

## Changing Financial Behavior of Firms and Households amid COVID-19

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Japan's Corporate Bond Market: Developments before & during the COVID-19 Pandemic

Kenji Tominaga / Nomura Institute of Capital Markets Research

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Rise of Digital Channels and Retail Investors: A Tale of the Indonesian Financial Sector during the 2020 Pandemic

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## FOREWORD

Although economic growth in most Asian countries turned negative in 2020 due to the COVID-19 pandemic that started to spread globally early in the year, economic growth in Asia is forecasted by the Asian Development Bank to be back at 7.2% for 2021. However, public debt outstanding in Asia has been increasing as a result of the governments' active fiscal stimulus measures, and stricter fiscal management will be needed to address this situation. Moreover, the financial behavior of firms and households has been impacted amid the prolonged COVID-19 pandemic.

The COVID-19 pandemic has had significant impacts on the business environment for micro, small and medium-sized enterprises (MSMEs) across various sectors. While governments have introduced various support measures for MSMEs, they could not provide them with sufficient financial support due to fiscal constraints. MSMEs, which generally have lower creditworthiness than large enterprises, often have difficulty in borrowing money from traditional financial institutions such as banks. Under these circumstances, alternative financing options such as peer-to-peer (P2P) lending and equity crowdfunding are attracting more attention.

The impact of the COVID-19 pandemic on the financial behavior of households can be characterized in two ways. The first is an increase in online financial transactions due to people spending more time at home under government lockdown policies and social distancing measures. The number and volume of transactions via internet banking and mobile banking have been increasing. In addition, more and more individual investors are starting online equity investing against the backdrop of continued low interest rates and good performance in equity markets. While increased participation of individual investors in equity markets is expected to improve market liquidity, it also highlights the necessity of promoting financial literacy and strengthening investor protection. The second impact of COVID-19 on household financial behavior is the withdrawal of savings due to increased unemployment and decreased income arising from worsened corporate performance. There is concern that the deterioration in the financial condition of households will make retirement planning more difficult in the medium to long term.

This issue of *Nomura Journal of Asian Capital Markets* features articles related to the effects of the COVID-19 pandemic in the region, including the financial support measures governments have taken and the changing financial behavior of firms and households in major ASEAN countries.



## KENJI TOMINAGA

Nomura Institute of Capital Markets Research

# Japan's Corporate Bond Market: Developments before & during the COVID-19 Pandemic

## Introduction

The spread of the COVID-19 pandemic dealt a shock to Japan's financial markets while also seriously affecting the nation's real economy. However, swift and proactive responses by the Japanese government and the Bank of Japan (BOJ) based on lessons learned from past financial crises and other disruptive events helped the markets regain stability rather quickly. For example, corporations have been able to stably secure funding in the corporate bond market, with corporate bond issuance in 2020 reaching an all-time high of nearly JPY16 trillion (Figure 1).

This smooth functioning of the corporate bond market can also be attributed to efforts since the 1980s to liberalize bond issuance in Japan and promote market activity. Since developing a more liberal system for bond issuance in the 1980s and 1990s, Japan has continued to promote initiatives to stimulate its primary and secondary bond markets in the 2000s.

In recent years, we have seen the

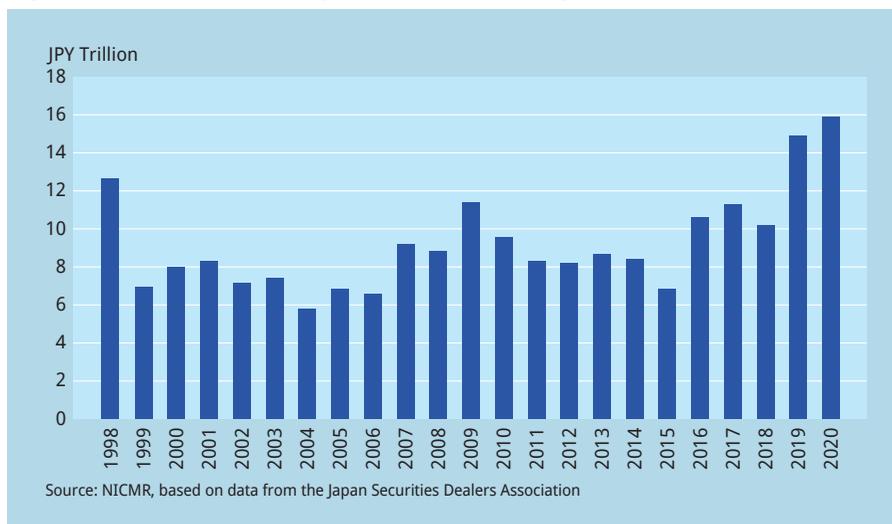
bond market expanded by the increase in issuance of green bonds, social bonds, sustainability bonds and other bonds collectively referred to as Sustainable Development Goals (SDG) bonds,<sup>1</sup> which are used to fund projects that contribute to realizing the SDGs being promoted by the United Nations.

This article summarizes the efforts to vitalize Japan's corporate bond market in the 2000s, presents the key characteristics of the market during the COVID-19 pandemic, and concludes with a brief outlook on the future expansion of Japan's corporate bond market.

## Development of Japan's Corporate Bond Market

During the 1980s and 1990s, Japan implemented measures that liberalized issuance in its corporate bond market. In the 2000s, initiatives in the corporate bond market

Figure 1: Issuance of Publicly Offered Bonds in Japan



focused on increasing transaction safety and convenience, leading to the launch of a bond transfer system that introduced a completely paperless settlement system for transferring bond ownership rights. The Lehman Shock in September 2008 and the following Global Financial Crisis triggered a greater awareness of the need to diversify corporate financing methods, expand investors' investment options, and create a more liquid market in order to vitalize the corporate bond market.

With that goal in mind, in July 2009 the Japan Securities Dealers Association (JSDA) established the “Study Group to Vitalize the Corporate Bond Market” (hereinafter, the “Study Group”) to deliberate on issues facing the corporate bond market and consider potential initiatives. The Study Group prepared and published its initial recommendations in June 2010 in a report entitled “Toward Vitalization of the Corporate Bond Market”. The report outlined four key topics to be given greater consideration by newly established subcommittees: (1) a review of underwriting examinations conducted by securities companies, (2) the granting of covenants<sup>2</sup> and information disclosures, (3) corporate bond management, and (4) the development of infrastructure for disseminating corporate bond price information. The subcommittees' recommendations were summarized in the Study Group's July 2012 report entitled “Measures for Vitalization of the Corporate Bond Market” (hereinafter “the Study Group's report”).

### **Review of underwriting examinations conducted by securities companies**

The process used by securities companies when conducting corporate bond underwriting examinations was reviewed from the perspective of securing flexible issuance of corporate bonds while strengthening the examination contents to ensure investor protection. For example, regarding the contents of the basic underwriting examination, the Study Group's report stated that, assuming the issuer and its auditor have submitted sound and accurate financial statements and other documents, the examination should focus on the issuer's principal and interest payment capacity and risk factor disclosure, which are considered to be the key factors influencing investors' decisions to invest in corporate bonds.

As for the continuous disclosure examination of corporate bonds, the report said that the typical common examination questions should be changed to “common questions” (reference model) based on the

actual situation at each issuing company and reviewed as necessary in the future. The Study Group's report also pointed out that underwriting examinations conducted at the time securities reports and quarterly reports are filed have sought responses to the common questions from the issuing company and its auditor. However, to ensure more flexible issuance of corporate bonds, the Study Group's report recommended that securities companies conduct internal reviews of the issuing company's disclosed quarterly reports, press releases, credit rating information, and other publicly available information. Based on these considerations, JSDA compiled the “Guidelines for Corporate Bond Underwriting Examinations Under the Securities Company Issuance Registration System.”

Along with this review, the Study Group considered and presented its view of how underwriting securities companies should examine issuers' financial statements and other documents. Specifically, the Study Group pointed out that, under Article 21-1 (iv) of the Financial Instruments and Exchange Act (hereinafter, “FIEA”), the underwriting financial institution as well as the issuer and the auditor may be liable for damages incurred by investors if the financial statements or other documents submitted when issuing securities contain false statements or lack statements on important matters or material facts. Similarly, Article 17 of the FIEA states that a person who sells securities using a prospectus containing false statements or insufficient information also may be liable for damages. Based on the views presented in the Study Group's report, the JSDA compiled its “Guidelines for Underwriting Examinations of Financial Statements, etc.”

### **Granting of covenants and information disclosures**

The Study Group's report also pointed out that vitalization of the corporate bond market should include expanding the primary corporate bond market, which was focused on bonds issued by companies with relatively low credit risk, to provide more opportunities for companies with relatively high credit risks to issue bonds. To achieve this expansion of the primary bond market, the Study Group's report stated that it was necessary to develop an environment that enabled the granting of covenants that more flexibly and appropriately reflected the capital and financial policies of issuers while also meeting investor needs. It added that these covenants should be fully reflected in the issuance

conditions for corporate bonds. The report pointed out that the main type of covenant attached to corporate bonds at the time was the negative pledge clause (a clause prohibiting the issuer creating any security interest over certain property specified in the provision). The report also noted that these collateral provision restriction clauses were usually effective only among corporate bonds. Considering that banks providing corporate loans generally had access to a relatively large amount of information about corporate bond issuers, the Study Group pointed out that this situation essentially made corporate bond obligations subordinate to bank loans. Under such conditions, investors must have access to information about the covenants and status of a bond issuer's bank loans as well as its corporate bonds.

The report also pointed out that corporate bond investors often were not provided with disclosure information sufficient for making sound investment decisions. In response, the Study Group indicated that it would prepare a reference model of standard covenants for corporate bond issues as a reference for issuing companies, investors, and securities companies. Based on the Study Group's recommendations, the JSDA announced “Disclosure Criteria on the Status of Covenants and Examples (Examples of Disclosure of Covenants)” in September 2016. This list of examples introduced disclosures made by previous bond issuers as well as a reference guide to criteria for judging disclosure and the contents of disclosure to support voluntary disclosures by issuing companies related to typical entries in the disclosure system, such as “Notes on Additional Information” and “Notes on Important Subsequent Events.”

### **Corporate bond management**

The Study Group pointed out that corporate bond issues require, in principle, the appointment of a corporate bond administrator, with the exception of cases where the issuance amount is JPY100 million or higher. However, it also noted that at that time about 80% of bonds issued in the domestic primary bond market, did not have an appointed administrator.<sup>3</sup> The report noted that it was necessary to consider establishing a corporate bond management system that would help vitalize Japan's corporate bond market by improving the environment for corporate bond issuance by companies with relatively high credit risks while also responding to changes in investors' understanding of corporate finance.

The corporate bond management company system was introduced when Japan's Commercial Code was revised in 1993. The Study Group's report pointed out that a company's main bank usually served as the bond administrator. However, it also noted that, in the case of bonds issued by companies with relatively high credit risk, the main bank could hesitate to serve as administrator even when asked to do so by investors, owing to concern that it would not be able to balance its duties as bond administrator with its position as a creditor involved in loan preservation and collection activities. This situation may have led to cases where there was no appropriate party to serve as the corporate bond administrator.

The Study Group therefore indicated that further consideration needed to be given to designing a corporate bond management system that would secure administrators capable of providing appropriate corporate bond management. Specifically, drawing on the trustee system in the United States, the Study Group considered establishing a system of "Corporate bond trustees (provisional name)" that would, in principle, serve as the agents of bond creditors with tasks limited to the preservation and recovery of debts after corporate bond defaults.

In February 2013, the JSDA and the Corporate Bond Market Study Group followed up by establishing the Working Group on Market Infrastructure for Corporate Bonds (hereinafter, "Market Infrastructure WG") to consider measures to enhance the protection of corporate bondholders. The Market Infrastructure WG released a report in March 2015 entitled "Protecting Corporate Bondholders." This report proposed establishing a Bond Administrator System (provisional name) as a practical measure to protect to corporate bondholders and recommended further discussions about the contents of bond guidelines and outsourcing contracts as steps to promote the acceptance and use of this system.

Accordingly, the Market Infrastructure WG continued to study matters related to this system and the content of specific provisions, and in August 2016 it presented its findings in a report entitled "An Outline of Bond Issuance and Outsourcing Contracts with Respect to the Bondholder Supporting Agent System." The system's name was changed from the provisional "Bond Administrator System" to "Bondholder Supporting Agent System" based on the study conducted by the Market Infrastructure WG.

### Development of infrastructure for disseminating corporate bond price information

Chapter 4 in the Study Group's July 2012 report entitled "Measures for Vitalization of the Corporate Bond Market" begins with the statement that vitalization of the secondary market for corporate bonds will require increasing the transparency and reliability of corporate bond price information. Corporate bond transactions are mainly conducted between the seller and the buyer, and third parties do not know the purchase price and other transaction details. To shed some light on bond prices, the JSDA has established a system that provides statistical data on Over-the-Counter (OTC) bond transactions.

The system was launched in March 1966 as a system for disseminating quotations on OTC bond transactions. In August 2002, the system was revised and renamed as the system for dissemination of reference statistical prices (yields) for OTC Bond Transactions to clarify that it is meant to be a reference for transactions and to improve the accuracy of the statistics provided. However, it later was pointed out that there were large differences between the reference statistical prices and the actual prices (contract price, bid offer, etc.) of corporate bond issues with low liquidity and from issuers perceived to have increased credit risk due to the occurrence of certain events.

The JSDA looked into these and other issues, and the Study Group's July 2012 report included two suggestions for enhancing the transparency and reliability of corporate bond price information: (1) publish reports about corporate bond transaction information, and (2) improve the reliability of the reference statistical prices of OTC bond transactions.

Responding to those recommendations, the JSDA established the Working Group on Development of Infrastructure for Disseminating Corporate Bond Price Information (hereinafter "Corporate Bond Price Information WG") in August 2012. In September 2013, this working group published a report on measures to improve the system for dissemination of reference statistical prices (yields) for OTC Bond Transactions in order to vitalize the corporate bond market. The report shows that the Corporate Bond Price Information WG studied the following issues: (1) designated criteria for designated corporate bond reporting association members (stricter criteria for Designated-Reporting Members, mandatory reporting of market prices by

the lead securities company); (2) enhancement and strengthening of guidance and management of JSDA's system for disseminating reference statistical transaction prices, and (3) a method for calculating reference statistical prices for corporate bond transactions (revision of the method for calculating reference statistical prices and of the minimum number of reporting companies), (4) introducing a time limit for reporting reference statistical prices for corporate bond transactions and delaying the release of those statistics, and (5) promoting better understanding of the reference statistical prices.

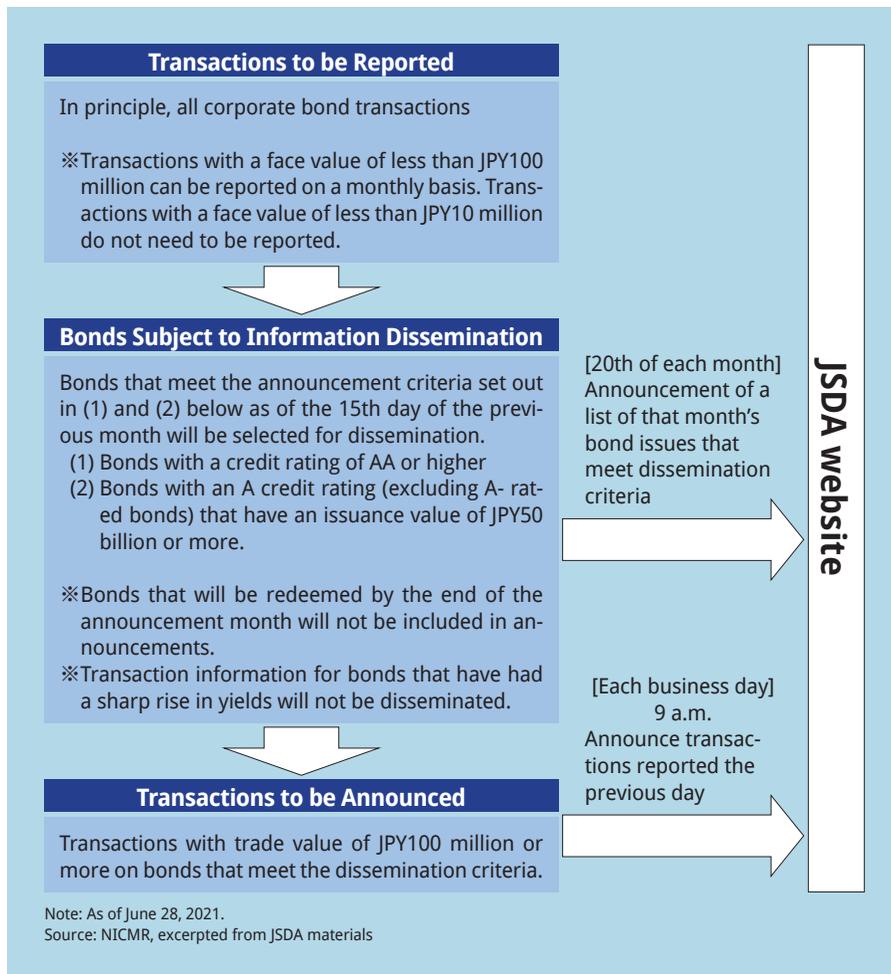
After soliciting opinions on the proposed revisions, in December 2013 the JSDA announced partial amendments to the relevant regulations and guidelines proposed in the Corporate Bond Price Information WG's report.

The Corporate Bond Price Information WG continued its studies of measures to improve the reliability of transaction reference statistics and regulations for reporting and announcing corporate bond trading information. As a result, in March 2014 the JSDA revised its regulations for reporting corporate bond trading information and launched a new public announcement system. The newly established system in principle requires that all corporate bond transactions be reported. However, reporting is optional for trades with a transaction volume of less than JPY10 million (Figure 2).

Announced corporate bond transactions are those that meet the following criteria as of the 15th day of the month previous to the announcement month: the bond has an issue amount of JPY50 billion or more (excluding those with subordinated provisions and 20 or more years to maturity) and (1) has a rating equivalent to AA or higher and (2) was issued by a company with an A rating (A-rated issuers are excluded).<sup>4</sup> Transactions on bonds that will be redeemed by the end of the announcement month will not be announced. In addition, the announcement of transaction information for bonds that have had a sharp rise in yields will be suspended. Announced bond transactions are transactions that have a traded amount face value of JPY100 million or more on bonds subject to the announcement requirements.

The information on corporate bond transactions announced by the JSDA consists of the following nine items: (1) contract date, (2) issue code, (3) issue name, (4) redemption date, (5) coupon rate, (6) trading volume (on a face-value basis), (7) contract price, (8) buy/sell indicator, and

**Figure 2: Japan's Corporate Bond Transaction Information Announcement Framework**



**Stable funding environment supported by the BOJ's strong monetary easing measures**

Spreads on Japanese corporate bonds rose along with the spread of COVID-19 infections, but the rise was held in check at a rather moderate level by the swift and proactive responses by the Japanese government and the BOJ, which were able to rely on past lessons learned during the Global Financial Crisis triggered by the Lehman Shock as well as other past crises.

Japan's corporate bond market was generally firm before the COVID-19 infections began to sweep across world, which pushed up yields from February to March 2020. In response, the BOJ announced a strengthening of its monetary easing policy on April 27, 2020, and the rise in bond yields was halted (Figure 3). Specifically, as part of its measures to ensure smooth funding for financial institutions and companies, the BOJ increased its upper limits for purchases of commercial paper (CP) and corporate bonds from about JPY5 trillion to about JPY20 trillion. In addition, the central bank raised the limits on the amounts it would purchase from a single issuer and extended the remaining maturity of corporate bonds eligible for purchase.<sup>6</sup>

An examination of corporate bond issuance in 2020 by years to maturity reveals that the issuance of medium-term bonds has increased as the market environment has been stabilized by continuation of the low interest-rate environment and the BOJ's monetary easing measures (Figure 4). Issuance of ultra-long-term bonds also remained rather buoyant.

**Increased use of corporate bonds as long-term debt**

Japanese companies, particularly large corporations, have been increasing their corporate bond issuance. The ratio of corporate bonds to total corporate long-term debt has risen in recent years, and the trend continued in 2020 (Figure 5).

More specifically, the share of outstanding corporate bonds<sup>7</sup> (i.e., the corporate bond ratio) to total long-term corporate debt (bank borrowings + bond issuance) at large corporations with capital of at least JPY1 billion has been on an uptrend since 2016. In 2020, corporate bond issuance rebounded after the market environment stabilized in April, and the increase in issuance from June to July onwards drove the corporate bond ratio above its previous year level.

The two main reasons for corporate

(9) reference statistical price (average price of unit prices).<sup>5</sup> As a general rule, the information is disseminated on the JSDA website by 9:00 a.m. on the business day after receiving the transaction report.

The new public bond OTC transaction reference statistical system and the reporting and public announcement system for corporate bond transaction information were launched on November 2, 2015.

affected the real economy and has caused turmoil in Japan's financial markets. Some industries have experienced large declines in income that have affected their funding needs, and financial markets were temporarily disrupted.

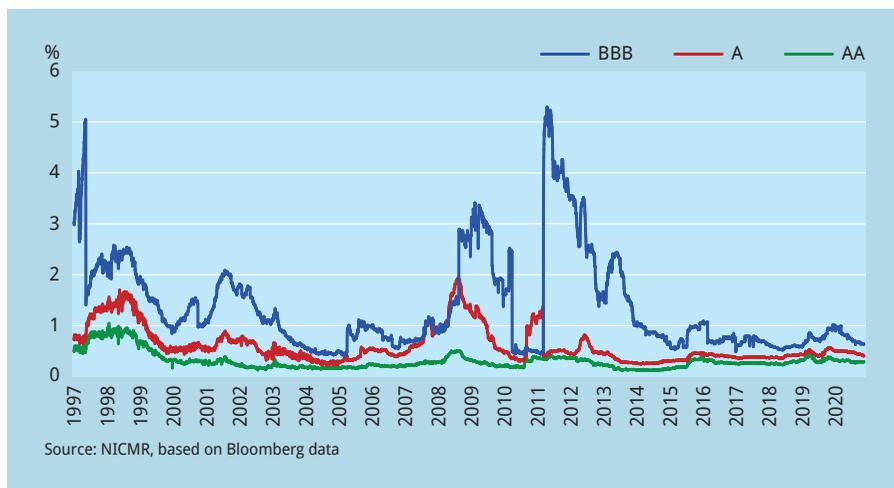
However, financial markets stabilized rather quickly thanks to the swift and proactive responses by the Japanese government and the BOJ that were based on past lessons learned during the Global Financial Crisis triggered by the Lehman Shock as well as other past crises. The past development of institutional infrastructure in the primary and secondary corporate bond markets has also contributed to relatively smooth financing and market transactions.

This chapter outlines (1) the generally stable funding environment supported by the BOJ's strong monetary easing measures, (2) the increased use of corporate bonds as a source of long-term debt, and (3) the expanding issuance of SDG bonds.

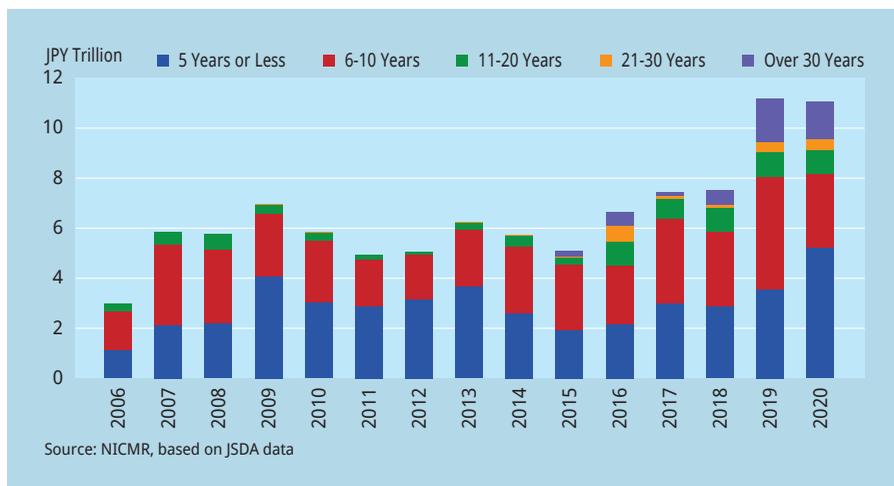
# Japan's Corporate Bond Market during COVID-19

The COVID-19 pandemic has seriously af-

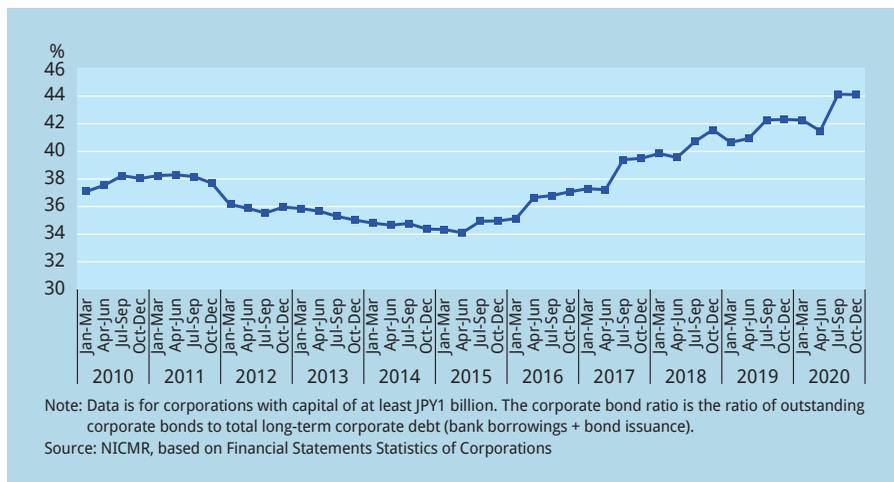
**Figure 3: 5-year Corporate Bonds Yield Spread Against Benchmark Japanese Government Bond**



**Figure 4: Issuance of Publicly Offered Bonds by Years to Maturity (excluding Financial Industry)**



**Figure 5: Corporate Bond Ratio of Large Japanese Corporations (excluding Financial Industry)**



bond issuance are (1) to procure funds needed to redeem maturing bonds or bank loans and to secure cash on hand, and (2) to raise capital to finance capital expenditures. In 2020, issuance by land transportation companies, including railway companies, expanded as the companies needed to raise funds to compensate for significantly reduced revenues caused by government requests asking the Japanese people to refrain from travel and leaving their homes owing to the spread of COVID-19 (Figure 6). Among land transportation companies, East Japan Railway Company (JR East) was the biggest issuer of corporate bonds in 2020, making five issues with a total issuance amount of about JPY430 billion (JPY30 billion in January, JPY125 billion in April, JPY85 billion in July, JPY100 billion in October, and JPY90 billion in December). Proceeds from these bonds were used mainly to secure cash on hand and redeem other interest-bearing debt.

