemic Risk Surveillance (DSRS) framework. In DSRS, surveillance is carried out

on individual banks and on transmissions through non-bank institutions, such as Payment Service Providers, Payment Infrastructure Providers and Rupiah Money Management Service Providers, as well as on the industry as a whole, given its potential to affect financial system stability. The instruments used include the Macroprudential Liquidity Buffer and Liquid Assets to Third-Party Fund ratio as monitoring tools.

The third pillar is related to the framework of the National Economic and Financial Inclusion Strategy. Further enhancements in economic and financial inclusion, to provide new sources of growth, are needed. Financial inclusion must be encouraged, including from the supply side by using the policy of the Macroprudential Inclusive Financing Ratio. This ratio is intended as a reinforcement and innovation of the Small and Medium Enterprises (SME) credit ratio, as it was previously known. Meanwhile, from the demand side, the policy is to strengthen SMEs, enhancing their capacities and competitiveness by using multiple strategies, including by introducing digitalization and connecting SMEs to e-commerce platforms, export aggregators and other projects.

The implementation of the main pillars in this policy framework is supported by research-based policy and surveillance, the digitalization of work processes, data and information, enhanced coordination and communication, the strengthening of the legality of macroprudential mandates, and the continuous improvement of Human Resource (HR) competencies.

Institutional Arrangements

As previously mentioned, the GFC imparted valuable lessons about the mandates and practices of central banks in carrying out monetary policy complemented by macroprudential and other policies, and their ability to maintain financial system stability while at the same time boosting growth. After the GFC, a number of countries improved the institutional arrangements of financial authorities, including their mandates and authority, as well as the coordination mechanisms between authorities.

Observations of a number of practices, as well as lessons learned from the global crisis, demonstrate that the central bank, which is also the authority for the monetary and payment system, is the appropriate authority for macroprudential mandates. The basis for this consideration is that the central bank has the capability and resources to monitor macrofinancial linkages, identify systemic risks, and formulate a policy mix to address these potential risks. Added to this is the function of the central bank as the lender of last resort.

It is very interesting to study the case of Indonesia. This is not only related to the intensive handling of financial crises in the last two decades (Asian financial crisis of

1997/98 and global financial crisis of 2008/09), but also to the establishment of the Financial Services Authority and strengthening of institutions to oversee financial system stability at the national level.

From the legal perspective, since the establishment of the Indonesian Financial Services Authority (IFSA) through Law No. 21/2011, the function of microprudential regulation and supervision of banks has shifted to IFSA. Article 7 of the aforementioned law explains that IFSA has the authority to regulate and supervise institutions, soundness, prudential aspects, and the examination of banks. Furthermore, Article 7 articulates that anything beyond the scope of the regulation and supervision assigned to IFSA falls within the role and authority of Bank Indonesia.

To implement effective macroprudential policy, both in conducting assessments and formulating policies to mitigate systemic risk, the macroprudential authority requires the following powers (i) the authority to formulate regulations; (ii) the authority to conduct supervision (off-site); (iii) the authority to conduct examinations (on-site) to detect behavioral patterns of financial agents, including to ensure compliance with the specified provisions; (iv) the authority to request information on a regular and *any time* basis; and (v) licensing for certain activities which are in the scope of that authority. These five powers are essential for the relevant authority to carry out its roles effectively. These powers are properly regulated in Bank Indonesia Regulation Number 16/11/PBI/2014 concerning Macroprudential Regulation and Supervision, which is complemented by several derivative regulations which act as guidelines in implementing the policy framework.

Since the maintenance of financial system stability is a shared responsibility among financial authorities, the Financial System Crisis Prevention and Management Act in 2016 strengthened the legal basis for cooperation and coordination among authorities, according to their respective roles and authorities, through the Financial System Stability Committee (FSSC).

The FSSC is a structured coordination mechanism for the authorities in the financial sector, namely the Ministry of Finance, Bank Indonesia, IFSA and the Indonesia Deposit Insurance Corporation (IDIC), without voting rights, with the tasks of: (i) coordinating in the context of monitoring and maintaining financial system stability; (ii) handling financial system crises; and (iii) handling systemic bank problems, both in normal and crisis conditions as pertains to financial system stability. The Committee holds meetings once every 3 months, or at any other time based on a request of its members. The abovementioned Act also regulates coordination between the IFSA and Bank Indonesia in determining systemic banks and providing short-term liquidity loans for illiquid but solvent banks.