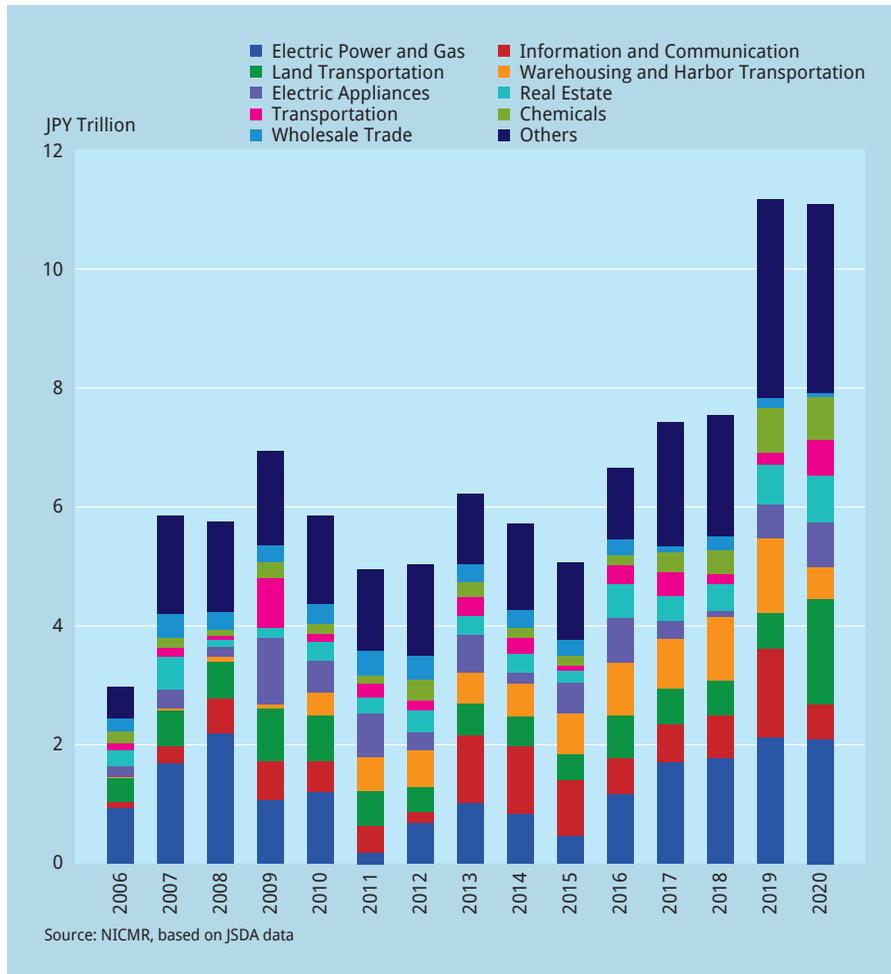
At its April 2020 financial results briefing, JR East announced that it would respond to the financial challenges presented by the COVID-19 pandemic by “securing a certain amount of cash on hand through ‘early, abundant, long-term’ funding.”

West Japan Railway Company (JR West) was the second largest issuer in the land transportation sector in 2020, raising a total of about JPY330 billion through three issues (JPY190 billion in May, JPY110 billion in August, and JPY30 billion in December). JR West mainly used these funds to repay debts and cover capital expenditures.

At its financial results briefing in July 2020, JR West indicated it would be raising large amounts of funds at an early stage, fundamentally using long-term funds.

In the JR West Group Medium-Term Management Plan 2022 announced in May 2018, the company indicated that its financing strategy would prioritize safety and growth investment while also enhancing shareholder returns and not reducing debt. However, considering the changes in the external environment caused by COVID-19, the company announced revisions to its plan in November 2020, reprioritizing its use of medium- to long-term funds. Investment in safety is now its highest priority, followed by debt reduction, capex for growth, and then shareholder returns. As for safety investments, JR West indicated that the total amount would be limited to some extent but that it would steadily advance investments necessary to enhance safety.

**Figure 6: Bond Issuance by Industry (excluding Financial Industry)**

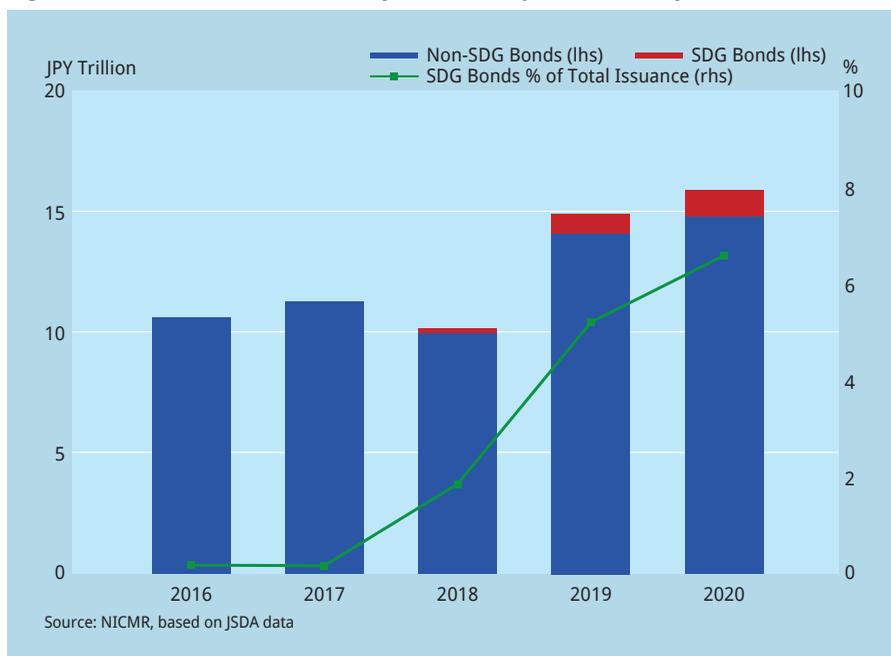


**Expanding issuance of SDG bonds**

The issuance of SDG bonds in Japan’s publicly offered corporate bond market has been increasing in recent years. Nomura Research Institute made the first offering of a green bond in September 2016. ASICS followed with the first sustainability bond issue in March 2019, and ANA Holdings issued the first social bond in May 2019 (Figure 7).

Green bonds account for the largest share of SDG bonds issued in Japan’s publicly offered corporate bond market, accounting for 48% of all such issues in 2020. The issuance of green bonds has been promoted by Japan’s Ministry of the Environment (MoE), which launched a green bond support program in 2017 and then in 2018 established its Financial Support Programme for Green Bond Issuance, which offers subsidies to help cover the expense of green bond issuance. To date, investment corporations, the real estate industry, and electrical machinery makers are among the largest issuers of green bonds. Looking ahead, electricity and gas utilities, which are regular issuers of corporate bonds, could issue a relatively large amount of green bonds. In recent years, we have also witnessed increasing interest in transition bonds, which are used to finance society’s transition to low-carbon and eventually carbon-free economies. Transition bonds are attracting attention in the Japanese corporate bond market.

**Figure 7: SDG Bond Issuance in Japan’s Publicly Offered Corporate Bond Market**



**Conclusion & Future Outlook**

COVID-19 dealt an initial shock to Japan’s financial markets and has continued to seriously affect the nation’s real economy. The financial markets, however, regained stability rather quickly, thanks to the Japanese government and the BOJ’s swift and proactive responses, which drew on lessons learned during past financial crises and other disruptive events.

Japan’s corporate bond market has evolved over the years. The 1980s and 1990s saw a number of measures to liberalize the issuance of corporate bonds, and then in the 2000s efforts were made to vitalize the market. These past efforts



to develop and vitalize Japan's corporate bond market have contributed to the market's relatively smooth functioning as a source of much needed funding during the COVID-19 pandemic.

Amid this pandemic, companies have continued to use the corporate bond market to raise funds, issuing bonds with a more diverse range of maturities as well as SDG bonds.

Looking ahead, initiatives to further stimulate activity in the primary and secondary corporate bond markets companies will continue as companies also continue to use the market to raise funds to overcome challenges presented by COVID-19. These trends will likely contribute to the sustainable expansion of Japan's corporate bond market.

### Note

- 1 For convenience, this article refers to these bonds as green bonds, social bonds, and sustainability bonds.
- 2 Certain pledges made by debtors to secure their ability to fulfill debt obligations under bond guidelines or loan agreements when raising funds through corporate bonds or loans. Typical covenants include collateral provision restriction clauses, net asset value maintenance clauses, dividend restriction clauses, profit maintenance clauses, etc.
- 3 Japan Securities Industry Association, Study Group to Vitalize the Corporate Bond Market, "Initiatives Toward Vitalization of the Corporate Bond Market", July 30, 2012, pp.23. [Japanese only]
- 4 As of end-June 2021. The criteria for announced transactions have been revised from the initial criteria when the system was first implemented.

5 As of the end of June 2021.

6 The BOJ, "Enhancement of Monetary Easing", April 27, 2020.

7 Ordinary bonds, convertible bonds, etc.

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Tominaga earned a Master of Business Administration from Waseda University in 2017.



## KAHLIL ROWTER

Prospera

# Rise of Digital Channels and Retail Investors: A Tale of the Indonesian Financial Sector during the 2020 Pandemic

when only essential activities remained open. By late March 2020, the index had declined around 60%. Since then, the index

has started to recover and by March 2021 it had returned to its pre-pandemic levels (Figure 2). Trading volume has also recov-

## Recent Developments

The COVID-19 pandemic hit the global economy in the first quarter of 2020. The Indonesian economy started to weaken at the end of that quarter and then declined deeply in the second quarter. Later quarters still saw negative growth but with less severity. The 2020 full year record was negative 2% y-o-y. Growth was still negative in the first quarter of 2021, but recovery should take place in subsequent quarters (Figure 1). Still, for the gross domestic product (GDP) level to return to pre-pandemic levels may take longer. Policy choices taken to mitigate the recession will have consequences, as returning fiscal and monetary policies to normal will take some time. The banking sector and financial markets will also need time to go back to normal behaviour.

When the COVID-19 pandemic hit, the Jakarta Composite Index dropped a lot. At first, the decline was in tandem with global indices late in 2019 and at the beginning of 2020, but then local transmission of the virus took place and investors began selling off. The big decline took place

Figure 1: Indonesian GDP Growth

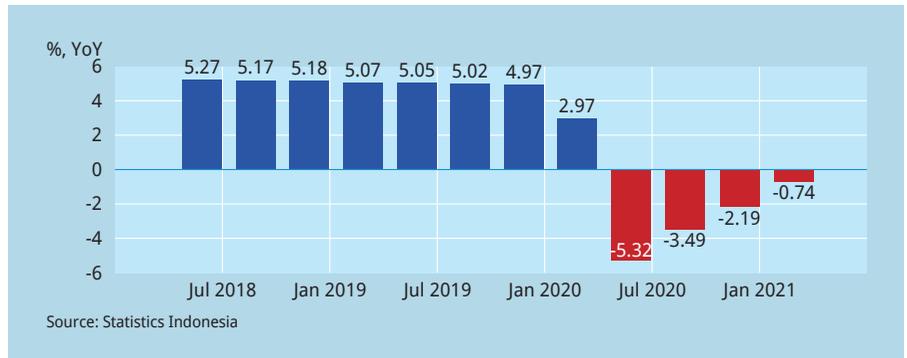
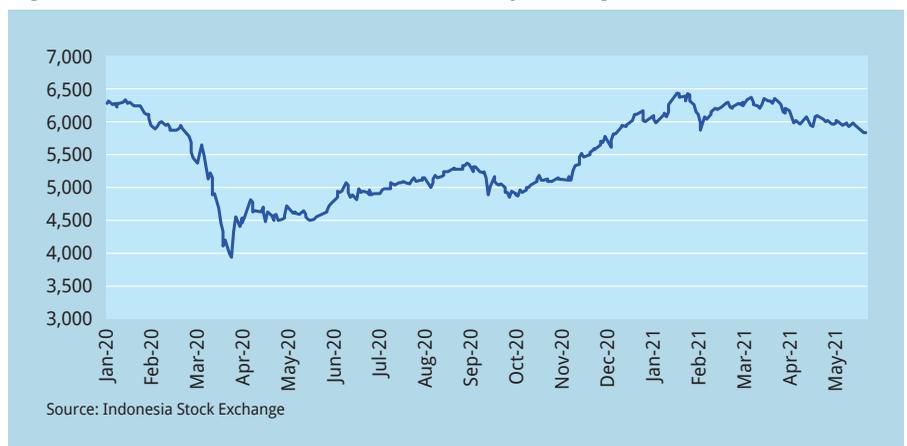


Figure 2: Indonesia Stock Market Index (Daily Closing Price)



ered and even surpassed 2020 levels in the first four months of 2021.<sup>1</sup>

In the government bond market, the 10-year benchmark yield rose 128 basis points in March 2020 (Figure 3). The main sellers were foreign investors who reduced their ownership by around IDR100 trillion in the first four months of 2020. Meanwhile commercial banks and the central bank continue to accumulate government bonds. For banks the rationale was clear, lending was stagnant while liquidity remained ample. Liquidity in fact rose as the central bank relaxed capital standards and the Ministry of Finance deposited funds into the banking sector. This was a measure to support the economic recovery program.

Besides, when the sell-off started the central bank stepped in to stabilize the market. This added to the supply of IDR in the market. Bank Indonesia also intervened in the currency market to stabilize the currency. This was necessary as foreign investors sold their IDR positions for USD to transfer home.

By August 2020, the 10-year government bond yield had returned to pre-pandemic levels (Figure 3). Throughout the year 2020 and into 2021 daily trading volume remained stable. The recovery of the government bond yield is remarkable considering several developments. First, Bank Indonesia cut policy rates by 150 basis points from January 2020 to April 2021. Second, the fiscal deficit rose to over 6% (from below 3%) as spending rose and revenues dropped. And third, foreign investment in government bonds has not recovered.

It was fortunate that in 2020, very few corporates went into financial distress. Those that did were already under financial pressure before the pandemic. For

example, the state-owned airline Garuda Indonesia and construction firm Waskita Karya were already under financial pressure before 2020. Also, no systemic financial institutions came under severe pressure during the pandemic.

## Structural Changes in the Financial Markets

Despite recovering market indicators, several structural changes will have longer term consequences. Ownership changes in the stock market are one example. In 2020 foreign investors sold down their positions. There was a slight inflow in January 2021, but outflow restarted in March and April 2021. The result is that foreign ownership in the stock market declined from around 45% in 2019 to around 40% in April 2021.<sup>2</sup>

In the government bond market, large ownership changes also took place in 2020. First, was the decline in foreign ownership. From a position of 39% early in 2020, it dropped to 25% by the end of the year. At the same time commercial banks raised their ownership from 23% to 37%. And Bank Indonesia also increased its ownership from 11% to 26% of the total outstanding.

When the government bond market came under pressure Bank Indonesia started stabilization moves, especially in March and April 2020. The central bank and the Ministry of Finance then agreed

on a sweeping policy change that consisted of two components. The first was a large one-off Bank Indonesia participation in the primary market and the second was participation in further auctions. The one-off transaction was IDR400 trillion and the second part amounted to IDR70 trillion.<sup>3</sup> By March 2021, the central bank had bought an additional IDR65 trillion.<sup>4</sup>

Another significant development was the record increase in retail investors. In 2020 there was a 67% rise the number of accounts. The increases were 53%, 79% and 46% in the equity, mutual funds, and retail government bond accounts (Table 1). This was the largest annual increase for any of the accounts on record.

This increase in retail investors occurred in a recession, with a drop in consumption and rise in unemployment. One explanation is that there were many first-time individual investors with ample savings who were pulled into the capital market by low returns in the real sector and low bank deposit rates. Meanwhile, low stock indices and bond prices promised attractive valuations. It also means that there is confidence that the financial markets will remain resilient.

It is too early to tell if the rise in retail investors means stability of financial flows in the future. On one hand, the rise in the small investor segment means a more balanced spread of ownership. But retail investors usually have a shorter investment horizon. Once deposit rates and real sector investments recover, we will see to what extent these investors remain.

Aside from individual accounts, there was also a sharp rise in fintech accounts. This was particularly true for the peer-to-peer lending segment. In 2020 the number of lenders, borrowers, and

Figure 3: 10-year Indonesian Government Bond Yield

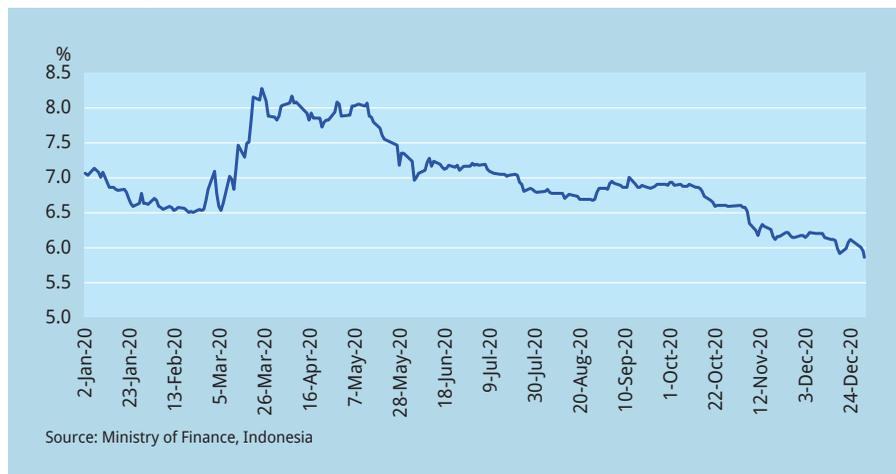


Table 1: Number of Investor Accounts in the Indonesian Capital Market

	Thousand Persons		
	2018	2019	2020
Equity	852	1,105	1,695
Mutual Funds	996	1,774	3,175
Government Bond Accounts	195	316	460
All	2,043	3,195	5,331

Source: Indonesia Central Securities Depository (KSEI)

**Table 2: Indonesian Fintech Key Lending Statistics**

Data	19-Dec	20-Mar	20-Jun	20-Sep	20-Dec
Lender Accounts (000)	606	640	659	682	717
Borrower Accounts (000)	18,569	24,158	25,768	29,217	43,561
Assets (IDR Trillion)	3	3.7	3.2	3.3	3.7
Average Disbursed Loans (IDR Million)	99.7	122.5	135.7	142.5	113.8
Outstanding Loans (IDR Trillion)	13.2	14.8	11.8	12.7	15.3
NPL (Over 90 Days Due)	3.7%	4.2%	6.1%	8.3%	4.8%

Source: Mandiri Sekuritas

amount of outstanding loans rose 18%, 135% and 16% respectively (Table 2). Ease of borrowing and the increased need to borrow may account for this rise.

The number of borrowers rose faster than the number of lenders and the amount of outstanding loans, which resulted in a decline in the average size of loans. This could mean that these loans were for consumption instead of investment. Note that the flat non-performing loan (NPL) levels suggest fintech lenders could select high quality borrowers.

The number of borrowers spiked in the fourth quarter of 2020, which was when economic activity was recovering and restrictions on peoples' movement were relaxed. At the same time government social handouts were still taking place. Hence, the increase in borrowers may point to a higher number of workers losing their jobs. They were likely also to run out of cash while not being eligible for government handouts.

## Rise in Digital Channels

A rise in digital channels also took place in banking, the payment system and e-commerce. For example, in 2020 Bank Mandiri, the largest bank in Indonesia and a state-owned firm saw a 40% increase in the number of online users and a 43% increase in transaction values. Online transactions overtook ATMs in transaction values from the first quarter of 2020. Meanwhile the two channels remained at par in frequency until the end of the year. Going forward,

online transactions will likely dominate ATM transactions.

Another example is Bank Negara Indonesia (BNI), which is the fourth largest bank in Indonesia and state-owned. It saw a 60% rise in the number of mobile users, and close to a 50% rise in both online transactions value and frequency. But still, mobile and ATM channels remained almost equal in frequency and transaction value until the end of 2020. This may be because BNI has more ATMs in smaller towns.

Bank Rakyat Indonesia (BRI) is an interesting example of the rise in digital channels. It is state-owned and it has the most extensive network in Indonesia. Despite a 132% rise in the frequency of internet banking in 2020, the number of ATM transactions remained 37% higher. It appears that transactions in remote regions were still ATM-based.

Besides the general relative decline in ATM transactions, use of bank branches also fell. Bank Mandiri reported that branch use dropped 1% during 2020. Branches still serve small businesses which rely on cash for payments, but going forward they will likely move to digital payment means.

Before the pandemic the banking community expected that digital channels would dominate by the year 2023. As it turns out, the pandemic accelerated this by three years.

Another growing digital channel segment is e-commerce. In 2020 the gross market value (GMV) of e-commerce was USD32 billion, a 54% increase from 2019. E-commerce should grow by around 21% compound annual growth rate (CAGR) to reach USD83 billion in 2025. At the same time the digital economy should double from 4% of GDP in 2020 to 8.1% in 2025.<sup>5</sup> Yet e-commerce remains a tiny part of the consumer goods market at around 5%.<sup>6</sup>

Tokopedia and Gojek, Bukalapak and Shopee are the main drivers of e-com-

merce growth. There has also been a recent development in online fresh produce delivery, which became popular during the movement restrictions in 2020 when these firms grew 5 to 10 times. Some of them have linked-up with major e-commerce players. Post-lockdown, fresh produce delivery appears to remain higher than before the pandemic. This phenomenon also occurred in most other ASEAN countries. Going forward, online sales will rise and displace sales at brick and mortars stores. A few supermarket chains in Indonesia were early victims, for example Giant, while other chains are reducing the number of their stores.

## Regulatory Responses

The Ministry of Finance, Bank Indonesia and the Financial Services Authority (OJK) are the main financial sector regulators. They each issued policies to contain the effect of the pandemic on the financial system, but more regulatory power was needed. Hence, the government issued an emergency regulation, which became law number 2 / 2020, giving expanded powers to these authorities. The overarching goal was to preserve confidence in the system.

One important policy action was to expand the fiscal deficit, but only on a temporary basis until 2023, in order to allow the government to increase spending while tax revenues were declining. The 2020 budget deficit was thus raised from 1.7% of GDP to 6.34% in 2020. This new budget supported an economic revival plan with a focus on health, social assistance, and corporate support.<sup>7</sup>

Financing for the economic revival plan partly came from Bank Indonesia. Agreement between Bank Indonesia and the Ministry of Finance paved the way for this. The central bank supported the deficit to the tune of IDR400 trillion at first. It also participated in government bond auctions as a standby buyer. Absent this, market-based deficit financing would be disruptive.

OJK relaxed lending standards for banking and finance companies, making loan restructuring easier. These measures are effective until March 2022. Other mea-

asures include extension of reporting deadlines and online meetings for regulatory compliance. Similar relaxations were also issued for insurance and pension funds.

For capital markets, new regulations focus on maintaining operational integrity and market stability. They include first, permitting online shareholder meetings; second, permitting several corporate actions for companies undergoing restructuring; third, reducing disclosure requirements for financial firms undergoing restructuring; and fourth allowing public firms to buy-back their shares without shareholder approval. These exclusions need regulatory consent.

The impact of these regulations was positive. First, financial panic was averted despite the large market correction. Second, no systemic financial firm went under. And third, the stock and bond markets rebounded within a few months.

In 2020, several firms defaulted on their debt instruments, and some underwent restructuring, but they were already in financial difficulties before the pandemic. One major company that got hit was Garuda Indonesia. Flight cancellations during the pandemic added to its financial woes. In 2020 Garuda Indonesia got a 3-year extension on its USD500 million global bond. Other troubled companies were the state-owned construction company Waskita Karya, which lost IDR7.4 in 2020, and the state-owned railroad company which booked a IDR1.6 trillion loss in 2020.

## Challenges Ahead

Going forward Indonesia's financial sector faces old as well as new challenges. Old issues include trust, governance and the gap between financial literacy and inclusion. Trust and governance relate to weak consumer protection. New challenges stem from the impact of recent policy choices. These include the enlarged fiscal deficit and large bank ownership of government bonds. Also, there are challenges surrounding the upcoming listing of tech unicorns.

Trust in the financial system was dented with the discovery of fraud at several large state-owned insurance companies. One was Asuransi Jiwasraya, one of

the largest insurers in the country, which reportedly had been investing in questionable stocks that then lost value. Key personnel and a few other market participants were convicted by the corruption court. The losses amounted to IDR37 trillion. In response, the government created an insurance holding company to absorb Asuransi Jiwasraya and next, the state will inject fresh funds to partly compensate policy holders.

Another problem company is Asabri, insurer of armed forces personnel. Similar to Asuransi Jiwasraya its management also invested in dubious stocks. The resulting loss was about IDR23 trillion. A few key Asabri personnel are now accused in a criminal proceeding, but recovery and bailout are not clear.

In addition to issues of trust and governance, a second continuing challenge for the financial system is the gap between financial literacy and inclusion. The gap is quite large, with financial literacy recorded at 38% while financial inclusion was at 78%. Financial literacy means to what extent an individual has knowledge about basic financial products, while financial inclusion means that an individual has access to basic financial products such as a bank account.<sup>8</sup> This gap is becoming critical on account of two factors. First, a large part of the population has access to smartphones and is digitally savvy. Second there have been aggressive campaigns by several illegal fintech lending firms. This highlights the need for consumer education and protection. Towards this end the government has pushed for digital literacy campaigns. The latest campaign was in April 2021 by the Ministry of Communications,<sup>9</sup> while on consumer protection OJK is strengthening the dispute settlement framework. A recent initiative is to combine several alternative settlement bodies.<sup>10</sup>

Among the new challenges is reducing the deficit back to the 3% ceiling starting in 2023. With the slow economic recovery in 2021 tax revenues will remain weak. This slow recovery owes to several factors. First is the slow response to the pandemic last year. Second is the large informal sector where economic actors have little financial buffers. And third is the tenuous linkage with the global economy. On the positive side Indonesia has been quick to roll-out a vaccination program which was first focused on healthcare and essential workers and the elderly.

Another upcoming challenge is the need for the central bank to taper its large ownership of government bonds, at least in the medium term. As of May 2021, Bank

Indonesia's holdings of government bonds amounted to IDR980 trillion. As a result of the central bank's fiscal support, broad money grew 12.4% in 2020 compared with GDP growth of -5.3%. This means in the medium term the central bank will need to reign in money growth. In the short term this runs against the need to maintain low interest rates to boost economic growth.

In the banking sector, there are two main challenges ahead. First is how to manage the rise in NPLs once the relaxation policy is over and second is how to sell down the sector's large ownership of government bonds. As of February 2021, around 18% of bank loans are being restructured, affecting close to 8 million borrowers, around 40% of which are small-to-medium scale enterprises. How these restructuring exercises fare would depend on resumption of commercial viability. Some sectors may not recover at all. These include transport and the hotel sectors. Now the prospects remain grim, especially in tourist destinations like Bali. State-owned banks are looking to write off loans that have no recovery prospects.

On the second issue, around 17% of banking sector assets now consists of government bonds. Loan growth in the future would entail reducing this amount. But a large sell down of government bonds can put severe pressure on the market. Besides there is also the capital adequacy consideration. Government bonds are safe assets and have zero weight in capital adequacy calculations, which is why the banking sector is under no pressure to raise equity. But replacing government bonds with corporate loans will pressure banks' equity.

In the equity market there is a significant new development: the coming listing of tech unicorns like Go-To (Gojek and Tokopedia) and others. These firms might conduct dual listing in Jakarta and another exchange. This would attract foreign (and domestic) investors into the Indonesian capital market and it will raise the weight of the Indonesian market in MSCI indices.

There are three key concerns regarding these prospective listings. First is the issue of different shareholders having different voting power. This is a common feature among tech firms that went through several funding rounds, and yet it is not recognized in the Indonesian regulatory structure. Second, there is no dual listing regulation in the Indonesia stock exchange. And third is the profitability rule. Most of these unicorns have not been profitable recently. Still, the Indonesian stock market is reviewing the regulations to accommodate these listings.

## Conclusions

The Indonesian capital market showed remarkable resilience during the pandemic. The stock index and government bond prices have returned to pre-pandemic levels. And yet, significant structural changes took place. And these will affect how the capital market evolves in the near and medium term. Policies taken in 2020 will impact monetary and fiscal policies going ahead.

First is the large size of central bank purchases of government bonds as a result of the early intervention in 2020 and later central bank support to finance the fiscal deficit. At some point the central bank needs to reduce its holding of government bonds. This will be in tandem with reducing money supply growth, which saw a large uptick during 2020. But the timing will be tricky as interest rates need to remain low to speed up economic recovery.

Next is the relaxation of lending standards issued by OJK. Once the relaxation expires, only loans of firms that weathered the storm can remain current. The rest will end up on banks' books as NPLs. Also, the restructuring done during the relaxation could depress earnings for a while. Another issue for banks is how to sell down their large ownership of government bonds.

The outcome of these regulatory changes was successful maintenance of confidence. Those firms that came under pressure were already in stress before the pandemic. One example was Garuda Indonesia, the state-owned flag carrier. It was already teetering before the pandemic, but travel restrictions made things worse. The company is now going into a major restructuring.

On the fiscal side, the government needs to return to a deficit of 3% in 2023 from the current level around 6%. A weak economy complicates this effort in addition to the need to continue spending heavily on health and social and corporate support.

For the stock exchange the challenge ahead is to handle listing of several tech unicorns. The authorities are also working to overcome long-standing issues including improving trust, increasing financial litera-



cy and improving consumer protection. In the insurance sector, the government has formed a new insurance holding company and it plans to inject fresh capital to partly compensate Asuransi Jiwasraya policyholders. On literacy the government has various initiatives to raise digital literacy. For consumer protection, OJK is enhancing the alternative dispute settlement institutions.

### Notes

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### KAHLIL ROWTER

Senior Advisor, Prospera

Kahlil Rowter has over 30 years' experience in academics, the corporate world and the capital market. He is now a senior advisor in Prospera, an Australian-Indonesian government partnership program for economic development. He is also the independent commissioner at Danareksa Investment Management.

Until 2018 Kahlil was the chief economist of PT Danareksa Holding. He advised on economics across various lines of Danareksa business, including securities brokering, investment banking, asset management, treasury, and private equity.

From 2007 to 2010 Kahlil headed Pefindo, the largest debt rating agency in Indonesia. In 2009 he initiated the PEFINDO25 Index (for small and medium-sized enterprises) with the Indonesian Stock Exchange. He also initiated valuation coverage for small cap shares. Pefindo also underwent an ISO 9000 certification under his guidance. He was also a board member of the Association of Credit Rating Agencies in Asia where he helped in the formulation of Asian Credit Rating Best Practices.

Earlier, Kahlil spent over 10 years in Danareksa, Mandiri Sekuritas and CIMB in succeeding senior positions in fixed income and economic research.

Kahlil also lecturers at Universitas Indonesia's Graduate School of Management.

# Facilitating Market-Based Financing for the Informal Economy

## Introduction

The recent COVID-19 pandemic has caused a multidimensional global crisis. It has adversely affected economic growth and caused a sudden halt of business operations due to closure of external borders by many countries. However, the most visible effect of the pandemic outbreak has been to the self-employed, casual and gig-workers, and small-scale entrepreneurs and businesses, which can be commonly described as those people and enterprises in the informal economy. In the developing world, the informal sector is a pervasive phenomenon, with more than 2 billion people, representing 60% of workers and 80% of enterprises.<sup>1</sup>

The term informal economy has no generally accepted definition. While the official definition of the International Labour Organization (ILO) states that the informal economy is “all economic activities by workers and economic units that are — in law or in practice — not covered or insufficiently covered by formal arrangements”, globally, many terms have been used to illustrate the informal

economy, such as “underground”, “shadow”, or “parallel” economy. Yet, whatever images come to mind, the informal economy typically encompasses a broad range of unregulated and unreported income from the production of legal goods and services, either from monetary or barter transactions.

For instance, an airline crew member with a second job retailing craftwork on the web, a social media influencer (also known as a Key Opinion Leader [KOL]) undertaking a livestream marketing job for a renowned brand, or an individual engaging in livestream e-commerce who does not declare his earnings to the national inland revenue board are all examples of the informal economy. These activities add up to billions of dollars that take place off the books and out of the gaze of tax collectors and government statisticians.

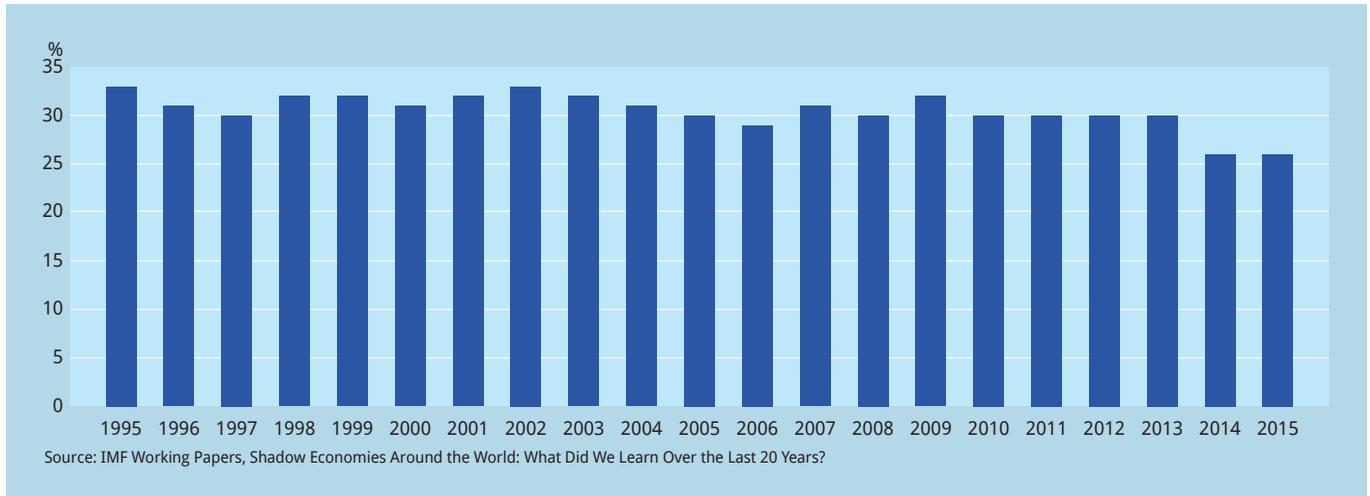
Informal economic activities have long been a fact of life—and are ever increasing around the world. According to Friedrich and Christopher (2003),<sup>2</sup> the Asia Pacific region’s informal economies have grown considerably since 1989-90, and may potentially threaten the veracity of the fundamental information system that monitors economic activity and forms the basis of both business and governmental policymaking. While there is no single accurate methodology for estimating the size of the informal economy, since much of the action takes place out of sight, the presence of a vast informal economy may distort measures of growth, unemployment, inflation, savings, and

productivity, as well as accurate measures of income inequality.

For Malaysia, discussions around the informal economy are crucial. The existence of a massive informal economy is both a driver of its economic growth as well as a hindrance. According to an International Monetary Fund (IMF) study,<sup>3</sup> while the informal economy in Malaysia has been trending lower from an estimated 33% of gross domestic product (GDP) in 1995 to 26% in 2015, the average share for the period 1995-2015 was 31.5% (Figure 1). The working paper published in January 2018, analysed the results of the informal economy for 158 countries for the period 1991-2015 and found that Malaysia’s informal economy is particularly significant compared to other Southeast Asian countries such as Singapore (11.9%), Vietnam (18.7%), and Indonesia (24.1%), and even more acute compared to members of the Organisation for Economic Cooperation and Development (OECD) — where it averages around 13-15% of GDP. According to the latest estimates by the Malaysian government, the country’s informal economy accounts for 21% of GDP, or around an estimated RM300 billion,<sup>4</sup> and makes up 8.3% (or over 1.2 million workers) of the labour market.<sup>5</sup>

While this large informal sector has undeniably created jobs, it also came at a cost for both the government as well as the business sector in general. First, it deters the development of inclusive economic development as it deprives potential tax revenues to finance socio-econom-

**Figure 1: Malaysia Shadow Economy as a Percentage of GDP**



ic development projects for the public. Second, it is exceedingly challenging for the informal businesses to access any incentives provided by the government as well as formal financing facilities as they continue to operate under the business registry radar and outside government purview.

The current pandemic outbreak has clearly demonstrated the severity of this conundrum. For the government, the fiscal response and debt incurred on COVID-19 relief has added to the considerable red ink already on its ledger following the pandemic-driven global restraint order and border closures. However, with an estimated shadow economy of RM300 billion, for example, a 1% increase in tax collection can translate into RM3 billion in additional revenue for the government to support its development expenditure and obligated operating expenses. For the informal businesses, its implications are straight-forward. Absence from formal business registry and poor transparency will significantly impair the sector's capacity to enter into legally binding contractual obligations and access to capital markets, if needed, for further growth. And that is not all. Rapid globalisation, fast evolving business ecosystems shaped by the acceleration in technology development and adoption, as well as the rise of the gig or sharing economy have further complicated matters for the policymakers to track, measure and provide necessary support for the informal economy. Policymakers' ability to improve engagement with the informal sector is therefore integral to enhancing overall financial inclusion which supports the 2030 Sustainable Development Goals (SDGs) in terms of sus-

tainable development, poverty reduction, decent work and more inclusive societies.

It should be emphasized that what is relevant to policymakers is not just the size of this sector, but also to come up with models that allow the informal economy to coexist alongside the formal economy. Whether it is a street trader, a social marketeer, or a white-collar professional taking on side-line entrepreneurial jobs, these people really do contribute to the economy and to their country. The question is how do we make space for them? And how do we help the informal sector to become more productive, more efficient, and more effective?

## A New Deal for Financing the Informal Economy

The economic consequences of the recent spread of coronavirus are severe and are still unfolding. Nonetheless the crisis has brought the future forward by driving increased demand for digital transformation in both the business and financial services sectors. It has led to many crucial innovations in the way businesses and financial services operate and has undeniably accelerated the digital transformation agenda on all accounts. It has spawned new consumer behaviours that in turn spur new ways of working.

Take the recent example of a KOL

for instance. A regular girl in Taiwan named Hung Chien-shu, better known by her YouTube handle Chien's Eating, rapidly became a popular influencer and entrepreneur. Chien's Eating does not dance or sing. She has made her name — and a fortune — posting videos of herself tasting and promoting different types of food around her neighbourhood. Through her postings, she has managed to garner hundreds of thousands of followers. Difficult as it may be to believe that online viewers throng to watch strangers eating, Chien's Eating has surged in popularity and her videos have attracted over 700,000 views — roughly the same number as her 800,000 subscribers at the time.<sup>6</sup> Amongst her videos, there is one in which Chien laughs and goofs around while eating a dozen packs of ginger paste black sesame oil noodles — a noodle that she manufactured herself. The noodles were later marketed to the public as Sui Ooh Noodles. In the months after the video was released, Sui Ooh Noodles were mass produced and quickly offered on many retailers' shelves across Taiwan, Korea<sup>7</sup> and Singapore.<sup>8</sup>

Behind Chien's success is not just her creativity and a conducive business environment accelerated by technology advancement, but also the presence of PressPlay — one of Taiwan's big YouTube management companies. The name PressPlay probably means little to some people, but to the online community, it represents content creation and sharing. The platform focuses on helping influential YouTubers forge their own brands by helping them to create original and valuable content, employing the foremost creative minds in development, production, post-production, and quality improve-

ment. PressPlay handles not just content management and operations, but also attempts to unearth and develop any potential young stars (YouTubers).

Chien's example illustrates that the social variant of a KOL is open to everyday people who gain significant social influence. Many others hope to one day make a living through online activities based on their "social capital" as well. Such activity has become part of the informal economy and is likely to stay in the years ahead.

To move forward in an increasingly challenging environment brought about by the recent pandemic outbreak, businesses and markets within the informal economy must reinvent themselves. The sector needs to create structures in which participants can pool their resources and extend their reach and power. Finance needs to be redefined as well to create solutions that enable better outcomes for the informal economy. Policymakers can consider the following initiatives and strategies to support as well as broaden the financing options for the informal economy.

#### **Formalising the informal — co-operatives to promote inclusive development**

The traditional cooperative business has long been in existence as a form of organisation in which members voluntarily come together to satisfy their common needs with due regard to individual capacity, autonomy, and equality. Now, with advancements in technological platforms it is even more possible for this business model to provide a simple yet effective solution to formalise the informal economy and for cooperatives to operate in new ways with greater opportunities to scale. As more and more people manage their work and resources through digital platforms, cooperatives can offer far more benefits than any individual business unit could ever achieve on its own. A report by Nesta and Co-operatives UK<sup>9</sup> highlights a typology of the different platform co-op types which are emerging in the UK as well as the way forward in terms of a new funding model for platform co-operatives.

In all cases, the goal of cooperatives has been to enable members of an under-served community to improve their economic condition by working together in ways that are more productive. These are businesses where ownership rests with their cooperative members, and not with distant investors as in the case of corporations. Thus, the overriding aim of cooperatives goes beyond maximising financial returns. It prioritises other

aims such as member involvement in decision-making, long-term planning, and more equitable pay.

Globally, cooperatives are effectively being adapted to lift people out of poverty and carry out the transition of smaller businesses to the formal economy. Whether they are providing financing for informal sellers and traders on the street in Nairobi to upgrade their activities,<sup>10</sup> improving income of homeless shoe-shiners in Uganda,<sup>11</sup> or empowering artisan women to become self-reliant in Canada,<sup>12</sup> cooperatives have proven to provide people effectively and efficiently with a voice, representation and empowerment, while also generating an array of instruments for entrepreneurial development.

According to the 2019 World Co-operative Monitor, the top 300 global co-operatives collectively reported a total turnover of over USD2 trillion.<sup>13</sup> As such, cooperatives should be seen not only as a constellation of small enterprises that provide limited jobs, but also as a considerable potential force for local and regional development. For instance, Japan's Consumer Cooperative Union — comprising over 320 consumer cooperatives with 29 million members — not only manages its members' product development and supply, it also carries out various activities and educational programs for members such as planning and promoting campaigns jointly held by member co-ops nationwide as well as publishing educational materials.

In today's economic uncertainty, where individuals or small businesses may feel powerless to change their livelihood, cooperatives represent a strong, vibrant, and viable economic alternative. Similarly, the cooperative movement model is not something new to Malaysia. It has been able to elevate its position as a powerful economic model as some examples in the agricultural, brewery purchases and financial services industries show. Today, Bank Kerjasama Rakyat Malaysia has become one of the top 300 cooperatives in the world and the biggest Islamic cooperative bank in Malaysia with turnover in 2017 totalling USD1.63 billion. This illustrates how cooperative models can be utilised to raise the social and economic status of rural communities, as well as promote equitable distribution of wealth and opportunities — a jurisprudence that is aligned with the country's Islamic finance principles.

The proposed recommendation concerning the transition from the informal to the formal economy can be an

important opportunity to recognise and promote the contribution of cooperatives in this respect. Appropriate regulation of cooperatives makes it possible to organise their constituents, i.e., the informal economy, and subsequently have them, both individuals and entrepreneurs, take decisive steps towards onboarding the formal economy. Policymakers could encourage the formation of cooperatives by providing incentives for members to move downstream in the value chain to gain access to new markets and consumer information. Policymakers could then impose more meaningful tax obligations on cooperatives instead of taxing individuals and entrepreneurs within the informal economy.

#### **Dig deep into the data**

Imagine a scenario where a self-employed YouTuber like Chien was in a fix and had applied for a loan but her application was rejected as her credit score did not generate enough data to establish her creditworthiness. Like Chien, many hopeful loan applicants are facing difficulties due to lack of credit history. And this happens to be a vicious cycle. In the case of a low or non-existent credit score, they are unable to get loans, and hence cannot further improve their credit profiles. The World Bank Global Findex Database reports that almost two billion adults do not have a bank account, let alone a FICO or other scoring methodology assessing their creditworthiness.<sup>14</sup> In the absence or scarcity of data, is it possible to accurately determine someone's creditworthiness and if not, what are the options available to overcome this challenge?

One can look at alternative credit scoring to improve his or her chances of successful loan application and subsequent disbursement. Underwriting of the risk in borrowing has traditionally focused on the applicant's capacity to repay. Even with absent or low credit scores, the alternative credit score can be utilised to bolster chances of procuring loans from banks and financial institutions. The model shifts towards a "propensity-to-pay" approach that incorporates broader non-financial characteristics and behaviour of an applicant, rather than the typical parameters such as collateral, repayment history etc., employed in the traditional credit rating framework. Alternative credit scoring utilises a broader set of data on the loan applicant such as utilities payment history, banking activities, e-commerce shopping experience, financial literacy, and spending patterns to

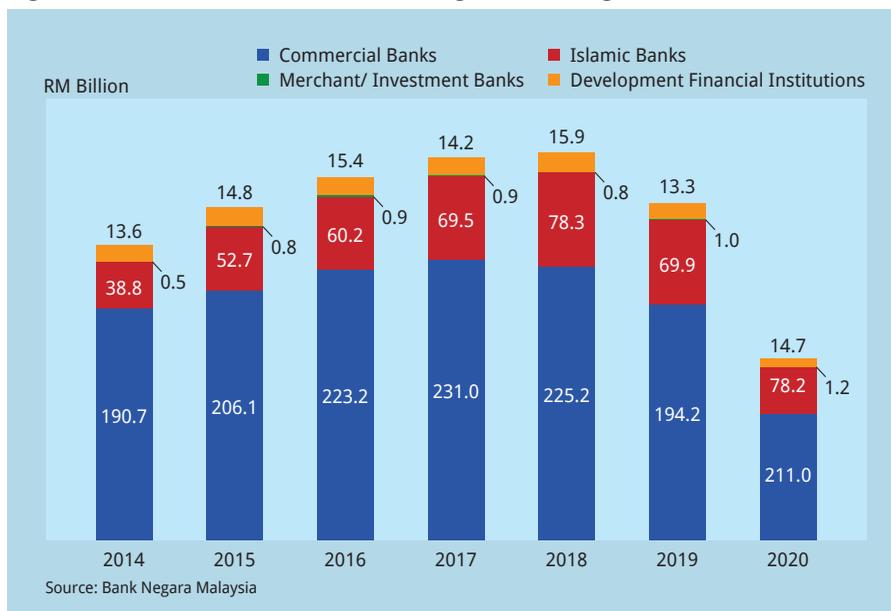
indicate a person's understanding of debt and responsible borrowing. It involves substantial application of technology and digital footprints like social media and mobile and internet usage to determine if the prospective applicant meets repayment requirements.

The benefits of alternative credit scoring are two-fold. By extending access to credit, applicants who are new to the credit and loan ecosystem can still avail themselves to loans irrespective of sufficiency of credit scoring data in traditional channels. Lenders too can employ alternative credit scoring to increase their penetration in previously uncharted territory like semi-urban areas or green field sectors while keeping fraud and default risk at bay with more meaningful data.

With the advent of big data and the ever evolving domain of information and communication technology (ICT), the way people view lending, credit, and financing has undergone a sea change over the last few years. Be it payday loans, invoice financing, or business-to-business (B2B) financing, the way businesses access credit today is far different from what it was almost a decade ago. Traditional scoring frameworks have not been able to keep up with this radical shift in the way of assessing the creditworthiness of a potential loan applicant. This lag may potentially widen the gap between demand and supply of financing for smaller businesses or micro, small and medium-sized enterprises (SMEs). Smaller businesses' loans outstanding at Malaysia-based financial institutions witnessed trivial increments over the last few years, from a total of RM243.6 billion in 2014 to RM305.1 billion in 2020 (Figure 2). Between 2014 and 2020, SME loans outstanding at commercial banks and development financial institutions recorded minor increases in annual growth of 1.7% and 1.3% respectively. Comparatively, SME loans outstanding for Islamic banks and merchant banks recorded higher annual growth rates of 12.4% and 15.7% respectively over the same period. Although financial institutions today are better capitalised and have sufficient liquidity to manage mortgage delinquencies compared to during the 1997 Asian Financial Crisis, many FIs have exercised prudent judgement in underwriting risks for smaller business loans, particularly in a low interest rate environment — when investment income is likely to be impacted.

Additionally, alternative fundraising avenues such as equity crowdfunding (ECF) and peer-to-peer (P2P) financing were introduced to help meet the needs

**Figure 2: 2014-2020 SME Loans/Financing Outstanding**



of smaller businesses to finance working capital or fund business expansion. To date, there are a wide variety of small businesses issuers, ranging from manufacturing to retail trading, that have successfully raised financing through ECF and P2P financing platforms. Since the frameworks' debut in 2016, ECF and P2P fundraising activities have grown rapidly, from RM70 million in 2017<sup>15</sup> to RM1,334.9 million<sup>16</sup> collectively in 2020 (Figure 3). Over this period, the ECF and P2P markets marked cumulative annual growth rates of 82.4% and 212.5% respectively.

Despite the positive progress made to broaden financing avenues in Malaysia, these developments have only scratched

the surface when it comes to addressing the SME funding gap, let alone the funding gaps in the informal economy. The regulatory requirements spelled out under the ECF and P2P frameworks only allow public incorporated companies to raise capital and exclude smaller proprietary businesses or individuals like Chien in the informal economy from participation. The reason is obvious and understandable — to ringfence assets and protect investors. However, more work needs to be done if the country intends to make the system more inclusive moving forward.

There is a whole host of data not being captured by traditional credit scoring methodology, which is inherently back-

**Figure 3: Total Amount Raised Successfully**



ward looking. It does not assess behaviour metrics or a person's future potential. The various interactions that a person like Chien has with her psychometrics and social capital, can help paint a picture of how likely she is to repay a loan. When you turn to big data for solutions to construct financial identities for individuals who have little or no traditional credit history, different answers can be derived. Capital providers could vacuum up every item of data they can legally use—blocked only by the limits of technology and, in some cases, by laws like the Personal Data Protection Act (PDPA) 2010 that govern sensitive information and disclosure of client data—to provide a better assessment of applicants in the informal economy. Instead of sniffing out only credit blacklists, alternative credit scoring offers a glimpse into positive financial behavior that was previously not captured by traditional credit scoring methodology.

Good data analysis and widening the information parameters that could help establish a financial identity for participants in the informal economy are critical steps towards financial inclusion. With the rise of big data and innovation in credit scoring methodologies, the “all data is credit data” approach could become a reality that is just around the corner. The enrichment of applicable credit data—by considering wider behavioral factors and digital footprints—would certainly increase the informal economy's visibility and access to capital market products.