The synergy and coordination among the Committee's members have been tested since the onset of the COVID-19 pandemic in March 2020. Law of No. 2/2020 concerning State Financial Policy and Financial System Stability for Handling the Covid-19 Pandemic strengthened the authority of each of the Committee's members in being able to take extraordinary actions to mitigate the impact of the pandemic. For Bank Indonesia, the authority includes handling certain bank problems through the provision of Short-Term Liquidity Loans for systemic and non-systemic banks, and Special Liquidity Loans for systemic banks (under certain terms and conditions);

the purchase of Government Bonds and/or Government Securities. For the IDIC, the purchase/repo of Government Bonds and/or Government Securities; the regulation of foreign exchange flows and provision of access to corporate funding with Government Securities repos through banks; and the strengthening of its authority related to the handling of bank solvency problems. For the IFSA, the strengthening of its authority related to the regulation of financial services institutions, including the authority to carry out bank consolidations. And for the Ministry of Finance, the reinforcement of its authority to provide loans to the IDIC.

These financial sector policies were subsequently included in the Integrated Policy Package issued in February 2021, the implementation of which is still being monitored and evaluated. The pandemic, from which we have yet to fully recover, requires that all authorities in the financial sector take increasingly intensive and innovative actions to promote economic recovery and maintain financial system stability.

In addition to coordination through the Financial System Stability Committee, Bank Indonesia has also strengthened policy synergies with the IFSA and IDIC, both bilaterally and trilaterally, under a memorandum of understanding or cooperation agreement, covering areas such as the exchange of data and information, including the results of surveillance, capacity building, research and others. Similarly, BI also maintains synergy and coordination with several relevant ministries/agencies, including in the context of strengthening SMEs.

Navigating the Financial System's New Landscape

The global financial system's landscape in 2021 and beyond will face three main challenges, namely the expansion of digitalization, the need for improved financial inclusion, and climate change-related risk. Without ignoring the numerous other issues in the financial sector, future macroprudential policy needs to pay more attention to these three issues, which are popularly known by the acronym DIG—Digital, Inclusion, and Green Finance.

Digitalization

The trend of digitalization has rapidly gathered speed since the 2008 GFC, changing the structure of the financial sector which was previously dominated by the banking industry in terms of credit intermediation services as well as payment services. The swift development of technology and its ease of use have stimulated the emergence of ever more technology-based financial services, either from technology companies with an established presence in the market for digital services (bigtech) or financial innovations based on the use of digital technologies and big data (fintech).

More recently, there have been many collaborations between banks and fintech companies, alongside the phenomena of bigtech acquiring small banks and large-scale and medium-scale banks launching digital platforms to broaden their services and meet customer preferences which have hitherto been difficult to satisfy.

In the near future, the financial industry landscape will become dominated by digital developments, resulting in the banking industry being faced with several scenarios if it does not respond with the right strategies. The most extreme scenario is one in which banks lose their relevance as customers begin to benefit from the comprehensive services offered by more agile, technology-based digital platforms, be it in lending, payment, investment or other activities.

The digitalization of banking has also brought forth the following challenges: consolidation in the banking sector as more mergers or acquisitions take place; reduced financing capacity due to the shifting of intermediation activities into fee-based income transaction services; and increased policy mix transmission complexity due to the emergence of new economic agents in the form of fintech/bigtech that will affect variable calculations in interest rates, credit rates, and expenditure (Singh et al. 2008). As to data, can the data related to fintech/bigtech activities be controlled and processed? In the years ahead, digitalization is expected to become a new source of vulnerability in the financial sector, most notably with the emergence of cyber risk, an increasingly high level of interconnections which will be more difficult to measure, as well as other risks yet to be identified.

Corresponding to the development of the macroprudential policy framework and the development of a strategic environment that continues to change dynamically, Bank Indonesia has formulated a strategic business plan in relation to digitalization, as detailed below:

(a) Digitalizing policy formulation—that is the use of digital information for policy formulation and calibration through the development of a forward-looking Financial System Stability Index, Stress Test 4.0 for a Macroprudential Stress Test, namely an Integrated Stress Test using big data and forward-looking expected loss, Policy Mix, MacFin Model for a Macrofinancial Granular Model for systemic banks and corporations.
(b) Regulatory and supervisory technology such as suptech, real time liquidity indicator, Crisis Management Protocol Dashboard, and studies on cyber risk.
(c) Business process digitalization such as (i) Digital Macroprudential Policy, Utilization of integrated data repository, and Digital Repository for task execution; and (ii) digitizing Macroprudential communication for Gen Z and millennials.
(d) Digital financial deepening and inclusion such as (i) digitalization of financial market licensing and Development of Market Intelligence and Market Monitoring; and (ii) end-to-end integrated digitalization of SMEs.
(e) Massive development of HR competencies in the fields of cyber risk and data analytics, such as Machine Learning, Artificial Intelligence, Deep Learning, Text Mining, etc. as well as the enhancement of relevant employee expertise.