### Catalysing investments through a strategic fund

Since the commencement of the national emergency lockdown in March 2020, the Malaysian government has proactively introduced various measures under the PRIHATIN Economic Stimulus Packages and the National Economic Recovery Plan (PENJANA) to cushion the impact of COVID-19 on businesses and reinvigorate the country's economic growth. Focus has been given to encouraging domestic investments, support smaller businesses as well as enhancing the provision of credit through Bank Negara Malaysia's RM4 billion Targeted Relief and Recovery Facility, RM200 million Disaster Relief Fund, RM1 billion collateral-free High-Tech Facility,<sup>17</sup> etc. Additional measures include granting of stamp duty exemption on instruments relating to approved mergers and acquisitions<sup>18</sup> among SMEs to help strengthen the capacity of local companies and prevent the hollowing out of companies caused by the recent pan-

democratic outbreak.

To assist with the smooth functioning of Malaysian capital markets such that they remain a viable fundraising avenue for businesses, the capital market regulator has provided temporary relief from its listing requirements, allowing for waivers on listing-related fees for initial public offerings (IPOs) and annual listing fees, liberalisation of the obligations set forth under listing rules for companies seeking regularisation plan, as well as lowering the requirements on public securities holding spread from 25% on a case-to-case basis to encourage fundraising and listing on Bursa Malaysia.

To encourage greater investment and diversification into the alternative investment industry such as ECF and P2P, the country's Budget 2021 has allocated RM80 million to match private sector investments in these two channels. In addition, investors under any registered ECF platform will be given a 50% tax break, with a cap of RM50,000, for their investments. The crisis financing provided under the country's pandemic stimulus packages no doubt provided some relief to small businesses. However, it has not reached deep enough to benefit every fabric of society, particularly the informal economy.

In searching for alternatives to mainstream finance, some attention is increasingly being paid to the private markets funds for meeting private sector credit demand. In the US for example, middle market deals have steadily accelerated in both number and value over the last decade, from 1,315 deals in 2010 to more than 3,100 deals in 2019, and from USD193 billion to USD531 billion in enterprise value in 2019.<sup>19</sup> And with global private equity dry powder amounting to USD1.9 trillion as at December 2020,<sup>20</sup> the private funds industry has not only proven its versatility in stepping up investment activities in diverse industry verticals, but also provided abundant liquidity directed to support small business activities affected by the recent COVID-19 pandemic outbreak.<sup>21</sup>

However, it requires distinctive instruments, project pipelines, and measurement ability to be able to channel private capital to more sustainable and equitable financing solutions. Public authorities could focus on catalysing and directing private investment opportunities towards the informal economy by creating a strategic investment fund. To encourage participation from a broader range of investors, the strategic fund could

be structured with initial commitment by the government that co-invests alongside private investors. The fund could pool funding through issuance of community shares,<sup>22</sup> for example, to encourage like-minded investors or communities to “buy-in” to a certain project.

In addition, the fund could be structured in various phases and sectors to address the different needs and priorities of economic growth. Together with the enhancement in risk-reward due to the first-loss protection, this could encourage private investors—such as institutional funds, corporates, and family offices—to invest and finance business activities in the informal economy, where growth is constrained by a lack of access to follow-on financing.

## Conclusion

The devastating effect of COVID-19 has not only affected how businesses—ranging from big conglomerates, through smaller establishments to the informal economy—pursue their fundraising and capital deployment activities, it has also highlighted the constraints on public spending in countering the consequences brought about by the pandemic outbreak. While some would argue that a growing informal economy represents a sign of instability and unpredictability, nevertheless it is undeniable that an economically efficient and democratically organised informal economy can bring about the much needed radical changes required for a country's development to go forward. Alternative evaluation and a new way to attract financial resources to develop the informal economy are needed, especially in times like these.

### Disclaimer and Acknowledgement

*This ICMR report is produced to encourage the exchange of ideas on the issues highlighted in the report, and to facilitate interaction among market participants, policy makers and academics. The views expressed are not those of any of the institutions with which ICMR is affiliated.*



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*The ICMR welcomes any questions or suggestions. Please address your comments to Cheam Tat Hong at [thcheam@icmr.my](mailto:thcheam@icmr.my)*

## Notes

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- 19 <https://pitchbook.com/news/reports/q1-2020-us-pe-middle-market-report>
- 20 Preqin's database.
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- 22 In the UK, community shares refer to the sale, or offer for sale, of more than £10,000 of non-publicly tradeable shares or bonds to communities of at least twenty people, to finance ventures serving a community purpose.

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## EDWIN SHEA PINEDA

University of Asia and the Pacific

# The Philippines: Critical Public Finance Issues due to an Extended Draconian Lockdown

## Contemporary Background

While many economies are slowly transitioning back to normal from the COVID-19 pandemic with economic recovery in sight, the Philippines now has one of the world's longest

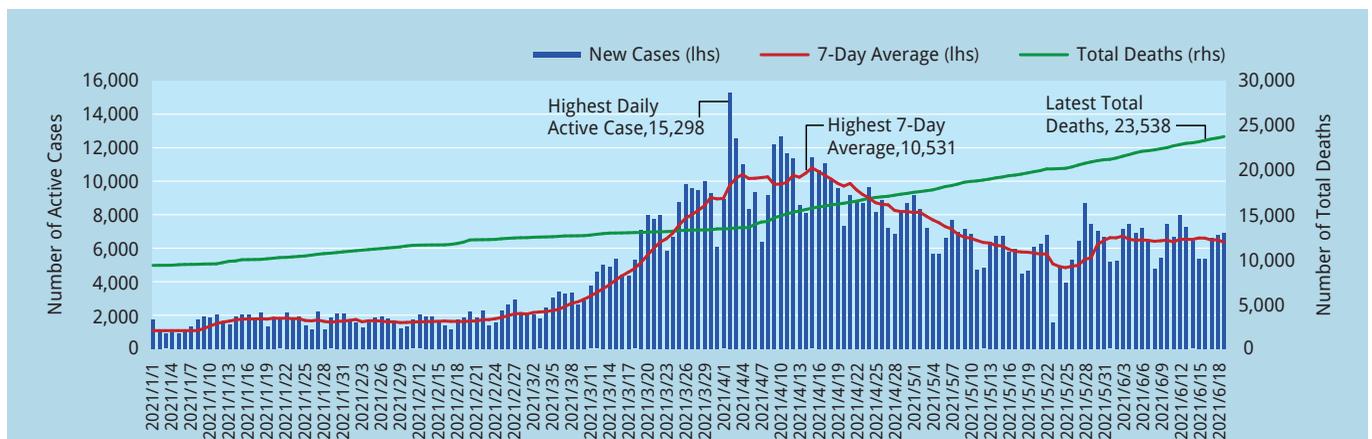
and strictest lockdowns (See, 2021) with no change in sight.

From the very beginning, the Philippines has been slow and vague in imposing necessary measures to mitigate the alarming COVID-19 outbreak. It was in December 2019 when the World Health Organization (WHO, 2020) announced the developing case of severe and “viral pneumonia” in Wuhan, China. It was only on March 15, 2020 when the Philippines was first placed under a month-long lockdown following the declaration of COVID-19 as a pandemic by WHO, but this was already too late.

The situation in the Philippines was already getting out of control—hospitals were overwhelmed, intensive care unit

(ICU) beds were running out, supply of critical medical equipment was depleting, and testing kits were limited. Yet, the only intervention was to put the National Capital Region (NCR) through a series of extended lockdowns with varying degrees of community quarantine according to the magnitude of the outbreak per region: Enhanced (ECQ), Modified Enhanced (MECQ), General (GCQ), and Modified General (MGCQ) Quarantine. As of writing, it has been 460 days since the first lockdown, but the health crisis remains critical. Since January 2021, the Philippines recorded a 15,298 high of newly recorded cases with a 7-day average high of 10,531 active cases, and a total of 23,538 deaths (Figure 1).

Figure 1: COVID-19 Cases and Total Deaths, from January 2021



Source: Philippine Department of Health, Cayton (2021)

A year of community quarantine has not only failed to save peoples' lives, for the rise in active cases is complemented by a sinking economy. The economic trajectory of the Philippines broke its growth streak in Q2 2020 at the peak of the toughest lockdowns, plunging 16.9% due to shocks in both demand and supply (Figure 2). On one hand, the reduction in household consumption and investment negatively affected the productivity of businesses, leaving industries with two options: massively laying off employees or permanent-

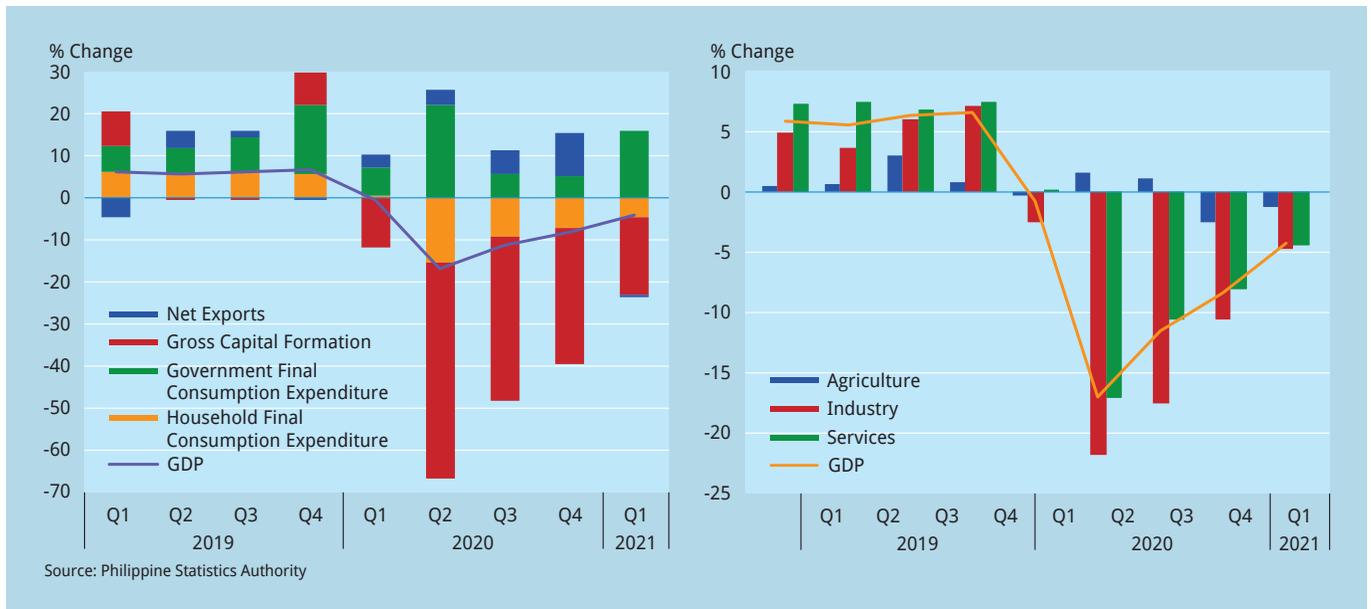
ly leaving the market. On the other hand, intermittent localized lockdowns restricted economic mobility, which heavily disrupted supply chains in the long-run, and diminished the aggregate capacity of the economy to cost-effectively produce goods and services. Posting a full-year drop of 9.6% in 2020, the Philippine economy is at its lowest post-war level and is Southeast Asia's worst-performing economy according to Asian Development Bank (ADB) (BusinessWorld, 2020).

The Philippine government resorted

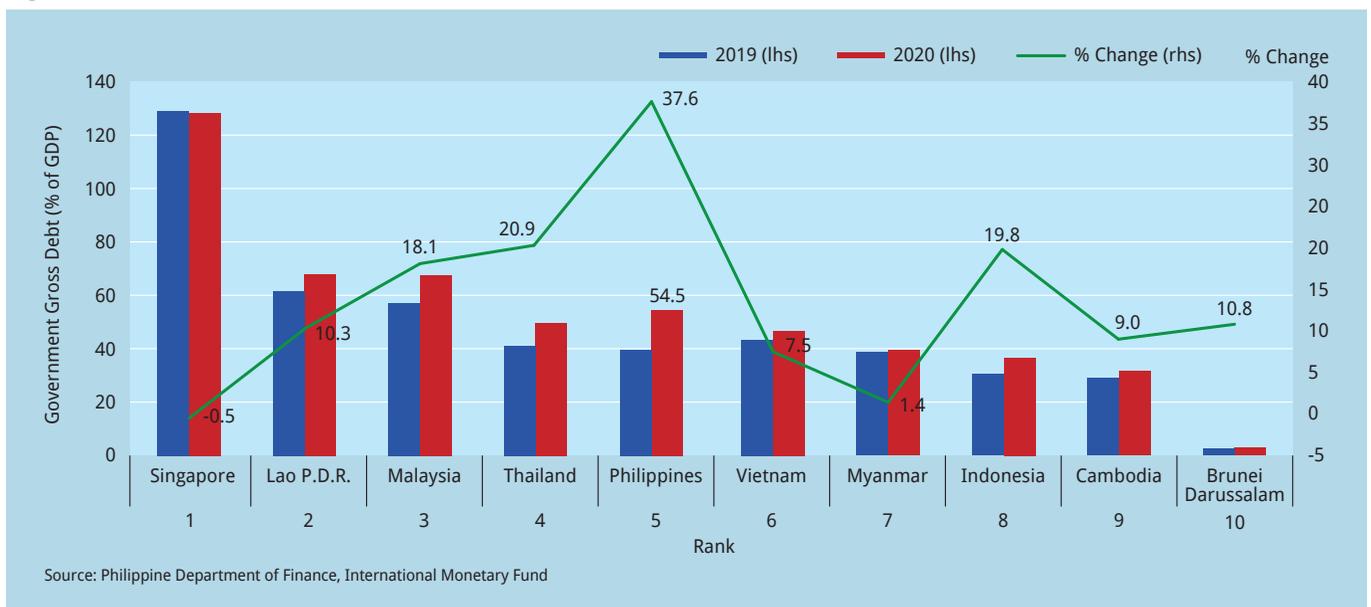
to external resources to support the economy and meet the demand of the health crisis. Financing economic stimulus packages under the Bayanihan to Heal as One Act (Bayanihan 1) and Bayanihan to Recover as One Act (Bayanihan 2)<sup>1</sup>, the country's outstanding debt ballooned by 29% at PHP10.13 trillion (USD210 billion) by Q3 2020, yielding a 54.5% high debt-to-gross domestic product (GDP) ratio, which was the highest marginal increase among ASEAN countries at 37.6% YoY (Figure 3).

In a Presidential Palace briefing on

**Figure 2: Quarterly Change in GDP by Expenditure and Industry (2019-2021)**



**Figure 3: General Government Debt as a Percent of GDP in ASEAN**



March 23, 2021, then acting National Economic and Development Authority (NEDA) Chief Karl Chua presented a cost-benefit analysis of imposing another two-week MECQ on the economy (Figure 4). According to Chua, a lockdown preventing 266,194 new COVID-19 cases and 4,738 deaths would come at a hefty cost of an additional 58,000 Filipinos in hunger, 128,500 more unemployed Filipinos, and a daily income loss of PHP2.1 billion in NCR alone and in nearby regions (Galvez, 2021). With the third stimulus Bayanihan 3 intended to fill the wide gap with cash aid and wage subsidies awaiting passage, Chua deemed it unnecessary and rather called for letting the theoretical “reopening” of the economy “cost-effectively” drive up consumer spending (Laforga, 2021).

The current Duterte administration’s continuous reliance on prolonged community quarantines without immediate health interventions will just become another example of its declining effectiveness in managing both the economy and the ongoing crisis. This rigid fixation on the merits of a draconian lockdown strategy hinges on the 1) implicit tradeoff between health and the economy and 2) the explicit conviction that the country can spend its way out of the depression by way of infrastructure binges. Both tendencies are implied through the misaligned budget of the whopping PHP4.506 trillion in the 2021 General Appropriation Act (GAA).

According to the Department of Budget and Management (DBM, 2021) the 2021 GAA is the “heftiest stimulus package,” amounting to 21.8% of GDP. It is designed

to avert economic misery by addressing the pandemic, reviving infrastructure, and adapting to the new normal through three banner programs. By sector, the budget allocates the largest share, 37%, to social services; 29.4% to the economic sector primarily to fund the Build, Build, Build program; 16.6% to general public services; 12.4% to the debt burden; and 4.6% to defense.

While the 2021 GAA is 10% greater than the 2020 GAA, and social services receives the greatest share of government spending, surprisingly, spending on safety nets for the healthcare system, social security, and employment and enterprises decreased. Figure 5, taken from analyses by JC Punongbayan, et al. (2021a, 2021b), shows the difference between the budget allocations for 2021 and 2020 (which includes Bayanihan 1 and 2). The upper portion of the figure documents the administration’s strategy of stimulating the economy through infrastructure activities, with a 58% increase in public works spending from the previous year. On the other hand, the lower portion of the figure reveals massive cuts to sectors essential to the ongoing health crisis and that have distributional effects on the productive capacity of a pandemic economy such as direct cash transfers, health, agriculture, transportation, labor, trade, and industry. With respect to addressing the health crisis, the budget for the Department of Health (DOH) is substantially cut by 23% from the previous year.<sup>2</sup> Furthermore, despite the high—but risky—expectations for vaccines to bring economic recovery, of the PHP82.5 billion allocated for procurement,

only PHP2.5 billion is sourced from 2021 GAA, with PHP10 billion to come from Bayanihan 2 and the remainder yet to be sourced from loans and unprogrammed appropriations (Department of Finance, 2021).

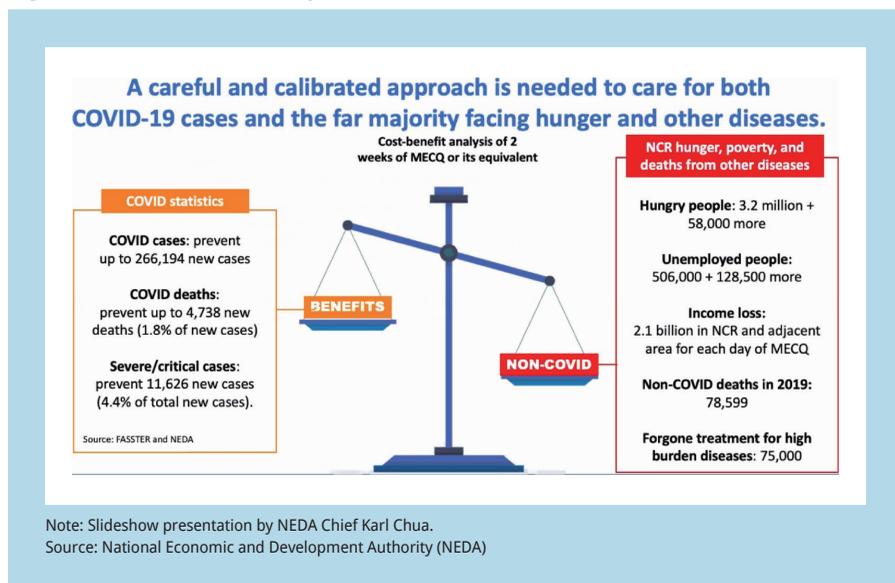
In terms of financial aid during the pandemic, the Department of Social Welfare and Development (DSWD) recorded the largest reduction by 54%. Moreover, no budget is allocated for another wave of the Social Amelioration Program (SAP) and cash transfers are limited. Wage subsidies for displaced workers in the Philippines and abroad were also cut, as reflected in the meager budget of the Department of Labor and Employment (DOLE). Support for micro-small-medium enterprises and exporters under the Department of Trade and Industry (DTI) was marginally decreased, and the budget for the Small Business Corporation (SB Corp.) was cut 86%.

Clearly, the 2021 budget shows the government’s attempts to save the faltering pandemic economy first through infrastructure activities, and only then by mitigating the health crisis. As Finance Secretary Carlos Dominguez III described it, with infrastructure activities generating the “best multiplier effects in terms of employment and shared prosperity,” the government expects 1.1 million direct and indirect jobs to stimulate economic activities in the country (Suzara, 2020). However, bleak and slow historical progress creates reasonable doubts that the multiplier effects of infrastructure investments will come to fruition, especially at a time of a raging health crisis.

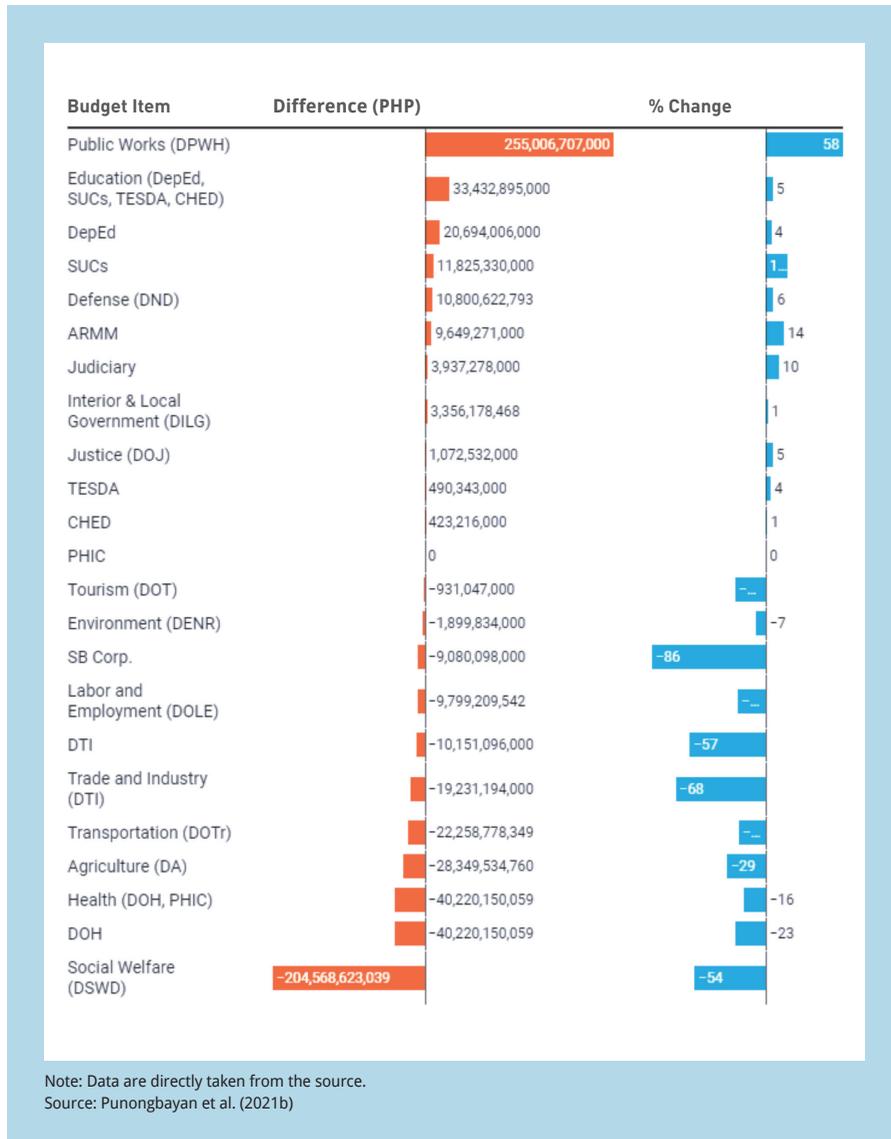
Indeed, while the pandemic caused an unexpected disruption to all economies, it is evident that the Duterte administration’s lack of urgency on public health interventions and social safety net supports will cause greater socio-economic ills. Without directing its investments to address the pandemic, the Philippines will continue in a succession of province-wide and city-wide lockdowns. Along with many other groups around the world we agree with the statement of the U.S Heritage Foundation (Dayaratna et al., 2020): “[s] weeping lockdown orders did not result in better outcomes,” and we strongly advocate a focused protection approach of mass (and scientifically correct) testing<sup>3</sup>, contact tracing, treating, and isolating (emphasis in parenthesis is ours).

In the following sections the authors test the economic viability and robustness of the government’s infrastructure-spending-as-a-way-out strategy by means of an econometric analysis.

**Figure 4: Cost-benefit Analysis of MECQ**



**Figure 5: Summary of Changes in the 2021 Budget from the 2020 Budget**



Augmented Dickey-Fuller (ADF) and the Phillips Perron (PP) time-series stationary tests to observe the unit roots (i.e., non stationary variables) of the variables of interest.

After testing for unit roots, the Johansen's cointegration test was performed to observe possible co-integrating vectors between two or several variables in the model that seeks to identify their long-run effects to the Philippine economy. If a cointegration relationship of at least one among the variables is observed, the model incorporates a certain number of lags for the next estimation procedure which is the Vector Error Correction Model (VECM) to better describe the dynamic relationship between the variables.

Lastly, the Granger causality test was conducted and was simultaneously applied to the VECM estimates to validate certain causality between the target variables and the relevant macroeconomic indicators.

#### Data description and sources

The empirical investigation uses secondary time-series on annual macroeconomic data for the Philippines over the period 1986-2020. The basic linear regression model is:

$$Y_t = \alpha_0 + \beta_n X_n + \varepsilon_t \quad (\text{eq. 1})$$

where  $Y_t$  refers to the dependent variables regressed on the vector of regressors  $\beta_n X_n$ , and  $\alpha_0, \varepsilon_t$  are the constant and error terms respectively.

Incorporating the variables used by Diokno and Knapkova yields three models. First, following Diokno's analysis of the fiscal balance, the dependent variable is measured by the national government account balance (NGAB) in Model 1 and by the consolidated public sector fiscal position (CPSFP) in Model 2. Both models regress the measure of fiscal balance on the real GDP growth rate (GDP), inflation (INF), domestic liquidity (M3GDP), the real effective exchange rate (REER), debt interest payments (INTGDP), gross capital formation (GCF), and tax effort (TAXEF). The corrected models on VECM are:

(BSP) Governor Benjamin Diokno (2007). To further investigate the causes of the Philippines' swelling debt, this research follows the regression model of Knapkova et al. (2019) in determining the macroeconomic indicators of public debt.

These methodologies were adapted to the obtained data, specifically to avoid yielding spurious regression of non-stationary variables, by applying the

## Econometric Methodology

### Econometric model estimation

To determine the impact on the Philippine economy from the stringent lockdown measures taken in response to the COVID-19 pandemic, this research adapts the econometric models on fiscal balance presented by Bangko Sentral ng Pilipinas

Model 1:

$$NGAB_t = \alpha_0 + \alpha_1 tce_{t-1} + \sum_{i=1}^k \beta_1 GDP_{t-i} + \sum_{i=1}^k \beta_2 INF_{t-i} + \sum_{i=1}^k \beta_3 M3GDP_{t-i} + \sum_{i=1}^k \beta_4 REER_{t-i} + \sum_{i=1}^k \beta_5 INTGDP_{t-i} + \sum_{i=1}^k \beta_6 GCF_{t-i} + \sum_{i=1}^k \beta_7 TAXEF_{t-i} + \varepsilon$$

Model 2:

$$CPSFP_t = \alpha_0 + \alpha_1 tce_{t-1} + \sum_{i=1}^k \beta_1 GDP_{t-1} + \sum_{i=1}^k \beta_2 INF_{t-1} + \sum_{i=1}^k \beta_3 M3GDP_{t-1} + \sum_{i=1}^k \beta_4 REER_{t-1} \\ + \sum_{i=1}^k \beta_5 INTGDP_{t-1} + \sum_{i=1}^k \beta_6 GCF_{t-1} + \sum_{i=1}^k \beta_7 TAXEF_{t-1} + \varepsilon$$

Model 3:

$$\Delta DEBT_t = \alpha_0 + \alpha_1 tce_{t-1} + \sum_{i=1}^k \beta_1 GDP_{t-1} + \sum_{i=1}^k \beta_2 INF_{t-1} + \sum_{i=1}^k \beta_3 UNEM_{t-1} + \sum_{i=1}^k \beta_4 TRADE_{t-1} \\ + \sum_{i=1}^k \beta_5 GCF_{t-1} + \sum_{i=1}^k \beta_6 RLABOR_{t-1}$$

For Model 3, which follows Knapkova et al. in examining government debt, the dependent variable is public debt (DEBT) regressed on the real GDP growth rate (GDP), inflation (INF), the unemployment rate (UNEM), trade openness (TRADE), gross capital formation (GCF), and labor productivity (RLABOR), and the corrected VECM model is:

### Theoretical perspectives

#### • Inflation

Diokno theorized a positive relationship between inflation and debt in the sense that, when inflation is high, real tax revenues decrease and the government incurs budget deficits. At the same time, inflation reduces the real value of debt repayments and amortizations, favoring borrowers. So, when the government is the single biggest borrower in the economy, inflation has a beneficial effect on the fiscal balance due to the implicit inflation tax on creditors. Marin and Romero (2017) proposes a perspective consistent with the latter and proves that countries with continuously high levels of indebtedness are bound to experience increases in inflation. Thus, inflation has an ambiguous effect (either positive or negative) on government fiscal balances and/or debt.

#### • Real Effective Exchange Rate

Kouladoum (2018) points out that there is a positive relationship between external debt and the real exchange rate, but the ensuing debt servicing process negatively and significantly affects the real exchange rate. More relevantly, Carrera and Vergara (2012) states that a devaluation of the local currency, because of shocks and changes in the real exchange rate, can significantly alter the country's fiscal position

negatively, affecting not only external or foreign-currency-denominated public debt but also the country's overall economic performance. Thus, the research here hypothesizes that in the Philippine setting, the real effective exchange rate has a negative relationship with the dependent variables under study, NGAB and CPSFP.

#### • Tax Effort

Generally speaking, the government's revenue sources depend on the economy's growth and specifically on how economic growth generates tax revenue. With economic growth, a "natural increase" in tax revenues happens because of certain taxation policies set in place by the government. Ishi (1990) reinforced the above ideas on economic growth and tax effort, mentioning that "rapid growth of nominal income tended to generate large-scale natural tax increases for new revenue sources in constructing annual budgets." This, in turn, provided the country with a budget that did not rely on "massive floatings of public debt" (Ishi, 1990). Thus, the present research holds the hypothesis that tax efforts have a positive relationship with the dependent variables NGAB and CPSFP.

#### • Unemployment Rate

As the national population and the size of the labor force increase, more people need public goods and services, such as pensions under the Social Security System. This increases a country's need to spend but does not guarantee an increase in income tax revenues (Subires et al., 2019). Fedeli and Forte (2012) concluded with a positive relationship between unemployment and fiscal deficits, such that as the unemployment rate increases, the fiscal deficit also rises and vice versa as amplified by high levels of government spending

and taxation. Based on these results, this research hypothesizes a positive relationship between the unemployment rate and public debt, with an increasing number of unemployed contributing to further declines in economic and labor output and in income revenue streams, ultimately leading to increased public debt.

#### • Real GDP Growth

Casares (2015) empirically studies the relationship between public debt and economic growth and concludes that there exists an inverted U-shaped relationship between the two, showing that "at low levels of indebtedness, an increase in the external debt-to-GDP ratio could promote growth; however, with high levels of indebtedness, an increase in the external debt-to-GDP ratio could hurt economic growth." Thao (2018) posits a similar conclusion and adds that the positive relationship between economic growth and public debt is only achieved within a certain threshold. Based on these results, we hypothesize a positive relationship between economic growth and public debt for countries with low levels of indebtedness, and a negative relationship between economic growth and public debt for countries with high levels of indebtedness.

#### • General Government Spending and Gross Capital Formation

A significant part of the government's responsibility is to continuously provide for needed commodities, services, and infrastructure, such as health insurance programs, new highways, and public schools. Mourougane, Botev, et al., (2016) states that government spending and public investment boost growth through investment-led strategies—significant growth that would allow governments to improve their fiscal position in the long-run. Thus, this research hypothesizes that general government spending for capital formation (such as infrastructure) has a positive relationship with public fiscal position, wherein these expenses point to investment-led economic growth and also has a positive relationship with public debt as the investment is funded by borrowing.

#### • Liquid Liabilities of the Financial System (M3) to GDP

Guinigundo (2012) states that changes in a country's domestic liquidity enable fiscal authorities to spend more, and vice versa. Furthermore, he states that high liquidity allows for national governments to access domestic financial markets through foreign currency-denominated debt to res-

idents and to exchange the proceeds of this debt with the BSP to meet the government's foreign currency needs. With this, the current research hypothesizes a positive relationship of M3 with NGAB and CPSFP.

• **Trade Openness**

Auboin (2004) mentions trade liberalization or openness as a means to generate economic growth by promoting efficient resource allocation at the domestic and global levels (which we can identify as the tendency of countries to specialize on specific products for trade) and by increasing access to foreign exchange and inflows of foreign direct investment (FDI). The relationship between trade openness and economic growth implies a negative relationship of openness with public debt, as the outcome of economic growth should finance debt in the long-run, and a positive relationship with the fiscal balance whether measured by NGAB or CPSFP.

• **National Government Debt Service Payments**

Diokno lists high debt service as one of the three major factors that negatively impact the public finances of the Philippines, along with lower revenues because of lower net taxable income and slowdown in economic activity. In the same publication, however, he cites Woo's study using panel data that finds variations in results especially depending on the particular time-series data involved. Thus, Diokno specifically mentions that time-series data for the Philippines may yield varying results. Nonetheless, this research hypothesizes a negative relationship of debt service interest payments with NGAB and CPSFP, wherein higher debt service would result in weaker public finance.

for Model 1, 1 for Model 2, and 1 for Model 3. The Johansen Cointegration test specifies that there are 4 cointegrating equations in Model 1, 3 for Model 2, and 4 for Model 3. The result of the Error Correction Model below proves the existence of a long-run relationship between the dependent variable and independent variables in all three models. The results for all three models summarized in Table 1 are discussed below.

For Model 1, with NGAB as the dependent variable, three independent variables found to have a significant long-run relationship are REER, INTGDP, and GCF. As shown in Table 1, a one-unit increase in the real effective exchange rate causes the Philippine NGAB as a percentage of GDP to decrease by 0.105 units. Consistent with the theoretical discussion, the results show that government expenditures funded by foreign debt will change due to shocks to REER from Philippine or foreign currency. A weaker peso would lead to a higher value on previously incurred external debt, worsening the NGAB. The estimated coefficient on INTGDP suggests that a one-unit increase in debt interest payments results in a 0.43-unit reduction in the Philippine national government account as a percent of GDP. This result is consistent with Diokno's stating that the expected sign is negative, meaning an increase in debt servicing would point to a worsening fiscal balance (expenditures are much higher than revenues). Finally, the estimated coefficient on GCF indicates

that a one-unit increase in gross capital formation as a percent of GDP causes the Philippine NGAB as a percent of GDP to decrease by 0.294 units. This is contrary to the theoretical discussion that gross capital formation has a positive relationship with the country's fiscal position. Thus, this result may imply that the investment-led economic strategy that the Philippines has been adopting generally throughout the period of this study will result in a negative fiscal balance in the future, opening-up to potentially more debt.

In Model 2 the dependent variable, CPSFP, is a broader measure of the fiscal balance which includes the balances of other government corporations as well as of the NGAB as explained in the appendix. Under this model, three independent variables that show a long-run and statistically significant relationship are M3GDP, REER, and INTGDP. Consistent with the hypothesis of this research, the results suggest that a one-unit increase in domestic liquid liabilities as a percent of GDP signals an improvement in the country's fiscal position by 1.099 units. The results for Model 2 also show that a one-unit increase in the real effective exchange rate causes the country's fiscal position to increase by 1.489 units. This result contrasts with the negative relationship with REER observed in Model 1. This difference may be explained by the broader measure of fiscal balance in Model 2 from Model 1. Lastly, from Model 2 a one-unit increase in the debt interest payments as a percent of GDP caus-

## Econometric Results and Discussion

The ADF and the PP results confirm that all variables in the three models, except for RLABOR and TAXEF, are stationary in the first difference and hence, these two variables are excluded from succeeding estimation procedures. The Vector Autoregression Lag Order Selection Criteria test result indicates that the appropriate lag length is 2

**Table 1: Long-Run Results**

Variable	Coefficient	Standard Error	t - Statistic
<b>MODEL 1: NGAB</b>			
REER(-1)	-0.10485	0.03200	-3.27612
INTGDP(-1)	-0.43021	0.19045	-2.25894
GCF(-1)	-0.29365	0.08390	-3.49988
<b>MODEL 2: CPSFP</b>			
M3GDP(-1)	1.099054	0.17652	6.22624
REER(-1)	1.488749	0.21482	6.93018
INTGDP(-1)	17.53309	2.52479	6.94438
<b>MODEL 3: DEBT</b>			
GCF(-1)	7.464656	1.14868	6.49845

Note: The (-1) indicates lagged periods. It shows that the value of each variable is expressed as a linear function of past, or lagged, values of that variable and all other variables included in the model. Since the Johansen Cointegration test identified the existence of cointegrating relationships among the variables, the model includes residuals from the cointegrating vectors (lagged one period for all regressors) in the VECM system.

es the CPSFP of the country to increase by 17,533 units. While the theoretical discussion hypothesized a negative relationship between this variable and CPSFP, the VECM results revealed a positive relationship. Diokno states that the estimated relationship between the two variables may differ specifically for time-series data for the Philippines depending on the number of observations in the period under study. Furthermore, a positive relationship could be due to the inclusion in CPSFP of various government institutions that are net creditors, that is, institutions whose fiscal surpluses improve the national account balance.

The results for Model 3, which places public debt as the dependent variable, show only one independent variable with a long-run statistical significance: GCF. It is commonly believed that in the long-run, gross capital formation is positively related to the Philippines' public debt. The econometric result indicates that a one-unit increase in gross capital formation as a percent of GDP increases public debt as a percentage of GDP by 7.465 units. This supports the theoretical hypothesis discussed previously, as the investments and capital outlays of the Philippines may probably be funded by borrowing.

In sum, the estimation of the three models identified four macroeconomic variables that have a significant long-run effect on the Philippines' fiscal balance or public debt: REER, INTGDP, GCF, and M3GDP. Since the analysis covered the period of the onset of the COVID-19 pandemic in the Philippines, we can conclude that—to the extent that the pandemic-related lockdowns affected these economic variables—the impact will carry over long after the pandemic subsides. Moreover, the results suggest that the administration's strategy embodied in the 2021 GAA to prioritize infrastructure spending over spending on health care, social services and other sectors will be accompanied by higher public debt and or a smaller fiscal balance and deficits in the long-run.

## Final Recommendations & Conclusions

Based on our analysis, we believe it is time for the Philippine government to abandon

the imposition of draconian and extended lockdowns as soon as possible and to initiate a strategy of focused protection of the population through localized testing, tracing, treatment, and quarantine. The strategy of focused protection in contrast to sweeping lockdowns first appeared in October 2020 in The Great Barrington Declaration ([gbdeclaration.org](http://gbdeclaration.org)), a public document signed by over 850,403 physician-specialists, scientists, public health experts and citizens. Since then, it has been restated and widely supported by other scientists, groups, studies, and confederations in many countries across the globe (see bibliography for a partial list).

Adopting a strategy of focused protection that would require a realignment of the 2021 GAA national budget is strongly recommended for the Philippines, in the first place, in order to bolster the health care sector. Specifically, the budget should be readjusted to provide sufficient funds to expand the capacity of hospitals and testing hubs, ensure sufficient medical equipment and pharmaceutical supplies, and provide adequate compensation to the frontline workers.

Furthermore, the authors contend that eradicating virus in the Philippines depends not only on acquiring imported vaccines (by way of more debt), but also on ensuring the full access, legalization, domestic manufacture or cost-effective importation of affordable, alternative antiviral repurposed drugs that have been proven efficacious in multiple meta-analyzed medical trials in many countries. In fact, the Philippine health authorities (DOH-Food and Drug Administration (FDA)) have been slow to act on these repurposed antiviral drugs and have bureaucratically dragged their feet facing the strong censure of civil society, business groups,

legislators, and netizens calling for more randomized trials (which seems to be just a rationalization). The authors strongly advocate a thorough reorganization of the Philippines' health institutions, namely, DOH, FDA, and the Health Insurance Corporation, before any additional funds are reallocated to the health sector. This is to prosecute corrupt officials and remove incompetent ones.

Lastly, the 2021 GAA must also provide greater financial assistance to individual Filipinos. As the risk of contracting the virus keeps people at home and causes loss of livelihoods, the pandemic has tightened or reduced people's disposable income. Indeed, the majority of Filipinos could not afford to "work-from-home" let alone to remain sheltered and fed. Putting money back into the pockets of the consumer economy would bring back purchasing power and consumer spending, even of those in the informal sector. It is generally known that time for budgetary reform is running out because national elections are scheduled for May 2022. Either the present administration realigns the budget this year or a new administration does it for them next year.

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# Appendix

## Econometric Variable Definitions

Variable	Description
<b>NGAB</b> National Government Account Balance (% of GDP)	Total government revenues less total expenses for the Philippine national government Source: Department of Finance (DoF), Bureau of the Treasury (BTr) This variable represents the narrowest coverage of the government's fiscal position.
<b>CPSFP</b> Consolidated Public Sector Fiscal Position (% of GDP)	NGAB plus other public sectors i.e., combined surplus (deficit) of the national government, major non-financial government corporations (GOCC), government financial institutions (GFI), local government units (LGU), social security institutions, the Oil Price Stabilization fund & BSP Source: BSP, BTr; This variable represents the broadest coverage of the government's fiscal position.
<b>DEBT</b> Public Debt (% of GDP)	Debt incurred to finance the activities of the public sector either through the revenue streams generated from taxation, or through borrowing in the financial market Source: BTr
<b>GDP</b> Real GDP Growth (Annual %)	Annual percentage growth rate of GDP at constant 2018 prices Source: Philippine Statistics Authority (PSA)
<b>GCF</b> Gross Capital Formation (% of GDP)	Investments put in place and measured by the total value of fixed assets/capital formation. Source: PSA
<b>M3GDP</b> Domestic Liquid Liabilities (% of GDP)	The ratio of liquid liabilities of the financial system to GDP. Source: BSP
<b>INTGDP</b> Debt Interest Payments (% of GDP)	National government debt service interest payments as a percent of GDP. Source: BTr
<b>TAXEF</b> Tax Effort (% of GDP)	Annual tax revenues as a percent of GDP Source: BTr
<b>INF</b> Inflation (Annual %)	Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole Source: World Development Indicators (WDI), PSA
<b>REER</b> Real Effective Exchange Rate of the Peso (Adjusted for Inflation)	Weighted average of bilateral exchange rate indices adjusted for relative price differentials between the home country and foreign countries Source: BSP
<b>RLABOR</b> Labor Productivity at Constant 2000 Prices (Annual % Growth)	Total volume of output (measured in terms of GDP) produced per unit of labour (measured in terms of the number of employed persons) during a given time reference period Source: WDI, International Labour Organization (ILO)
<b>UNEM</b> Unemployment Rate (%)	Unemployed persons include all persons who are 15 years old and over and are reported as: (1) without work, (2) currently available for work, and (3) seeking work, or (4) not seeking work Source: PSA
<b>TRADE</b> Trade Openness (% of GDP)	Sum of exports and imports for goods and services measured as a share of GDP Source: PSA

## Notes

- Collectively known as the Bayanihan Act, these are immediate enactment of stimulus packages and measures intended to protect the socio-economic welfare of the Filipino people against COVID-19.
- While operational expenses of hospitals did increase marginally, investments in medical labs and funds for the frontlines were reduced.
- The Cycle threshold (Ct) value in an RT-PCR test is the number of amplifications it takes the test machine/procedure to detect the virus genetic material in a test subject. The lower the number of cycles, the more accurate the test becomes. The higher the number of cycles, the less accurate. Credible scientific papers hold that Ct cycles in the range of 25 and below should be the basis of mass public testing rather than the reported 38 and above which leads to many "false positives."

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# Improving Resilience to Systemic Crises through Financing Innovations: Lessons and Recommendations from Singapore

## Introduction

Any systemic crisis—manmade or otherwise—places undue strain on the economic and financial system and its participants, including ordinary citizens. We know this from two events in recent memory—the Global Financial Crisis of 2008-2009 and the more recent spread of COVID-19. Other less extensive crises, such as the European Debt Crisis, the U.S. trade war with the rest of the world, and the tragic wildfires in California and Australia should also serve as life lessons. Economic agents must be better prepared to respond in the next unfortunate calamity.

In such extreme cases, which usually result from the market being unable to bear unpriced (tail) risks, the state has an important role to play as the insurer of last resort. A case in point is the risks and costs for individuals, businesses, and the economy associated with the current pandemic.

This essay will focus on the lessons learned from the COVID-19 pandemic regarding how economic agents and policy-makers can use financial markets, innovation, government policies, and investment

science to improve and build more resilient ecosystems. Examining three areas in which governments are equipped to intervene—retirement finance, small and medium-sized enterprise (SME) financing, and infrastructure finance—the discussion will cover the role of both the capital markets and the state in difficult times. While the current essay can apply anywhere in the world, our illustrations and examples will focus on Asia, with a particular emphasis on Singapore.

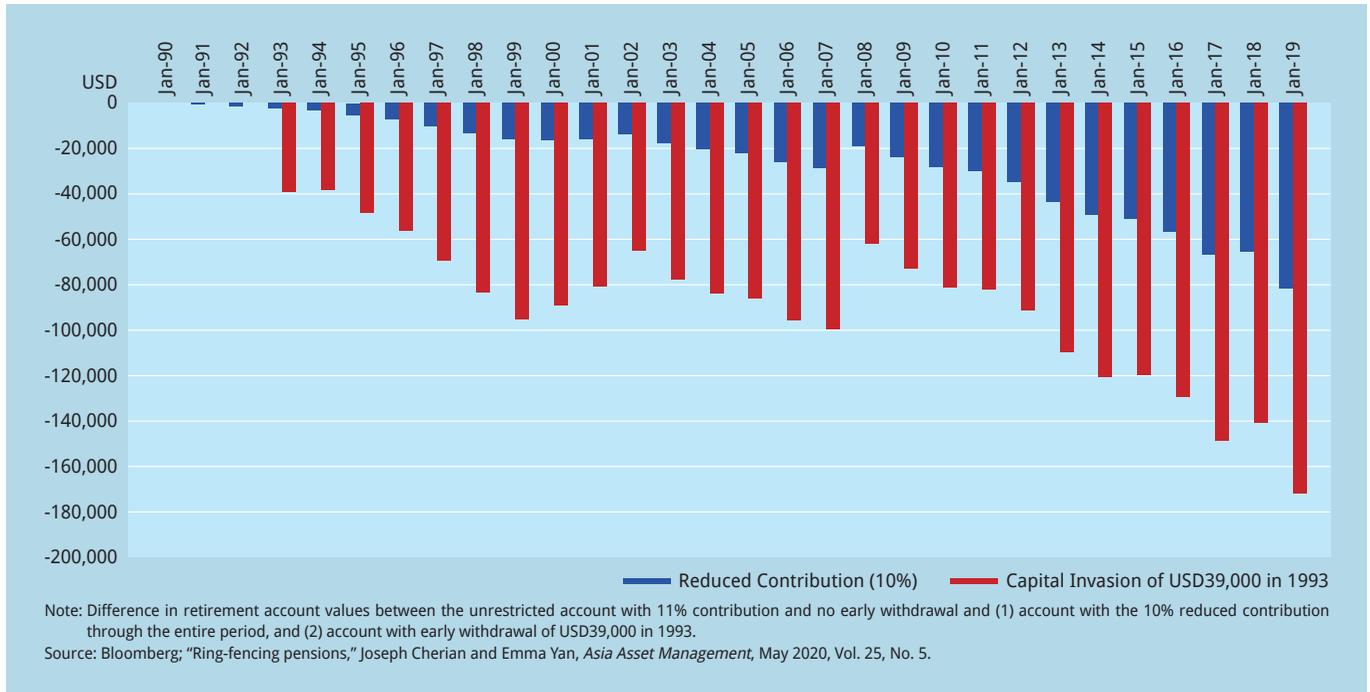
## Retirement Finance: Fighting Inadequacy and Standardized Solutions

Among its many other consequences, the pandemic has resulted in sub-optimal behavior by certain governments and retirement plan providers. Facing undue hardship from loss of income, jobs, health or bereavement, members of retirement plans, especially state-managed ones, were allowed to dip into their hard-saved retirement pots to help alleviate the pandemic-induced financial burden. Cases in point include: the Australian government permitting individuals to access up to AUD20,000 (USD15,445) of their superannuation funds by the middle of 2021; India allowing its Employees Provident Fund (EPF) members

to withdraw the lower amount of either 75% of retirement savings or three months of salary equivalent; and Malaysia's EPF announcing in March 2020 that the statutory contribution rate for employees would be cut from 11% to 7% of their salaries, and that members could withdraw a total of RM6,000 (USD1,465) over the following 12 months. Furthermore, the Malaysian government in November 2020 announced a second withdrawal scheme of up to RM60,000—a tenfold increase—to “help EPF members reeling from the economic fallout of the COVID-19 crisis”. Fortunately, national retirement schemes in Singapore and Hong Kong wisely resisted this temptation. Rather, Singapore simply deferred by a year a scheduled increase in the contribution rates for older workers.

Such extreme responses are sure-fire ways to destabilize the retirement plan's long-term mission of safeguarding everyone's financial future, especially in retirement. In a May 2020 essay, I demonstrated that the difference in retirement account values over a 30-year period (1990-2019) due to a reduced contribution rate (10% instead of 11%) or a raid on capital (USD39,000 withdrawn in 1993) against the unrestricted, fully invested case can be quite substantial. In fact, the difference could be up to 18% over the planning horizon (Figure 1). To illustrate this shortfall, a hypothetical 60/40 retirement portfolio invested in the S&P500 and Barclays U.S. Aggregate Bond Index, respectively, was constructed and then subjected to each value-reducing scenario.<sup>1</sup>

**Figure 1: Difference in Cumulated Values against Full Contribution of 11% and No Capital Invasion**



My recommendation then was that these plans should be ringfenced by legislation to avoid the national temptation of many households digging into their retirement nest eggs which tend to be the largest pool of available assets (apart from homeowner's equity). And if households indeed face extenuating financial circumstances due to a healthcare pandemic, it is the state's responsibility to step in and address the hardship. It can do so via targeted cash transfers, by preserving or enhancing job opportunities, deferring interest and principal payments via forbearance programs, etc., just as the governments of Singapore and the U.S. did in the current crisis. If that is not enough, the government could subsidize the monthly contributions that members make to their retirement accounts, at least until the exigency is over.

The second issue is that of conjoining the accumulated knowledge in investment science—in other words, modern portfolio theory—and the disruptive power of technology to provide cost-efficient bespoke retirement solutions that go back to the basics. Just as defined benefit plans once provided sufficient pension income to reasonably sustain a person's lifestyle in retirement, a defined contribution scheme should also take this approach over the member's entire life cycle. That is, it should first develop a target income goal in retirement based on the member's individual circumstances; then it should ensure that

financial engineers and technology devise an investment plan that allows for updating the target income as the individual's life circumstances change due to promotions, marriage, children, the consumption of leisure, and so on, so that the end goal is achieved with maximum likelihood upon retirement.

This is not a new concept. Nobel laureate Robert Merton has authored two articles that illustrate how to achieve this. The first was a seminal piece involving "glidepath strategies," where Merton and his co-authors demonstrated that the tradeoff between labor and consumption, along with the ability to choose the retirement date, can lead to a lifecycle investment choice up to and including retirement that is specific to the individual. The linkage among labor wage income, financial markets, and one's ability to vary labor supply, consumption spending, savings versus dis-savings periods, etc., can result in certain individuals being able to take on greater investment risk during different parts of their life cycle as compared to others.<sup>2</sup> Merton later articulated his ideas behind life cycle finance in the *Financial Analysts Journal* article, "Thoughts on the Future: Theory and Practice in Investment Management", which was published in 2003.