The system applications which are utilized to monitor movements in banking include the Statutory Reserve Requirement application and the LTV application. These applications will be brought into the existing digitalization programs in an effort to create an integrated digitalization program for financial stability information systems.

The development of digital technology should be used to boost financial system stability and increase intermediation by giving customers more alternatives for conducting their financial transactions through fintech, peer-to-peer lending, or digital banking. The objective is to establish a more efficient ecosystem by using, for example, open data with a high governance level, while at the same time managing risks, including cyber risks, so as to keep them under control.

SMEs can also be benefited by the use of digitalization to develop their business and assist them in becoming more export-oriented through e-commerce platforms and aggregators, both directly (SMEs are given online stalls to promote their products) and indirectly (SMEs place their products in aggregators). Currently, there is trend of mergers between e-commerce and fintech in order to expand financing. Going forward, digitalization and financial innovation are expected to change business models and the overall structure of the financial industry.

Inclusion

SMEs have become the spearhead of the Indonesian economy. Currently, SMEs account for around 99.99% (65.5 million units) of the total number of business actors in Indonesia and they also absorb around 97.8% of the national workforce. Nevertheless, there is still a disparity in the fact that SMEs only contribute around 57% to GDP. SMEs access to financing in the banking sector and non-banking sector is still limited, receiving only around 20% of the credit disbursed by banks, with the other 80% going to larger businesses. As such, greater efforts should be made to promote SMEs so that they can level up by increasing their incomes and contribution to GDP.

The empowerment of SMEs is key to creating sustainable economic growth and a stable financial system. The Asian crisis of 1997/1998 provided empirical evidence that the SME segment is more resilient than big corporations. With global economic conditions still shrouded in uncertainty, global shocks are likely to be more frequent, thereby adding to the importance of such empowerment efforts.

Encouraging SMEs to level up is no easy task. Suci (2017) states that there remain challenges in developing SMEs, such as a lack of capital in terms of amount and sources, a lack of managerial skills and operational skills for organizing, as well as marketing limitations. There are also other obstacles such as unhealthy competition and economic pressures, resulting in their scope of business being narrow and limited.

One of the keys to encouraging SMEs to level up is SME empowerment (Priminingtyas 2013), such as through funding for SMEs which is managed by a credit assistant, as well as entrepreneurial and management training to encourage the development of SMEs managed by women. Efforts to provide women with access to funding take place in various countries through priority sector credit policy (Jain et al. 2015; Rani and Garg 2015). Another way of encouraging financing for SMEs is to require a certain credit allocation to the SME sector, as is done in some South Asian countries (Ahmed 2010; Dasgupta 2002).

Efforts to encourage SMEs to level up begin with lower-income groups of people who find it difficult to meet their own basic needs in terms of clothing, food, and a home. These groups therefore require government support, especially in obtaining

otherwise unaffordable homes. This is in line with Act No 1/2011 concerning Housing and Resettlement Areas that defines lower-income people as people with limited purchasing power, such that they need government support to own a home.

By increasing the capacity of the poorer segments of society and encouraging them to start doing business, these people would be expected to level up by becoming new entrepreneurs in micro business groups. Furthermore, existing micro business groups need to be encouraged to expand their production and market capacity. This, along with increases in their financing capacity, would eventually lead to greater sales turnover and the chance to level up to become a small business group. Similarly, small business groups need to be encouraged to overcome intense competition so that they can continue to grow and become mid-level business groups.

The Macroprudential Inclusive Financing Ratio is an innovative policy that complements the previous Small and Medium Enterprises (SME) credit ratio obligation. The Macroprudential Inclusive Financing Ratio has the following three main objectives: (i) to make it easier for banks to fulfill the SME credit ratio obligation that has been effective since 2012 through the expansion of the modalities for fulfilling obligations; (ii) to ensure that the liquidity for institutions that are actively financing SMEs continues to go through the partnership and refinancing mechanism; and (iii) to encourage the creation of competitive credit interest by providing better bargaining power for supply chain corporations and SMEs.