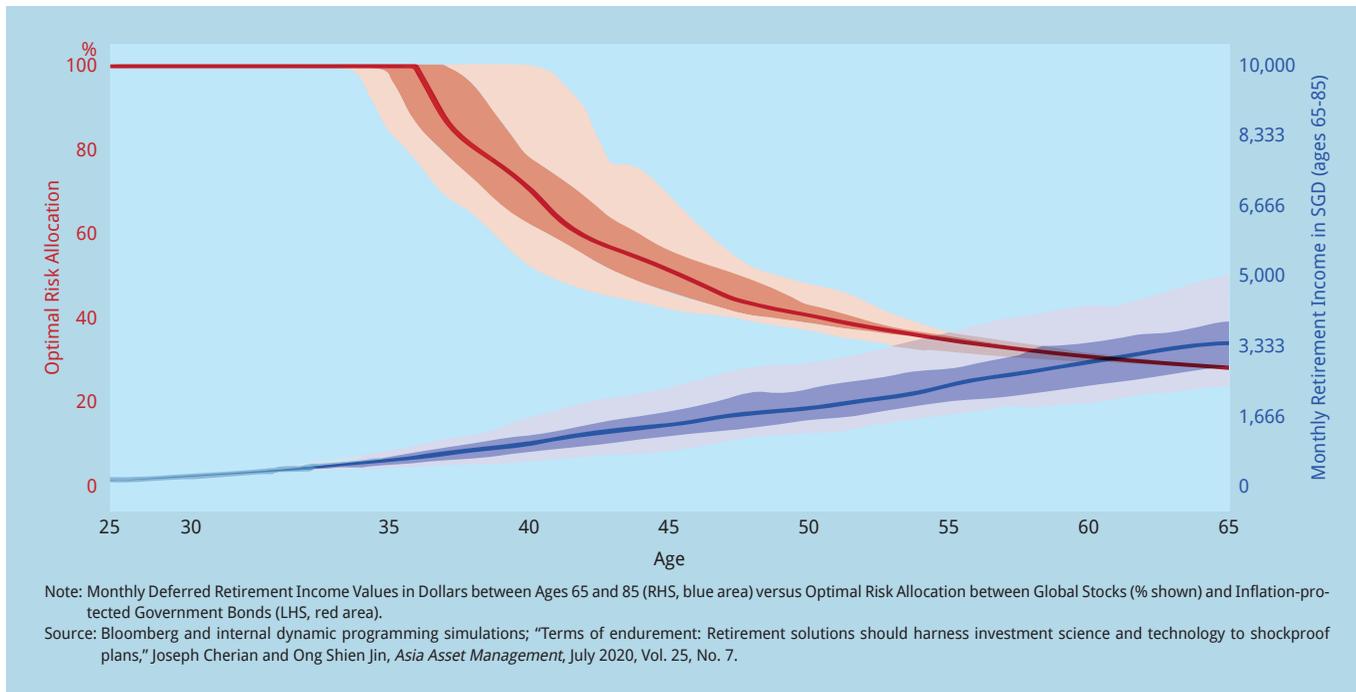
My co-author and I demonstrated that an individualized glidepath investment plan can be developed to maximize monthly (future) target income at the point

of the individual's retirement. This plan must consider the human capital labor income stream's correlation with the investment assets in place and other factors such as financial markets, current retirement savings and invested assets, desired income in retirement, spending profile, and risk aversion. These are combined with a mathematical optimization method called stochastic dynamic programming.<sup>3</sup>

The blue area in Figure 2 below illustrates the potential range of deferred annuity income values at retirement (at age 65) from one's retirement assets in place. The red area illustrates the retirement portfolio's range of mathematically determined optimal allocations between the 'risky' portfolio of global equities and 'safe' portfolio of Treasury inflation-protected securities, an extension of the standard 60/40 retirement portfolio. The red area is similar to the glidepath strategy depicted in many target date funds offered by asset managers. Our proposal is that asset managers target the individual and not the date.

Technology, Big Data, machine learning and artificial intelligence in financial systems, or 'fintech', have made immense strides to date, as have investment and behavioral science. It is imperative that the asset management industry utilizes these tools to move away from the one-size-fits-all model portfolio approach to life cycle investing. While some progress in this direction has been made on the robo-advi-

**Figure 2: Annuity Income Values at Retirement from Retirement Assets in Place**



sory front, the industry as a whole should be moving towards the bespoke, dynamic programming approach to finding sound and cost-efficient solutions for the investor.

suffered an overall y-o-y contraction of -5.4% in 2020, with most of the contraction understandably happening in the second quarter of 2020 (-13.3%). Despite estimates that the construction industry will con-

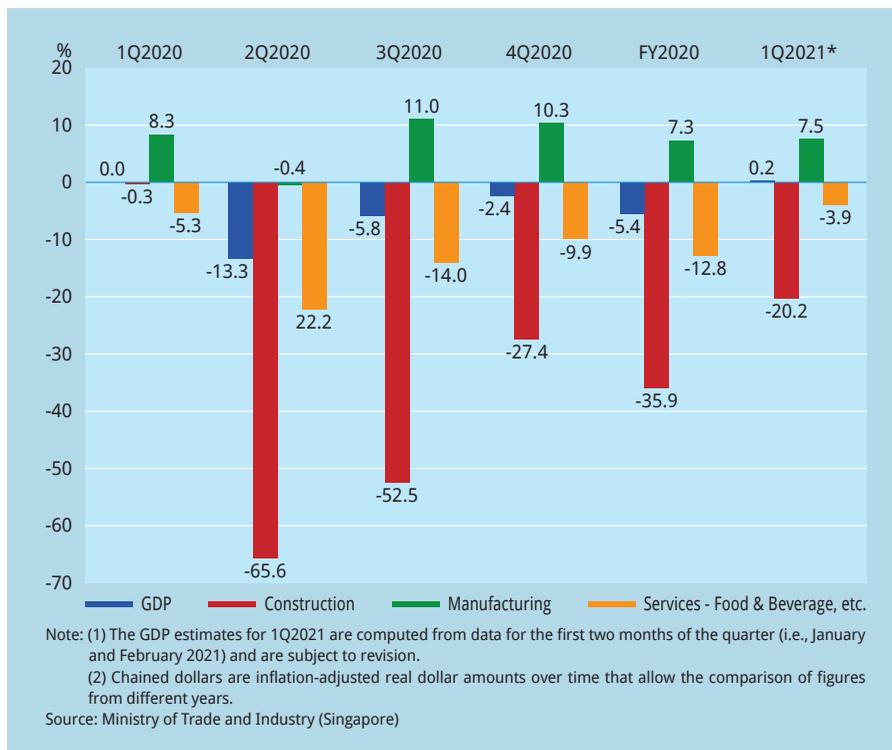
tract by 20.2% in the first quarter of 2021 (-65.6% in 2Q2020), the overall Singapore economy is expected to expand by 0.2% on a y-o-y basis in the first quarter of 2021 (Figure 3).<sup>4</sup>

## SME Financing: The Need for Out-of-the-Box Thinking for the Next Systemic Crisis

History has taught us that any pandemic has prodigious human, health, and economic consequences. Even with all the modern advances in health and emergency medical care, the COVID-19 pandemic has taken an extraordinary toll in human lives. As of 1 May 2021, there have been 151 million cases and 3.17 million deaths recorded worldwide. Singapore has at least avoided the worst of the disease's impact; the city-state has witnessed only 61,121 COVID-19 cases and 30 deaths as of 1 May 2021. On the vaccination side, more than 4% of the population has received a second dose of the vaccine.

According to the Ministry of Trade and Industry in Singapore, the country's gross domestic product (GDP) nonetheless

**Figure 3: Singapore's GDP in Chained (2015) Dollars**



The impact on businesses in Singapore, including SMEs and particularly those in the hospitality, travel, tourism, and entertainment sectors, has been more severe. Singapore, like many other responsible governments around the world, came up with massive financial support packages in 2020 and 2021 to help preserve local SMEs, workforce, households, public health and well-being, and the overall economy. Despite the Singapore government's massive COVID-19 financial support, on the order of SGD100 billion (USD75 billion) in 2020 (close to 20% of GDP) and another planned SGD107 billion in Budget 2021, SGD53.7 billion (USD40.4 billion) of which will be drawn from its reserves, most government support to business is in the form of loans and debt channeled through the private sector at concessional rates, which eventually have to be repaid.

In response to COVID-19, the Singapore government helped over 15,300 SMEs improve their productivity, innovation, and internationalization efforts in 2020; this was 54% more enterprises than the

government assisted in 2019. About SGD18 billion in loans at concessionary rates were disbursed. According to the Department of Statistics of Singapore, SMEs are a key pillar of the island-nation's economy. In 2020 (with 2019 data in parenthesis), SMEs contributed 45% of value-add to Singapore's GDP of SGD480.2 billion (SGD507.6 billion), provided over 70% of the 3.35 million (3.52 million) in total jobs, and constituted 99.5% (99.5%) of all its enterprises, comprising 279,700 (273,100) firms. As mentioned, many SMEs in Singapore do not have access to the local capital markets. Instead, they must rely on government support and grants (which are not ample), and bank financing, or are simply owner-financed. Enterprise Singapore's Year-in-Review 2020 provides an overview of the support provided by the government and the business challenges faced by enterprises (Figure 4).

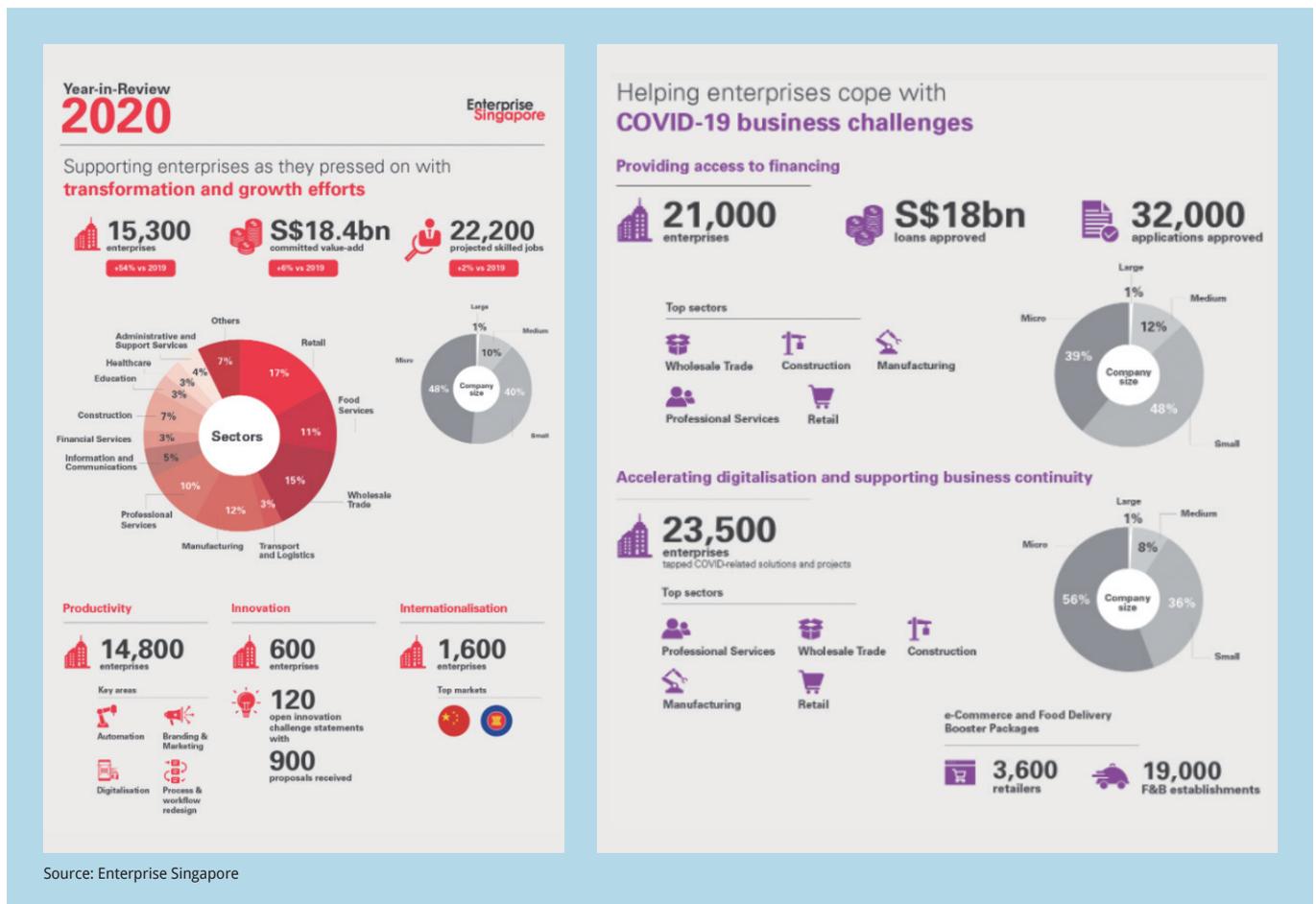
As the infographic shows, the need for a long-term solution for all enterprises in Singapore, especially hard-hit SMEs, cannot be overemphasized. Indeed, it is a

problem faced the world over. While subsidized or concessionary loans may temporarily help ease firms' short-term burdens, they may end up dragging down businesses in the long run, especially if they are SMEs.<sup>5</sup>

For that reason, I recommend that governments explore the possibility of taking on a partial equity stake in SMEs as part of the overall solution to the "going concern" (or the lack thereof) problem of such firms, both large and small. This approach, only applicable during a large-scale, systemic crisis, should be exercised in the case of SMEs and those firms with limited access to bank loans or capital market fundraising mechanisms. For convenience, I refer to the state's direct equity stake in the business as "quasi-equity" (as opposed to preferred equity or convertible equity). How would a quasi-equity program work, taking Singapore's experience as an example?

Firstly, the government has to recognize the need to provide support to SMEs during a systemic crisis such as a health

Figure 4: Enterprise Singapore's Year-in-Review 2020



Source: Enterprise Singapore

pandemic, to keep the economy humming while mitigating negative economic consequences, to save organizational capital, especially organization-specific human capital, and to mitigate negative social consequences.

Secondly, the Singapore government's COVID-19 subsidized term loan scheme, administered by the Monetary Authority of Singapore (MAS) and/or Enterprise Singapore via banks, has greatly helped micro and small enterprises. Very broadly, the *MAS-Enterprise Singapore Enhanced Enterprise Financing Scheme - SME Working Capital Loan* is capped at SGD1 million, with a 0.1% lending rate from MAS to the banks for a 2-year period. The government shares up to 90% of risk on the SME loan, with the bank's final interest rate charged to SMEs determined by the cost of funds, the SME's risk profile, and so on.<sup>6</sup> It also allows for a 1-year deferral of principal repayment, subject to the bank's risk assessment. The Ministry of Trade and Industry reported that the interest rates ranged between 2% and 4.5% p.a., between 1 March and 30 April 2020, with banks disbursing 2,500 loans worth SGD1.9 billion, for an average of SGD760,000 per loan.

Thirdly, the government is aware that direct handouts of cash can be costly for the following reasons:

- Handing out money to those who do not need it nor deserve it is costly.
- Fair and justified selective handouts may have high administrative costs, e.g., overcoming firm-specific information asymmetry, moral hazard, etc.

The Singapore government's various enhanced credit channel schemes for SMEs appear to be working well. What is missing? Despite the change in administration in the U.S., the trend away from globalization toward regionalism pressed by inward looking policies will continue. Consistent with the (pandemic-related) Declaration on Trade in Essential Goods, and past agreements such as the Closer Economic Partnership (CEP), Strategic Economic Partnership (SEP), and the Free Trade Agreement (FTA), the government announced that SMEs need to "emerge stronger, aspire to be one of the first to recover, seize new business opportunities" post-pandemic.

Regrettably, the world is in transition, with more nationalism and regionalism in evidence. That said, ASEAN nations, particularly Singapore, are seeing more foreign investment coming in to cater to the demands of China, Japan, and the rest of Asia. SMEs in Singapore can be key players in this new phase as the pandemic subsides. However, SMEs with the potential to seize such opportunities in the region and beyond will certainly face financial constraints. Additionally, SMEs will need to redesign, retrain, hire, innovate, upskill, tech-up and transform. To do this, they will need even more financing which is the nature of entrepreneurial financing. Banks and traditional financial institutions may be "trapped" with extant SME loans, deferral and forbearance programs, non-performing or bad loans, etc., so that SMEs are likely to remain cash-constrained even after the pandemic fades.

This is where a hybrid entrepreneurial financing solution option, i.e., credit combined with quasi-equity, will be helpful. A quasi-equity overlay example specif-

ic to Singapore would be instructive. The textbox below depicts the government's original concessionary lending scheme offered via the banks around March 2020 (Option 1) overlaid with state-funded quasi-equity. For convenience, the government Special Purpose Vehicle (g-SPV) referenced below could potentially be set up under the new Singapore Variable Capital Companies Act (2020).<sup>7</sup>

How does state-led quasi-equity financing work? First determine which SMEs qualify for the quasi-equity program via certain quantitative filters—say, the past 3 years' Profits after Tax (PAT), long-term viability/prospects, and the bank's credit loan officers' evaluation, as in Option 1 of the textbox. Then provide an arms-length, quasi-equity "term financing" via the g-SPV. Say for example, y% of 2017-2019 average annual revenues is in equity financing, which is combined with [100-y]% via the MAS-Enterprise Singapore SME term loan. Like preferred equity, the g-SPV holding the quasi-equity shares has no voting rights but has priority over owners' equity; i.e., the SME pays "dividends" in the form of, say, higher corporate taxes. The SME can buy the quasi-equity back from the g-SPV at an appropriate buy-back or forward price post a fixed holding period or duration. The oversight of the SME as a result of the quasi-equity will involve a Board of Overseers.

Conjoining state-led quasi-equity with the SME enhanced loan scheme provides a first-loss protection mechanism for the lenders. It also has other tangible benefits. On the business front, the SME faces lower interest rates (a reduction of x basis points) and hence lower monthly loan payments. On the lender's front, it fully utilizes the bank's ability to assess loans and lowers risk, given the government's equity participation, *ceteris paribus*. Additionally, it frees up capital on the bank's balance sheet for other more productive lending. On the government front, it encourages entrepreneurial risk-taking without overclaiming the fruits of the SMEs' efforts (the forward sell-back price is the SMEs' put option). A simple financial economic model is provided in the Appendix to justify the program economically.

The state-owned g-SPV of the quasi-equity certainly must worry about standard risk management issues, like adverse selection and moral hazard. For example, due to adverse selection, the SME would know more about its true health, condition, and commitment than the g-SPV does, *ex ante*. The solution is appreciation for long-term reputational effects, particu-

#### MAS-ESG Enhanced Enterprise Financing Scheme - SME Working Capital Loan

The SME needs SGD5 million in financing. Provide 2 options:

**Option 1:** The SME borrows SGD5 million over 2 years at 4% under extant MAS-Enterprise Singapore Enhanced Enterprise Financing & Temporary Bridging Loan Programme (TBLP) Schemes with 10% risk-share by the bank (=SGD500,000) and 90% risk share by the government (=SGD4.5 million)

**Option 2 (proposed):** The SME borrows SGD2.5 million over 2 years at (4%-x bps) under MAS-Enterprise Singapore Enhanced Enterprise Financing/TBLP Schemes with 10% risk-share by the FI (=SGD250,000) and 90% risk share by the government (=SGD2.25 million) + SGD2.5 million in state-led pseudo-equity financing. Very much like a public-private partnership program (PPP)

larly in the case of Singapore, which is a small island-nation. If necessary, the g-SPV can apply an adverse selection “haircut” to the loan/equity financing amount. Another example would be moral hazard, which arises when the SME recipient of quasi-equity financing, ex post, siphons off the funds for unauthorized purposes, be they unnecessary risk-taking or consumption of perquisites. The government, however, has punitive authority: any fraud or egregious wrongdoing can be prosecuted, or the SME could be “blacklisted” by the government.

In a well-managed country like Singapore, where tax compliance is good and long-term reputation is paramount, these effects would be smaller than in many other jurisdictions. Apart from the government agencies and regulatory authorities, reputable local business associations can be incorporated into the Board of Overseers in Public Private Partnership (PPP) format to monitor the state-led quasi-equity financing program.

## Infrastructure Financing

Without oversimplifying, the appeal of infrastructure assets is the steady, predictable, and long-term nature of their cash flows. These features adequately meet the asset and liability needs of sovereign funds, insurance companies and pension plans which are constantly looking for alternative sources of risk premia (and hence returns) in this low-yield interest rate environment. Over the last five to ten years, the FTSE Global Core Infrastructure Index of infrastructure-related listed securities worldwide returned 6.5% and 6.1% per annum, while the EDHECinfra’s most representative index of unlisted infrastructure equity, the infra300 Index, returned 5.03% and 13.5% per annum, respectively. U.S. President Joe Biden has been the latest leader to jump on the infrastructure bandwagon, with a USD2.3 trillion spending plan, around 50% of which is estimated to go towards physical infrastructure, such as rebuilding roads and bridges.<sup>8</sup>

Singapore, too, has been at the forefront of infrastructure financing and de-

velopment through Infrastructure Asia, a government agency which partners with various stakeholders for this purpose in Southeast and South Asia. Additionally, Singapore boasts some of the region’s leaders in infrastructure development, particularly in urban planning, design, and build. These include Surbana Jurong and Sembcorp.

I would like to explore three areas as new ways to think about investing in infrastructure. They are: the use of real options analysis (ROA) for project feasibility and due diligence studies; the innovative financing opportunities available in urban infrastructure in this region from the “value-chain solution provider’s” point of view, especially focusing on green and sustainability financing initiatives in urban infrastructure; and the potential of digital security token issuance to enable broader participation of non-accredited investors in the real economy. In other words, giving smaller investors the opportunity to invest in infrastructure.

First, ROA, which, unlike traditional capital budgeting using the ubiquitous discounted cash flow (DCF) model, takes uncertainty and flexibility into consideration when evaluating whether projects add value. ROA incorporates the impact of risk and uncertainty in irreversible investment projects, while explicitly valuing the inherent flexibilities in project management along the way, including project deferment, abandonment, or expansion. In a Surbana Jurong Capital test case study conducted in 2020 involving a wind farm within this region, students at the National University of Singapore (NUS) Business School divided the project into the following three irreversible stages (financial stages in parenthesis): feasibility studies (due diligence), project structuring and engineering (deal structuring) and construction (actual financing starts). A critical result from the study is that the difference in net present value of the project using the DCF versus ROA method increases monotonically in ROA’s favor as the volatility of the future cash flows to the project increases. The intuition behind this result is that in the ROA approach, the model considers the project manager’s ability, or flexibility, to abandon, defer, expand or re-contract. As financial option pricing theory predicts, the higher the volatility (or uncertainty) of the underlying project’s future cash flows, the greater is this project’s “flexibility” premium.<sup>9</sup>

Second is a new way of thinking about urban infrastructure financing that offers the opportunity to promote green

and sustainable goals. In November 2020, the MAS launched the world’s first Green and Sustainability-Linked Loan Grant Scheme for corporates. The financing scheme is such that independent service providers can be engaged by corporates, particularly SMEs, to validate that loan proceeds are used for green and sustainable purposes. So why don’t the industry and policymakers allow for green, sustainability and social-linked home mortgage schemes too, especially in the case of affordable housing? Any housing project—and its residents—that supports the Sustainable Development Goals (SDGs), Environment, Social, and Governance (ESG), circular economy, renewable energy and energy efficient activities, biological diversity, or which minimizes the social and environmental footprint as well as promotes sustainable food/farming practices, would qualify for this Green and Social-linked Home Mortgage Scheme. Or, the developer could offer a green-linked rent-to-own scheme, which combines a standard lease agreement with an option to buy before the lease terminates.

Finally, on the digital front, tremendous strides have been taken in Singapore to allow the issuance of digital securities, both traditional bonds and private equity-backed bonds, and digital token securities for the trading and settlement of the same in smaller denominations.

In the former case, HSBC Singapore and Marketnode (a joint Singapore Exchange (SGX) and Temasek digital asset issuance, depository, and servicing platform) have recently completed a digital bond issuance process in conjunction with a traditional bond issue from Singtel. According to HSBC Singapore, digital bond issuance is achieved by creating a “distributed ledger technology electronic platform that connects various parties in bond issuances and uses self-executing smart contracts to automate processes such as issuance flows and coupon payments.” In other words, a blockchain system.

In the latter case, a Temasek portfolio company, Azalea Investment Management, has been issuing listed bonds on a diversified portfolio of private equity funds held by Temasek, commencing in 2016 with Astrea III. The latest in the series of such PE-backed bonds, Astrea VI, is now witnessing local digital asset exchange, iSTOX, issuing tokens on Astrea VI. The tokenized offering of such bonds, down to a minimum size of USD20,000, allows for “fractionalized ownership” of Temasek’s PE funds, giving greater access to a broader range of investors, as well as better after-market liquidity

for those who need it.

A similar strong case can also be made for digital issuance and tokenization of infrastructure finance securities, so that a broader swath of investors can participate and benefit from the growth in the real economy through infrastructure investment.

## Conclusion

In this essay, I have tried to lay out how business owners, investors, and policy-makers can use financial markets, products, policies, technology, and science to build more resilient ecosystems to counter extreme systemic crises.

In retirement finance, adequacy and customization are paramount to individual lifecycle planning. Indeed, there are various tools and applications already available to do that in a cost-efficient and seamless manner. Additionally, governments should enact legislation to ringfence retirement assets from capital invasion.

In SME financing, state-run quasi-equity funding with unique features can help provide the necessary liquidity to an otherwise healthy firm during exigencies. Quasi-equity financing is meant to tide the SME over a difficult (yet short) liquidity “squeeze period” in exchange for equity to help the firm survive, recover, and potentially thrive in the long run.