By 2024, the banking sector is expected to be able to meet the minimum ratio target of 30%. A similar policy has also been adopted in other countries such as India, Thailand, Sri Lanka which have set even higher targets for their SME credit portion.

Green Finance

Nowadays, almost all scientists in the world agree that increases in the earth's temperature are causing very extreme weather changes. The UN intergovernmental body known as IPCC states that an increase in the earth's temperature of more than 2 degrees Celsius from pre-industrial levels will cause tremendous environmental and economic disruption.

Losses due to extreme global weather in the last 2 decades from 2000 up to 2020 have reached US$5.1 Trillion. Meanwhile, the National Development Planning Agency projects that national losses due to extreme weather conditions in Indonesia will amount to Rp 112 trillion by 2023.

Although the losses due to extreme weather are becoming increasingly evident and are growing, some countries still seem reluctant to make progress towards a transition to a low-carbon economy because of the high transition costs involved. However, as global policies on climate change become tighter, countries that do not convert as soon as possible will be exposed to greater costs. This is because these climate change policies are in the form of cross-country regulations. For example, import barriers put in place by some countries on high-carbon content products could disturb Indonesia's export market, affecting things such as plantation products, cars, coal, and other products from leading Indonesian sectors. In addition, the carbon tax policies of other countries may also cause investment disruptions in Indonesia. This is because the concept of carbon emissions measurements is global, such that carbon

emissions produced by branch offices and projects financed in other countries are taxed in the investor's country of domicile. As such, foreign investment in Indonesia, including via securities, could become more limited or expensive.

The costs incurred due to climate change will depend on the policy responses pursued. In the absence of a transitional policy, global temperatures will continue to rise and extreme weather changes will inevitably come to pass. The Network for Greening the Financial System (NGFS), a group consisting of 91 central banks and supervisors, projects that global GDP could fall below 25% of the expected level by the end of this century if the world does not act to reduce global greenhouse gas emissions. However, this potential shortfall could be reduced to 9% if governments across the globe are willing to make the transition to a low-carbon economy, in the case of a disorderly transition. Moreover, in the case of an orderly transition, the losses could be confined to just 4%.

Considering the impact of global climate change, various international forums are currently discussing climate change issues intensively, including the green transformation of central banks, data and disclosure, as well as taxonomy and the scaling up of green financing. The most active one is NGFS which incorporates all the aspects of central banking.

Bank Indonesia is also very concerned about climate change and green finance issues. This is evidenced, among other things, by its very active involvement in various international forums such as the G20 Sustainable Finance Working Group (SFWG), NGFS, FSB Working Group on Climate Risk (WGCR), ASEAN Task Force on Sustainable Finance (TFSF), and EMEAP Interest Group on Sustainable Finance (IGSF), along with the several bilateral collaborations it has entered into with other national authorities, international institutions, and national taskforces.

Furthermore, green macroprudential policy can be an option for closing the gap between macroeconomic and microprudential policy in mitigating climate risk (Dikau and Volz 2018). The following are among the green macroprudential policy options that may be implemented by Bank Indonesia:

(a) Climate-related Stress testing, to assess the potential impact of climate risk on the economy, the resilience of individual financial institutions, and the financial system as a whole.
(b) Countercyclical capital buffer (CCB), an instrument used to mitigate the financial cycle and also used to address climate risk. For example, a higher CCB is applied to "carbon-intensive" credit growth (Schoenmaker and Tilburg 2016).
(c) Green Credit Allocation, a policy which is quite popular in several developing countries and aims to boost green investment and sustainable development.
(d) Green Reserve Requirement, a policy by which banks that have a green asset portfolio within a certain threshold are permitted a lower Minimum Reserve Requirement.

Bank Indonesia has already implemented green macroprudential policies such as Green LTV and green down payment for Car Ownership Loans, which have been applied since 2019. Through these policies, the ratios of LTV/down payment were relaxed to boost both green property and green motor vehicle loans. By implementing

these policies, Bank Indonesia has given a strong signal that in the future, macroprudential policy will continue to be directed in a manner that contributes to sustainable finance. To this end, multiple future research projects and studies will be conducted, both internally and in collaboration with other institutions.

Closing

There are indeed many more challenges for the Central Bank when it comes to maintaining financial system stability. As discussed above, the application of macroprudential policy alone will not solve all the problems in the financial sector. Instead, the key is a policy mix—with the big challenge for the Central Bank being to determine the 'dose' of each policy in the mix. As such, assessments have to be sharpened, policy formulations need to be strengthened, and synergies with other authorities have to be made more effective.

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