I have also shown that the ROA approach in infrastructure finance adds value over and above traditional capital budgeting using DCFs. ROA provides for the necessary tradeoff and opportunity cost analysis that stems from the ability of the decision maker to adapt to changing scenarios in real time, be they economic, environmental, regulatory, social, or political. And what kind of stewards are we if our decision-making in this space is not green and sustainable? Furthermore, innovations in home mortgage financing and leasing can promote green and sustainable goals while innovations in digital securities issuance can promote access to a broader range of participants. Rethinking the roles of financial markets, innovation, and government policy in retirement finance, SME

financing and infrastructure financing in the ways described here will strengthen resilience in the face of future systemic crises, in Singapore and around the world.

## Appendix

### The Mathematics of SME Financing

A simple economic model to illustrate the economic benefit of state-led quasi-equity is instructive.<sup>10</sup>

- There are 2 states of nature:  $\Theta \in \{h, l\}$  ( $h$  or high = good state w.p.  $\pi$ ; or low = bad state w.p.  $(1 - \pi)$ )
- One SME which can borrow  $D \in \{D_L, D_H\}$  at  $r = 0$  (i.e., assume borrowing rate = 0%); and  $D_L < D_H$
- SME needs  $D_H$  (\$) in total financing, and is risk averse with Von-Neumann Morgenstern utility such that  $u'(\cdot) > 0$  and  $u''(\cdot) < 0$ , where  $u(\cdot)$  is the SME's twice continuously differentiable “utility function”
- One good risky investment returning  $R$  (in \$) w.p.  $\pi$  and 0 w.p.  $(1 - \pi)$
- One riskless investment with certain return  $S$  (in USD)
- SME can allocate  $a \in [0, 1]$  to “good” risky investment and  $(1 - a)$  to riskless investment
  - Scenario 1: All investment financed by debt  $\Rightarrow D = D_H$
  - Scenario 2: Investment financed by combo of debt ( $D_L$ ) + quasi-equity ( $E$ ) for  $x\%$  give-up s.t.  $D_L + E = D_H$
- If  $\Theta = h$  (good state)
  - Income  $y$  from ME's investment in risky & riskless assets:  $y^h(a, D) = \{aR + (1 - a)S\} * D_H$
- If  $\Theta = l$  (bad state)
  - Income  $y$  from ME's investment in risky & riskless assets:  $y^l(a, D) = \{(1 - a)S\} * D_H$  (assume  $< D_L$ )

- The Bank collects:  $P \equiv \text{Min}\{D, y\} = \text{Min}\{D, y^i\}$  (i.e., it collects full face value in good state w.p.  $\pi$ , and takes over the firm otherwise)
- The Government ( $x\%$ ) collects:  $xy = xy^h$  w.p.  $\pi$  (0 otherwise) (i.e., the government receives dividends per its %equity stake w.p.  $\pi$ )
- SME  $(1 - x\%)$  retains:  $(1 - x)y^h - P$  w.p.  $\pi$  (0 otherwise) (i.e., the SME receives residual value after first paying the government and bank its dues w.p.  $\pi$ )

The Scenarios:

- **Scenario 1:**  $x = 0\%$ ,  $D = D_H$  (Pandemic borrowing situation in Singapore where SMEs are financed by low-interest loans)  
ME maximizes  $u(\pi * \{aR + (1 - a)S\} * D_H - D_H) \Rightarrow u(\pi * D_H * \{aR + (1 - a)S - 1\})$
- **Scenario 2:**  $x = x\%$ ,  $D = D_L$ ; where  $D_L + E = D_H$  (Proposed hybrid solution for Singapore where SMEs are financed by low-interest loans and state-led quasi-equity)  
ME maximizes  $u(\pi * \{aR + (1 - a)S\} * (1 - x) * D_H - D_L) \Rightarrow u(\pi * D_H * \{aR + (1 - a)S\} * (1 - x) - 1 * (D_L / D_H))$

**Scenario 1:** Recall, SME maximizes  $u(\pi * D_H * \{aR + (1 - a)S - 1\})$ , and

**Scenario 2:** SME maximizes  $u(\pi * D_H * \{aR + (1 - a)S\} * \frac{(1 - x)}{1} - 1 * \frac{D_L}{D_H})$

- By inspection, since  $u'(\cdot) > 0 \Rightarrow a_{\max}$  (**Scenario 2**)  $> a_{\max}$  (**Scenario 1**).
- Due to concavity ( $u''(\cdot) < 0$ ),  $a$  in both cases are indeed interior maxima
- Hence the SME will optimally invest more in the “good” risky investment in Scenario 2
- From the bank's point of view, the risk of default in Scenario 2 is lower since:  
 $D_L$  (Scenario 2)  $< D_H$  (Scenario 1)
- From the government's point of view:
  - ▶ Scenario 2 implies more risk taking by SME and, hence, greater economic activity
  - ▶ The government collects a dividend of:  $xy^h$  w.p.  $\pi \Rightarrow x * \{aR + (1 - a)S\} * D_H$  w.p.  $\pi$  QED  $\square$

# Economic recovery COVID-19



## Note

- 1 “Ring-fencing pensions,” Joseph Cherian and Emma Yan, *Asia Asset Management*, May 2020, Vol. 25, No. 5.  
URL: <https://www.asiaasset.com/post/23349>
- 2 “Labor supply flexibility and portfolio choice in a life cycle model,” Zvi Bodie, Robert C. Merton, and William F. Samuelson, *Journal of Economic Dynamics and Control*, 16, Issues 3-4 (1992): 427-449.
- 3 “Terms of endurance: Retirement solutions should harness investment science and technology to shockproof plans”, Joseph Cherian and Ong Shien Jin, *Asia Asset Management*, July 2020, Vol. 25, No. 7.  
URL: <https://www.asiaasset.com/post/23545>
- 4 Editor’s note: The latest GDP growth estimates provided by the Ministry of Trade and Industry (Singapore) on 14 July 2021 report that Singapore’s economy grew by 14.3% on a y-o-y basis in the second quarter of 2021, while first quarter growth registered 1.3% growth.
- 5 According to Enterprise Singapore, small enterprises are companies with revenues between USD1-10 million, while medium-sized enterprises are companies with revenues between USD10-100 million. Other qualification conditions are listed on the Enterprise Singapore website.
- 6 The Enterprise Singapore’s SME TBLP provides 5-year working capital loans up to SGD5 million with interest rates capped at 5% p.a.

URL:<https://www.enterprisesg.gov.sg/financial-assistance/loans-and-insurance/loans-and-insurance/temporary-bridging-loan-programme/overview>

- 7 See MAS Report (10 September 2018).  
URL:[https://www.mas.gov.sg/-/media/MAS/News-and-Publications/Consultation-Papers/Response-to-Feedback-on-Proposed-VCC-Framework\\_10-Sep.pdf](https://www.mas.gov.sg/-/media/MAS/News-and-Publications/Consultation-Papers/Response-to-Feedback-on-Proposed-VCC-Framework_10-Sep.pdf)
- 8 Editor’s note: Since the writing of this article, the U.S. Senate has introduced a less ambitious USD1 trillion bipartisan infrastructure investment bill.

9 A caveat is in order here. While ROA provides a better returns representation of the project given it reflects the added optionality and risk premium, the corresponding challenge is the accuracy of both the underlying assumptions and ascertainment of the parameters associated with the ROA methodology.

10 The financial economic model used in this SME Financing section is adapted from “Contract Structure, Risk Sharing, and Investment Choice”, Greg Fisher, *Econometrica*, 81, no. 3 (2013): 883-939.

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Joe joined the financial industry in New York after an academic career, including as Associate

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Joe holds a B.Sc. in Electrical Engineering from MIT, and M.Sc. and Ph.D. degrees in finance from Cornell University where he was a two-term member of the Johnson Graduate School of Management’s Dean’s Advisory Council and remains Emeritus Member of the Council.



## ROONGKIAT RATANABANCHUEN

Chulalongkorn Business School

# The Digital Economy: The New Frontier for Growth of MSMEs in Thailand during and after the COVID-19 Pandemic

## Introduction

Based on the World Bank database, Thailand was experiencing growth of real gross domestic product (GDP) per capita at around 5% per annum during the years 1985 to 1999. Then the growth rate dropped to only around 3.4% after 2000. The start of the high economic growth period in Thailand resulted from a government project during the 1980s and 1990s known as the Eastern Seaboard Development Plan which attracted a significant amount of foreign direct investment from Japan, the United States, Hong Kong, and many European countries. The main growth engine during that time was the industrialization of labor-intensive sectors such as automotive, petrochemicals and agricultural products.

Over the past decades, Thailand was promoted by many names such as the “Detroit of Asia”, “the land of smiles” and “kitchen of the world”. Even though these campaigns helped the Thai economy to grow, most of the economic growth still depends on seasonal farming and the manufacture of low value-added products.

As economies around the world

have been embracing new digital technology, Thailand’s competitiveness has sharply dropped because most of its enterprises still concentrate in conventional ways of doing business. In order to maintain the same rate of growth as seen in the past, the Thai economy needs to restructure and transform itself to become “the land of the digital economy”.

This paper will discuss the current state of Thailand’s digitalization in order to understand the pace of digital transformation over the past 6 years. It will also focus on the recent developments during the COVID-19 pandemic as this pandemic is one of the critical factors that is forcing many enterprises to digitize their value chain. It will then be followed by an analysis of Thai government policies to support the growth of the digital economy. The paper will end with final thoughts about the need to increase the digital literacy of Thai households which can be an important component of successful digitalization.

## Current State of Thailand’s Digitalization

The latest data compiled by the National Statistical Office (NSO) on the penetra-

tion rates of computers, the internet, and mobile phones of the Thai population are shown in Figure 1. The average penetration rate of computers is only around 25%, which is quite low compared to some Asian countries such as Singapore at 88% and Malaysia at 67%, not to mention other high-income countries where the rate is mostly around 82% (TCdata360 World Bank database).

In addition, only in Bangkok and the surrounding metropolitan region is the computer penetration rate relatively high at 43% of the population. There is also a wide variation in computer penetration across different provinces with the lowest in Nong Bua Lamphu at 12% and the highest (outside Bangkok area) in Nonthaburi at 39%.

The average internet penetration rate is better at around 66%. Even though it seems high, this level of internet penetration is not impressive when compared with the average rates of 78% in Europe and Central Asia, 89% in North America and 67% in Asia-Pacific. According to Statista, the average amount of time Thai households spent online is estimated to be around 8.44 hours per day.

The only impressive figure is in the mobile phone penetration rate which is above 70% in all provinces of Thailand. However, this number may not be a correct estimate of the extent of digitalization as it includes standard phones without 3G or 4G connections.

Regarding the digitalization of Thai enterprises, data from NSO show that the

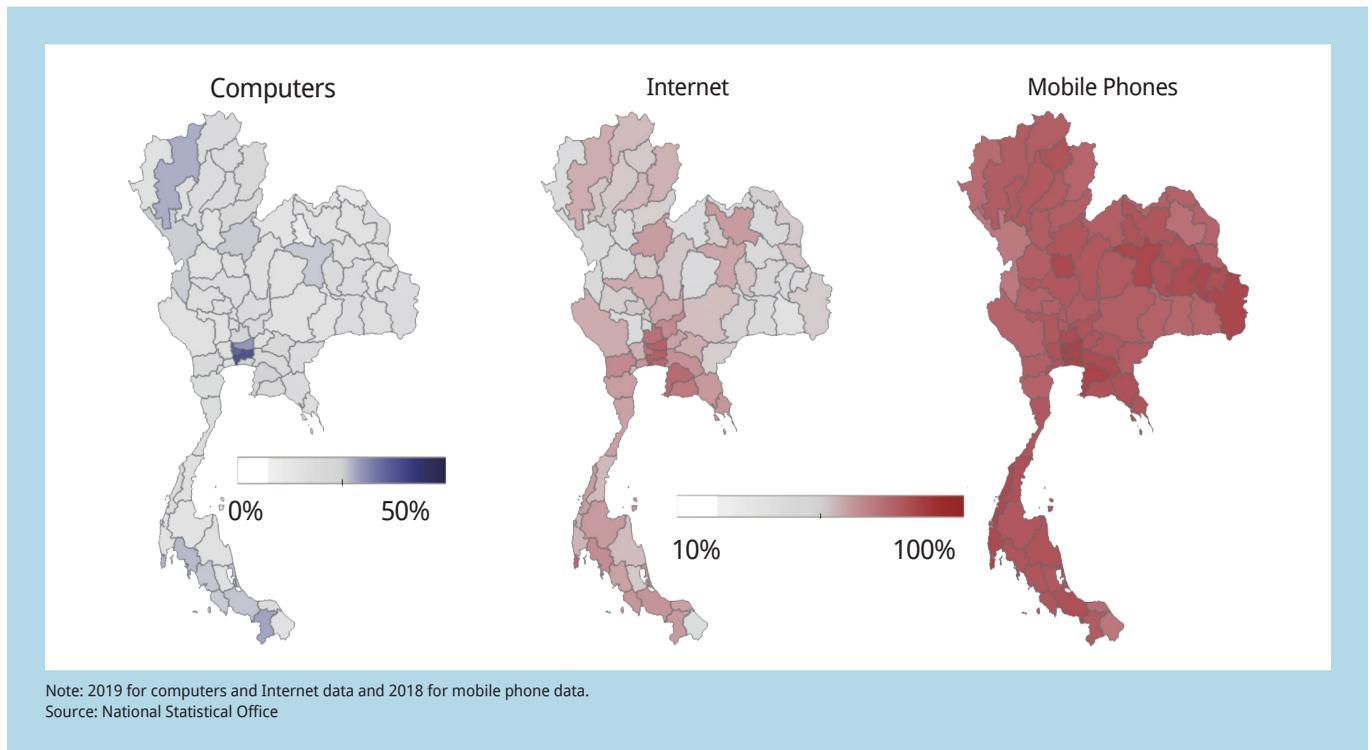
computer penetration rate at Thai enterprises is only around 28%. The rate of growth has been quite low over the past 6 years, even though during this time the digital technology has become a common device at most enterprises around the world. This low level of computer penetration in Thai enterprises largely stemmed

from the low usage by micro-enterprises<sup>1</sup> especially those in the Northeastern region of Thailand.

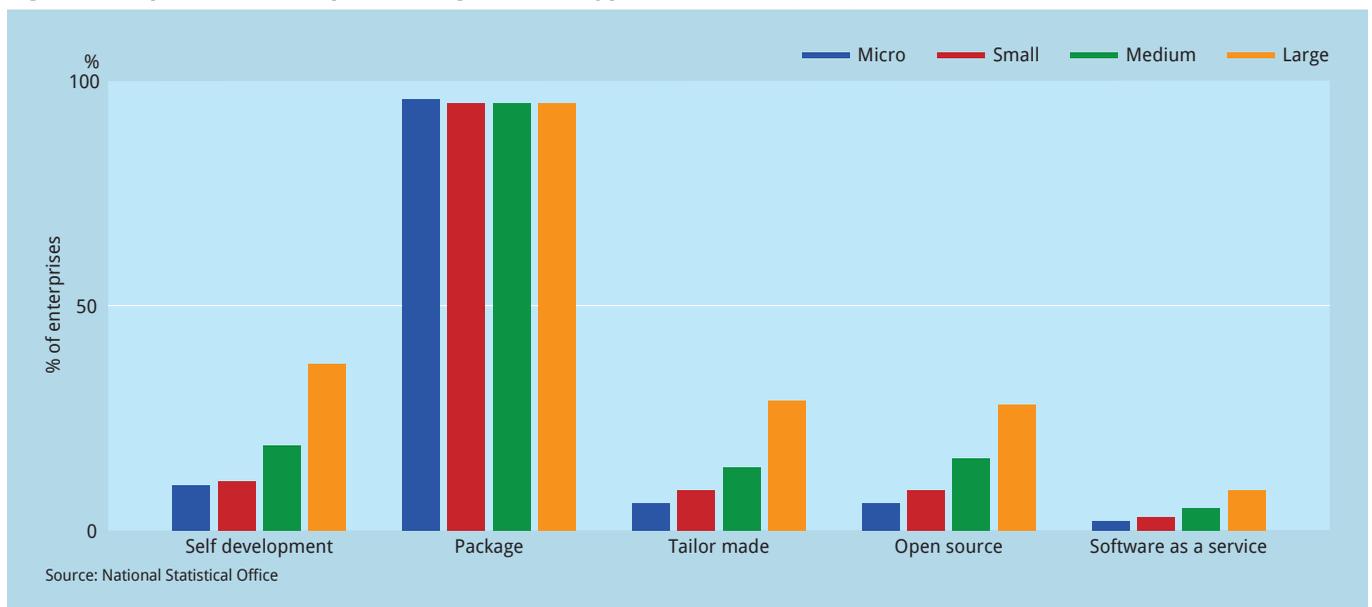
When looking at the type of software used in most enterprises, only around 2-3% of micro, small and medium-sized enterprises<sup>2</sup> (MSMEs) use software as a service (SaaS) technology as shown in Figure 2.

This is surprising as the cloud computing technology is regarded as one of the main technologies that can allow MSMEs to use advanced software at reasonable price plans. If the MSMEs that use SaaS are assumed to be digital entrepreneurs or tech startups, the proportion of these entrepreneurs is significantly low in Thailand.

**Figure 1: The Usage of Computers, Mobile Phones and the Internet as a Proportion of the Population Aged 6 Years Old and above**



**Figure 2: Proportion of Enterprises Using Different Types of Software (2019)**



Most enterprises in Thailand connect to the internet by broadband, followed by xDSL technology and 3G networks. The data also shows that compared to larger firms, micro enterprises largely use wireless technology to connect to the internet. This suggests that the main devices that micro enterprises use in doing business are smartphones and tablets.

One of the main indicators of how Thai enterprises participate in the digital economy is the proportion of enterprises having a website and having the ability to buy or sell products and services online. Figure 3 shows that the share of enterprises having a website increased gradually from only around 6.7% in 2014 to around 10.5% in 2019. However, the proportion of enterprises having the ability to buy or sell products online is still low at only 6-8%. Only a small percentage of MSMEs have an online presence compared to medium and large enterprises.

Moreover, most enterprises with websites state that the main purpose is for advertising and communication with customers (around 70-80%). In 2019 only 30% had started accepting orders online and 13.7% could accept digital payment. Because of this low capability of Thai enterprises to conduct business online e-commerce accounts for only 2% of the value of all retail sales in Thailand. This share is quite low compared to the US at 13%, Chi-

na at 20% and Singapore at 5% (Bain and Company, 2018).

Because smartphones appear to be the main device for most Thai households and MSMEs, their main activities while using the internet appear to be concentrated in online social networking, using messaging apps and consuming digital media. Only 25-30% of households use the internet to sell or buy products and services or for internet/mobile banking.

Enterprises also use the internet for basic tasks such as e-mail and searching for information (ranging from 60% for micro enterprises to 90% for large enterprises). Only around 30-40% of enterprises use the internet for buying and selling products and services, for internet/mobile banking, or for online meetings.

## Understanding the Thai Digital Economy through Payment Data during the COVID-19 Pandemic

The results discussed previously were

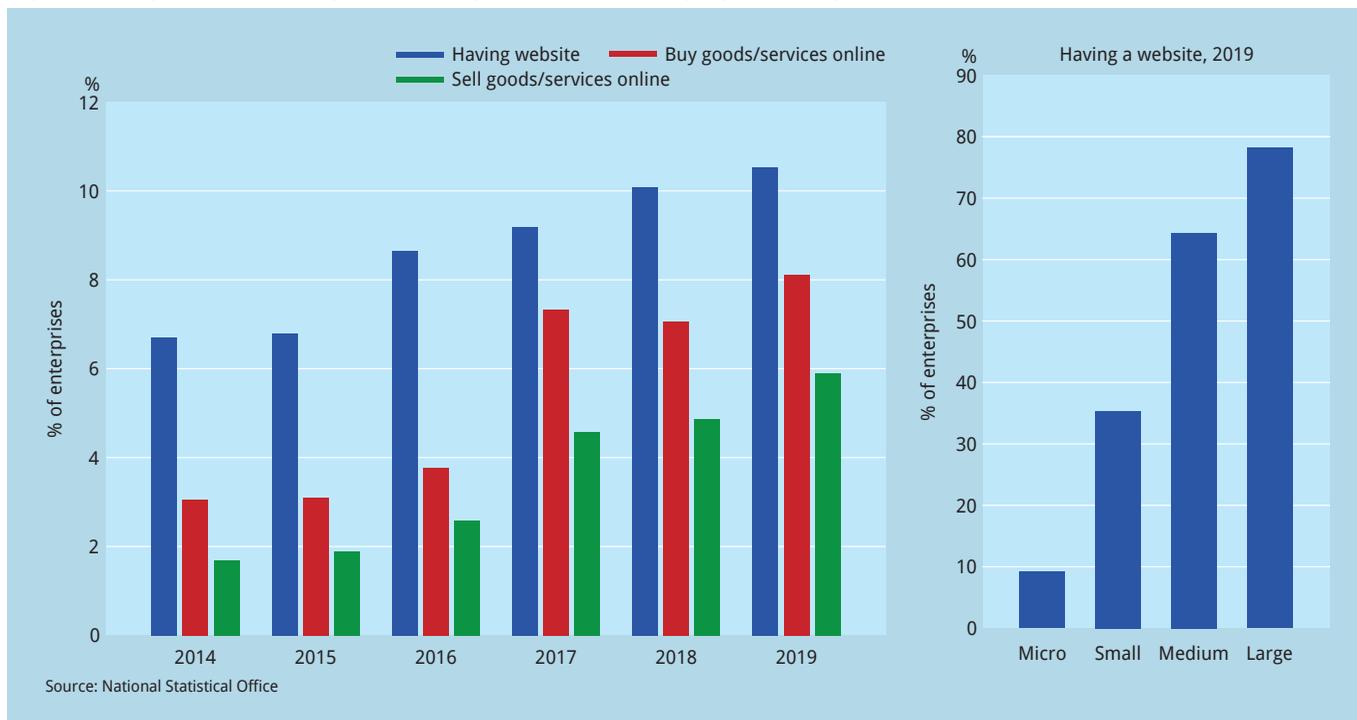
based on the latest data for 2019, but some may argue that the state of digitalization in Thailand may have altered after the COVID-19 pandemic. As the data from the 2020 survey from the NSO is not available yet, the only available data that can be used to reflect how households and enterprises in Thailand participate in the digital economy is the payment data collected by the Bank of Thailand (BOT).

According to these BOT data (Figure 4) e-payment transactions increased significantly over the past 10 years. Among e-payment transactions, online retail fund transfers (ORFT) and e-money grew the fastest over this period and among these, electronic transactions via the internet and mobile banking across banks increased by more than 180 times their value in 2010.

The tremendous increase in internet/mobile banking is a result of the implementation of PromptPay which is a new payment infrastructure that links together a national ID, a mobile phone number and a bank account. This platform greatly facilitates use of mobile banking by households and enterprises. Because of the introduction of this new technology, the use of ATM transfers and electronic transfers through bank branches dropped sharply after 2016.

Monthly data on transactions during the COVID-19 pandemic (Figure 5) show a sharp drop in card and electronic transactions at bank branches in April 2020 which

**Figure 3: Proportion of Enterprises Having a Website and Buying or Selling Online**



**Figure 4: Growth of E-payment and its Components**

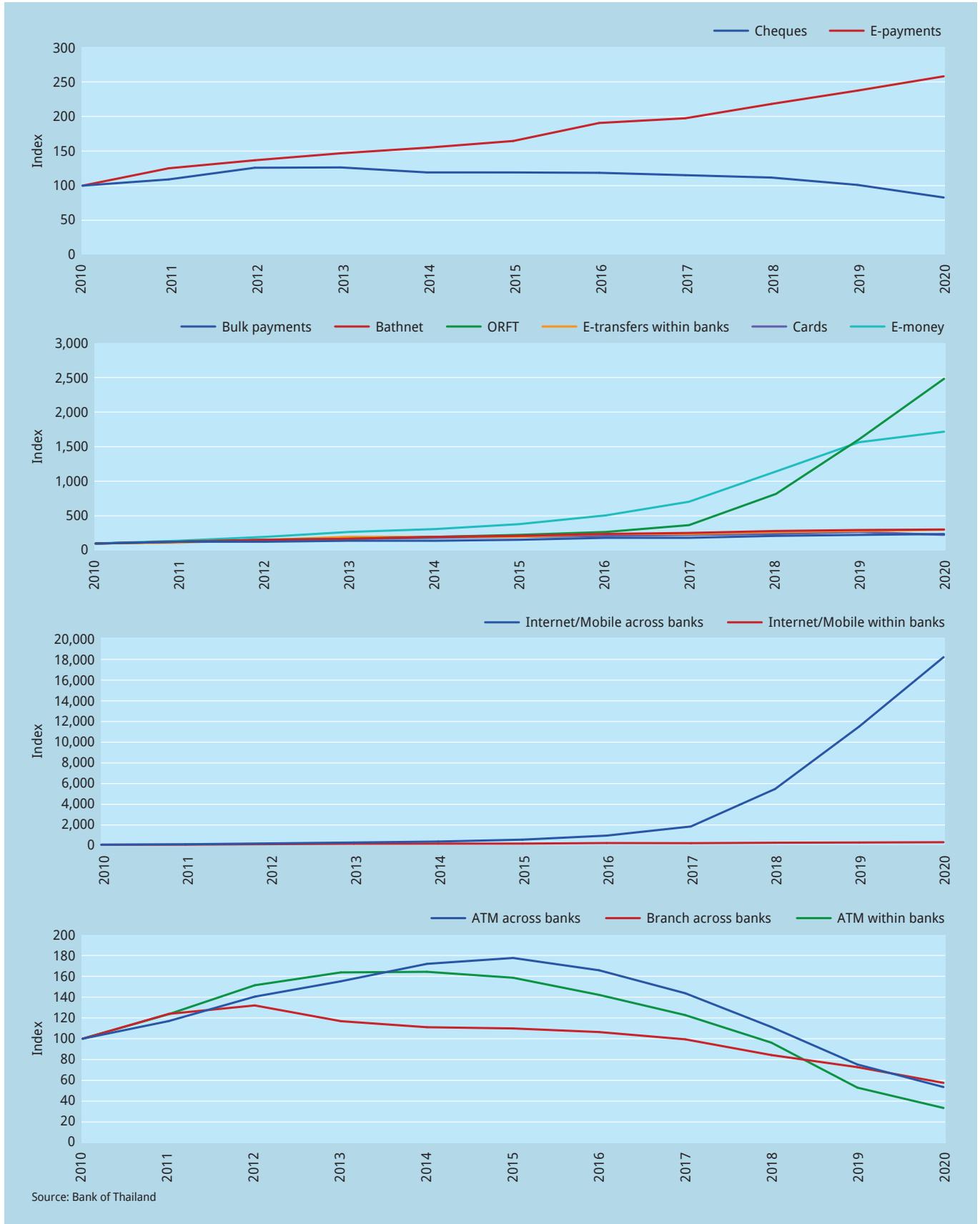
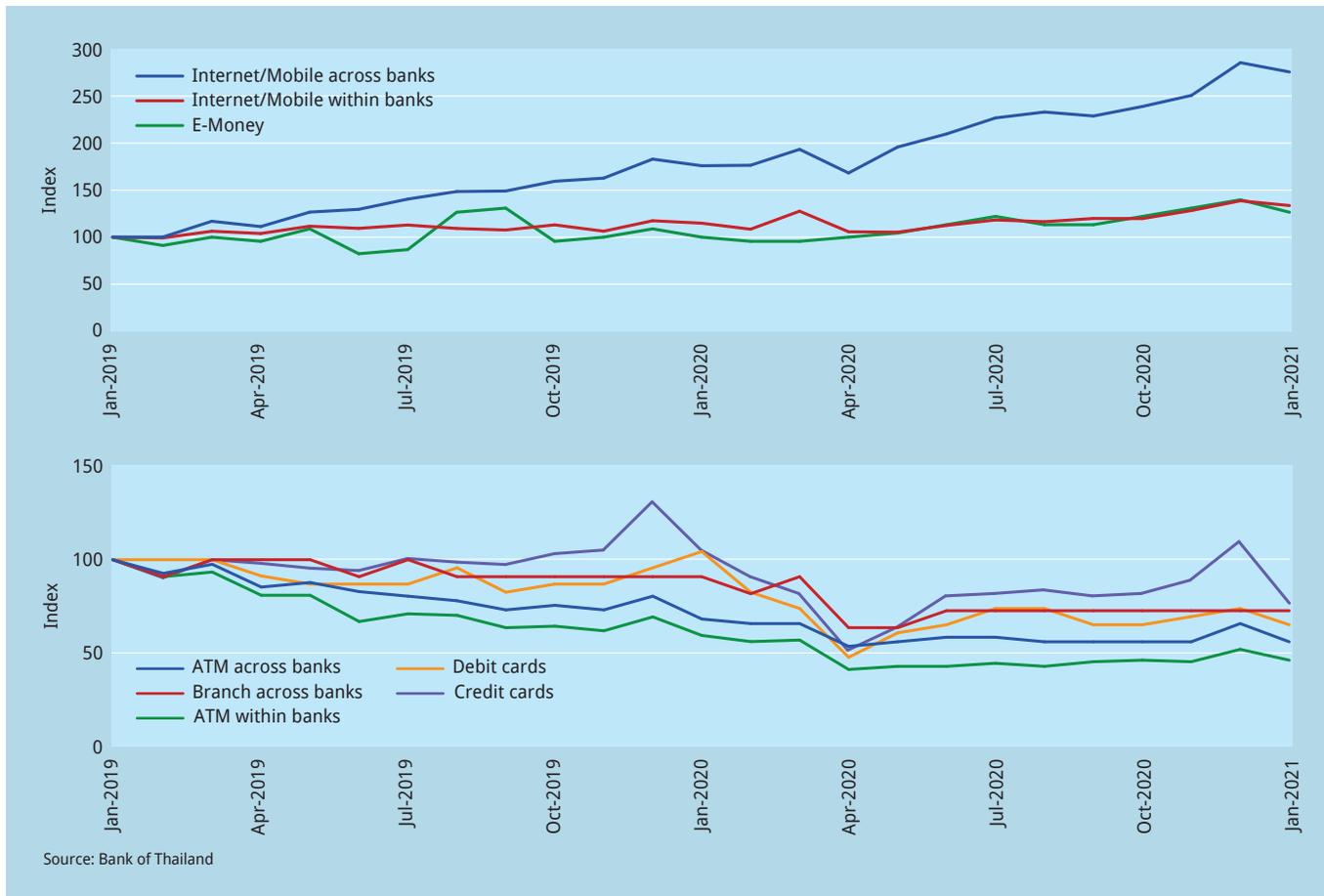


Figure 5: E-Payment Behavior during the COVID-19 Pandemic



was the first whole month of full lockdown. During the full lockdown period between April and June 2020 many households used internet and mobile banking. The value of payments through this channel increased sharply and it even continued to increase further after the end of the lockdown. This suggests that Thai households and enterprises have become accustomed to the new way of transacting business.

The year 2020 was also the time that the value of mobile banking transactions surpassed the value of internet banking as shown in Figure 6. The total value of mobile banking in 2020 alone increased from around THB2,200 billion per month before the COVID-19 pandemic to around THB3,000 billion per month after the pandemic. The number of mobile banking accounts (68 million) is now close to the total population (69.8 million) of Thailand.

The widespread use of internet and mobile banking has also led to a drop in the value per transaction from above THB100,000 to around THB40,000 for internet banking. The value per transaction for mobile banking is even lower at only

THB3,600 per transaction. These statistics suggest that mobile banking has already become common in daily life.

Because mobile and internet banking allows households the convenience of spending directly from their bank accounts, the value of these transactions has grown faster than e-money. It is clear that commercial banks in Thailand dominate retail e-payments. The total value of transactions per each e-money account is low, at only THB3,000 per year.

## Government Policies to Bolster the Thai Digital Economy

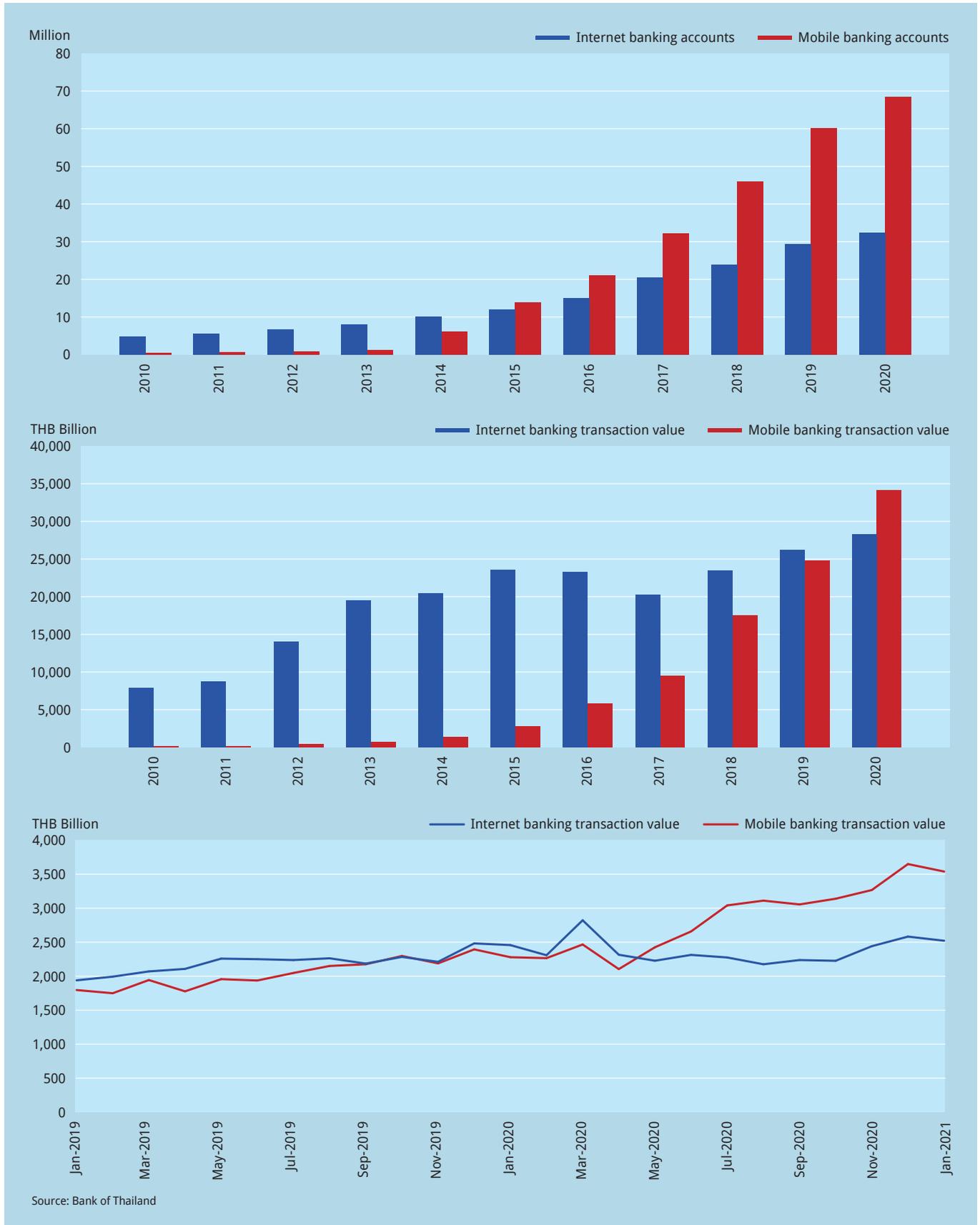
The Thai government launched the campaign “Thailand 4.0” in 2018. This cam-

paign is part of the 20-year master plan which largely includes the development of the digital ecosystem. The plan is organized in four phases: building digital manpower in phase 1; digitalizing Thai enterprises in phase 2; digitalizing communities in phase 3; and building Thailand to become a global digital leader in phase 4.

The overall goals of the four phases of the 20-year master plan are to transform the main products of Thailand from commodity into innovation, to replace conventional manufacturing processes with technology and automation, and to focus more on the service economy rather than the manufactured goods economy.

In order to help MSMEs to utilize digital technologies in a creative and productive way, the Thai government has created many agencies to support the development of innovation and business. The National Science and Technology Development Agency (NSTDA) was first set up in 1991 to focus on supporting research in science and technology. Then, the Geo-Informatics and Space Technology Development Agency (GITSDA) was established in 1999 to sup-

**Figure 6: Internet and Mobile Banking: Number of Accounts and Transaction Value**



port satellite and space technology. The National Innovation Agency (NIA) was set up in 2003 to focus on applied innovations in business. In addition, in conjunction with the 20-year master plan, the Digital Economy Promotion Agency (DEPA) was created in 2017 to build the foundation to support the digital economy.

Even though all these agencies work separately and have different agendas, under the campaign “Thailand 4.0” they now have a common goal. MSMEs can seek financial support, research funds or digital expertise support from many agencies.

Because the main barriers to technology adoption for MSMEs often include the lack of funding and knowledge to implement digital technology, NIA initiated a project called “Innovation Coupon”. Innovation Coupon is a funding project that requires three parties, namely an enterprise, a technology provider and the supporting agency. An enterprise which needs funding can browse and select a technology from a pool of certified technology providers. If the proposed business project using the selected technology is considered feasible, the agency will provide funding at a maximum of 75% of the total required capital for the project.

The success of this NIA project has led many other government agencies to provide this type of innovation coupon as summarized in Table 1. Each agency's funding project may have a slightly different focus. For example, the innovation coupon from NIA is currently geared toward projects in bioeconomy, manufacturing and circular economy, and service and sharing economy while the startup voucher from NSTDA focuses on projects with highly intensive use of science and technology. DEPA's vouchers have many purposes ranging from a small fund to purchase software to a fund for IP applications.

Apart from this innovation coupon, government agencies such as NIA, NSTDA and DEPA also set up funds or venture capital (VC) funds to finance tech startups. DEPA's digital transformation fund is for any organization (including universities, private sector, and public organizations) that needs funding in certain areas ranging from digital skill development (up to THB300,000 per project) to digital infrastructure (up to THB200 million per project). The Ministry of Higher Education, Science, Research and Innovation also set up the Technology and innovation-based Enterprise Development (TED) Fund aimed at projects proposed by undergraduate and graduate students. The Department of Industry Promotion partners with the pri-

vate sector each year to provide an angel fund for startups in certain areas.

Rather than just providing financing support, government agencies also attempt to build infrastructure that supports investment in the digital economy. DEPA's main infrastructure is the “Thailand Digital Valley” in the Eastern Economic Corridor (EEC) area to support the investment in IoT, data science, 5-G applications, smart devices, high value-added software, robotics, and cloud and digital services. The creation of digital and innovation parks in the city is the responsibility of NIA, while NSTDA focuses on the science park with infrastructure in food and feed technology, software development and bioresource research.

During the COVID-19 pandemic, DEPA and NIA played a crucial role in providing liquidity to some startups. In 2020, DEPA provided bridge financing for 38 startups. NIA is also considering providing matching funds.

The other important initiative implemented by the government is the “Startup Visa,” sometimes known as the “Smart Visa” aimed at attracting foreign talent, investors, executives, and startup entrepreneurs who wish to work or invest in the government-designated target industries<sup>3</sup>. The holders of a smart visa will be exempt from work permit requirements and can stay in Thailand up to four years.

NSTDA also created an e-commerce platform for digital technology called “Thailand Tech Show” where enterprises can browse and shop for digital technology. NSTDA sets the price and prepares contracts between enterprises and intellectual property owners. NSTDA also provides lending facilities for startups with interest rates as low as half the rate on 12-month

time deposits plus 1.125%.

NSTDA is also the main agency that certifies research and development projects for enterprises and investors to receive tax benefits. Currently the government provides a capital gain tax exemption for 10 years to VC funds that invest in startups working in the government's 10 target industries. Startups in those industries are also exempt from corporate income tax for five accounting years. Local angel investors can also get a maximum of THB100,000 personal income tax deduction.

Regarding the VC environment in Thailand, data compiled by Techsauce show that the VCs and local angel investors now number more than 100 and 50 respectively. In normal times, angel investors play an important role in funding startups at the seed stage. Most VCs in Thailand invest in Series A or Series B rounds. Even though the COVID-19 pandemic has made it difficult for VCs to do due diligence, the total value of disclosed deals in 2020 was around USD364 million which is the highest amount observed by Techsauce so far (Techsauce, 2021).

In 2020, the Stock Exchange Commission (SEC) also resolved the bottleneck in startup funding by allowing startups and SMEs to issue shares or convertible debentures (CD) for private placement without having to file with the SEC. Small and medium-sized enterprises (SMEs) only need to prepare factsheets, register with the Office of Small and Medium Enterprises Promotion (OSMEP) and report the result of the offering within 15 days. In 2020, three startups successfully issued CDs with a total value of THB168 million. The SEC stated that there are around 69 enterprises in the process of issuing CDs in 2021 (RYT9, 2020).

**Table 1: Innovation Coupon in Thailand (as of 2021)**

Government Agency	Campaign Name	Funding Amount
NIA	Innovation coupon - 1 <sup>st</sup> Phase (2010-2012) - 2 <sup>nd</sup> Phase (2014-2016) - 3 <sup>rd</sup> Phase (until now) MIND Credit	Up to THB400,000 per project Up to THB1.5 million per project Up to THB1.5 million per project Up to THB1 million per project
DEPA	Mini transformation voucher Standardization voucher Intellectual property voucher Internationalization voucher	Up to THB10,000 per project Up to THB100,000 per project Up to THB100,000 per project Up to THB150,000 per project
NSTDA	Startup voucher	Up to THB800,000 per project

Source: Government agency websites

The BOT is also working to allow peer-to-peer (P2P) lending platforms to be widely commercialized soon. This will be a new funding platform for small enterprises to access commercial loans with a maximum amount of THB50 million and maximum interest rate of 15%. In 2019, the SEC also allowed equity crowdfunding platforms. Currently, there are five authorized funding portals. However, the SEC only allows enterprises to raise funds from retail investors with a maximum of THB20 million in the first 12-month period.

Regarding funding via cryptocurrency technologies, the legalization of cryptocurrency exchanges, brokers and dealers came into effect in 2018. The SEC has now approved eight exchanges, six digital asset brokers, one digital asset dealer and four initial coin offering (ICO) portals. In May 2021, one company announced to raise THB2,400 million via an ICO offering. If this offering is successful, financing via ICO may become popular and small enterprises would then have a new channel for funding.

## Final Thoughts: The Need for Digital Literacy for All Thai Households and MSMEs

Despite all these funding projects and well-developed infrastructure supporting the ecosystem of tech startups, the goal of transforming the Thai economy into a successful digital economy may not be achieved if households and small enterprises do not have the capability to use digital technology in productive ways. There may be few creative and promising ideas for the government agencies or VCs to support the financing. As a consequence, one of the key components that links digital technology and the growth of the economy is the level of digital literacy of Thai MSMEs.

Based on the data shown in this paper, it is clear that most MSMEs in Thailand still run their business in traditional ways. Only a handful use the internet and computers in their daily routines. Moreover, those that use computers or the internet mainly use them only for basic activities. Digital transformation cannot happen if these entrepreneurs do not know how to use digital technology and do not realize

the benefits that digital technology could offer to their business.

Ratanabanchuen (2020) proposes a framework to measure the digital literacy of Thai households. His model includes four aspects, namely: 1) the level of digital access; 2) the level of digital skills; 3) the level of digital knowledge; and 4) the level of risk and information awareness. Based on his survey which covered households living in Bangkok and its metropolitan area, around 18.7% of the population is regarded as digitally illiterate. Most of these households work in labor-intensive sectors or are employed. In contrast, those considered to be digitally fluent are working in high-ranking professional occupations with an annual income of more than THB1 million a year.

This finding suggests that digital literacy has already created challenges in Thailand and it may be one of the main obstacles for MSMEs to grow in the digital economy. Without proper policies, wealth inequality between large enterprises and MSMEs may widen even more in the next decades.

Digital literacy and digital infrastructure should be considered the main foundation of the digital economy which supports three pillars, namely 1) innovative business models, 2) digital tools, and 3) digital financial services. With this framework, Thai MSMEs can become the main backbone of Thai economic growth in the next decades.

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### Notes

- 1 The term micro-enterprises in this paper is defined as those firms with fewer than 10 workers, which comprise 90% of all Thai enterprises.
- 2 The term small enterprises in this paper is defined as those firms with 10 – 50 workers, which comprise 9% of all Thai enterprises.
- 3 The 10 target industries include: 1) next-generation automotive; 2) smart electronics; 3) agriculture and biotechnology; 4) affluent medical and wellness tourism; 5) food for the future; 6) automation and robotics; 7) aviation and logistics; 8) medical and healthcare; 9) biofuels and bio-chemicals; and 10) digital.

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Roongkiat Ratanabanchuen, Ph.D. is currently Assistant Professor at Chulalongkorn Business School. Before joining Chulalongkorn University, he worked at the Bank of Thailand in the Department of Risk Management. He holds a doctorate in pension fund management from the London School of Economics and Political Science.

Dr. Roongkiat has expertise in personal finance, capital markets, fund management and bank management. He has earned a number of awards and scholarships including the 2017 CFA Institute Best Paper Award for research about market microstructure and the 2018 SEC Best Paper Award for research on fund management. He was also invited to present a research paper on the topic "Understanding the dynamic of digital economy in the context of digital literacy of Thai households" at the Bank of Thailand Symposium 2020.

# Introducing Nomura Foundation

Nomura Foundation (the Foundation) is a public interest incorporated foundation formed in 2010 from the combined resources of three existing foundations established by Nomura Group, a financial services group comprising Nomura Holdings and its subsidiaries in Japan and overseas. The Foundation aims to support a dynamic and sustainable economy and society by promoting the social science disciplines, enhancing international understanding, and fostering young academic and artistic talent. It focuses on four program areas: Social Sciences, Foreign Student Scholarships, Arts and Culture, and the World Economy.

The World Economy program supports research, conferences, and publications related to the macro economy and capital markets.

In the macro economy area, the Foundation has organized conferences together with experts from the Brookings Institution (US), Chatham House (UK), the Development Research Center of the State Council (China), and Bruegel (Belgium) as well as Nomura Securities and Nomura Institute of Capital Markets Research to share research on such topics as monetary and financial institutions, fiscal stability, and demographic change and sustainability.



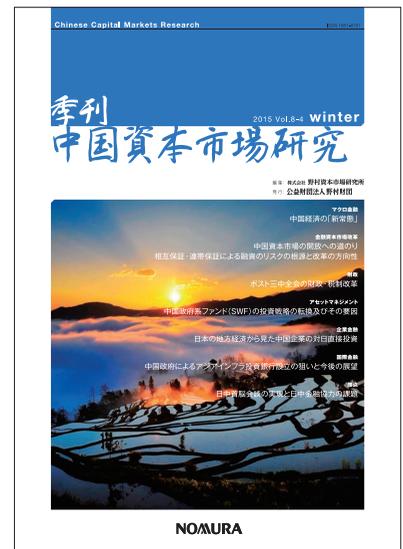
Panel Discussion at the 2015 Forum

In the area of capital markets, the Foundation has organized conferences and roundtable discussions in conjunction with the Brookings Institution, the Wharton School, the Development Research Center of the State Council (China), China's Center for International Knowledge on Development and Nomura Institute of Capital Markets Research. It has also provided financial backing for several conference volumes published by the Brookings Institution, *Capital Markets in India* published by Sage, Inc., and the quarterly Japanese-language journal *Chinese Capital Markets Research*.

Research papers and presenta-

tions prepared for conferences and the content of print publications are available on the Foundation's website <http://nomurafoundation.or.jp/en>.

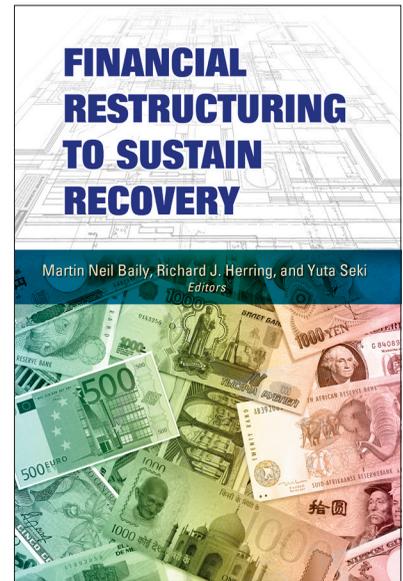
With the expanding importance of Asia in the 21<sup>st</sup> century global economy, the Foundation has been increasing its support of intellectual interactions among experts at think tanks, universities and government agencies in the region. As part of this effort and recognizing the importance of capital market development in promoting economic growth and prosperity in Asian countries, the Foundation started publishing *Nomura Journal of Asian Capital Markets* in 2016.



Cover of *Chinese Capital Markets Research*



Lord Mervyn King at the 2015 Forum



Cover of *Financial Restructuring to Sustain Recovery*

# Introducing Nomura Institute of Capital Markets Research

Nomura Institute of Capital Markets Research (NICMR) was established in April 2004 as a subsidiary of Nomura Holdings to build on a tradition begun in 1965 of studying financial and capital markets as well as financial systems, structure, and trends. NICMR develops original research and policy proposals by specialists based upon knowledge of actual business practice.

NICMR publishes some of its research output in Japanese in *Nomura Capital Markets Quarterly* as well as *Nomura Sustainability Quarterly*, and posts some items in Japanese, English, and Chinese on its website.

NICMR's core mission is to contribute to reform of Japan's financial system and securities market in order to foster establishment of a market-structured financial system. Structural changes, particularly population aging, are having a major impact on Japan's economy and society. Addressing the challenges created by these changes calls for reforming social security, tax, and public finance systems. One of Japan's most valuable resources is the JPY1,900 trillion in financial assets held by households. Establishing a market mechanism-driven money-flow that makes efficient, effective use of these assets is critical to the country's future.

NICMR's research focus extends well beyond Japan to encompass current issues in capital markets around the world. In addition to research offices in New York, London and Beijing, NICMR established a research office in Singapore in 2015 to strengthen its Asian research platform.

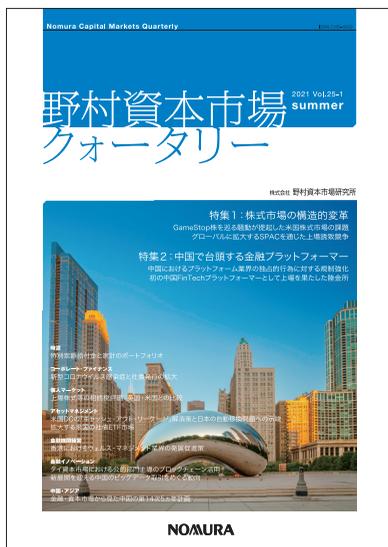
The continued growth of Asian economies including China is generating huge funding needs for infrastructure and creating an urgent need for indirect financing systems and robust capital mar-

kets in the region. Promoting the development of Asian capital markets is a key for the future of Asian financial systems and economies. Moreover, it is important that Asian perspectives and regional differences are recognized in the post-global financial crisis environment of closer cooperation among financial regulators making rules and global standards.

NICMR's recommendations for developing financial and capital markets in Asia are based on analyses of past experience in developed economies. In particular, Japan offers useful lessons on the importance of direct finance for supporting new businesses and of investment services to cater to the needs of a growing middle class.

NICMR has also been working to strengthen its sustainability initiatives. To this end, it established the Nomura Research Center of Sustainability in December 2019. This research center focuses on objective and practical research into areas of sustainability closely related to the financial and capital markets in major regions including Asia.

As a member of the Nomura Group, a global financial group based in Asia, NICMR strives to contribute to the development of financial and capital markets in Japan and the rest of Asia through fundamental research and experience-based policy recommendations.



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