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Post-COVID Central Bank Balance Sheet Normalization and Its Implications: The Case of ASEAN-4 Economies

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Abstract

The unprecedented economic impact of the Covid-19 pandemic necessitated the use of balance sheet tools by many central banks including ASEAN-4 economies namely Indonesia, Malaysia, Thailand, and the Philippines. Chief among them is the large-scale outright purchases of government bonds, in some cases to support government financing while in others to address temporary bond market dysfunctions. As the economies recover and monetary policy is on a tightening path, the paper sheds light on the normalization of balance sheet tools with a particular focus on government bond purchases, which has not been adequately discussed in existing literature in the case of ASEAN-4 central banks. The findings suggest that a passive normalization is already underway in many cases, albeit with less communication compared to Advanced Economies' central banks. The paper also provides some guidelines on the factors that ASEAN-4 central banks should take into consideration when assessing the need for and designing the pace of balance sheet normalization. These factors include optimal balance sheet size, short-term interest rate controls, financial market development, and the potential impact on the bond market. We conclude that while there may be no urgent need for ASEAN-4 economies to scale down their government bond holding in the short term, in the longer-term, central banks with a large presence in the market may consider more active normalization to avoid unintended consequences on the bond market. Clear communication should also form an integral part of the normalization plan.

JEL classification: E52, E58, G1

Keywords: central bank balance sheet, monetary instrument, open market operations, bond market

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I. Introduction

The unprecedented impact of the Covid-19 pandemic triggered large-scale policy responses by ASEAN central banks. Both conventional price-based interest rate tools and unconventional quantity-based balance sheet tools were employed to ease financing conditions and ensure adequate liquidity in the system. The balance sheet tools, such as large-scale outright purchase of government bonds and lending to financial institutions, have been widely used among advanced economy (AE) central banks since the Global Financial Crisis. However, until the Covid-19 pandemic, these tools were less common among emerging market economies, which were subject to tighter foreign exchange constraints to adopt such tools. As post-pandemic recovery gathers strength and policy normalization follows, much of the policy discussions and analyses have focused on the normalization of interest rate tools. Meanwhile, balance sheet normalization of ASEAN central banks has not gained much attention, unlike in the cases of AEs.

This paper aims to shed light on pandemic-related central bank balance sheet tools and ensuing normalization, with a particular focus on ASEAN-4 economies, comprising Indonesia, Malaysia, Thailand, and the Philippines due to their broadly similar monetary policy framework and balance sheet tools. Despite their similarities in the broad choices of tools, ASEAN-4 central banks followed different approaches in their utilization of balance sheet tools based on country-specific circumstances and policy objectives, leading to different implications on their normalization path (if any).

The structure of the paper is as follows. In Section II, it will take stock of the balance sheet tools used by ASEAN-4 central banks in response to the pandemic as well as their policy objectives to set the stage for further analyses. The stocktaking exercise will draw comparisons among both ASEAN-4 and AE central banks. Then, the following section will explore ASEAN-4 normalization plan that have been communicated or carried out thus far. The key questions on whether and why balance sheet normalization is necessary for ASEAN-4 economies will be addressed, and the financial market implications of such normalization, particularly of government bond purchases, will be discussed. Finally, if normalization is deemed as an appropriate next step, the paper outlines the key considerations that central banks should take into account when formulating normalization strategy.

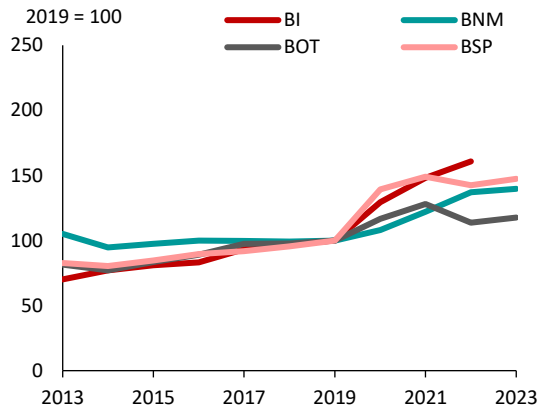
II. The use of central bank balance sheet tools during the pandemic

Overall Balance Sheet trends

To understand the use of balance sheet tools, the development of central banks' assets needs to be examined. Most balance sheet tools employed during the pandemic involved changes in the size and composition of central bank assets. The unprecedented nature of the pandemic and its massive impact on the ASEAN-4 economies necessitated large scale fiscal stimulus spending and monetary policy easing in the forms of policy rate cuts and central bank interventions in various markets to provide funding and ensure orderly market functioning. As a result, the asset side of ASEAN-4 central banks expanded at an exceptional pace in response to the crisis. For instance, in 2020 alone, total assets of Bangko Sentral ng Pilipinas (BSP), Bank Indonesia (BI), Bank of Thailand (BOT), and Bank Negara Malaysia (BNM) expanded by 39 percent, 29 percent, 17 percent, and 8 percent, respectively, compared to the average annual growth rates of 10 percent, 6 percent, 8 percent, and 4 percent during 2005-2019. Cumulatively, between end-2019 and end-2022, BI's assets saw the largest increase of 61 percent, followed by those of BSP at 43 percent, BNM at 37 percent, and BOT at 14 percent (Figure 1). The different magnitudes of the increase in the balance sheet sizes reflect each central bank's policy choices and the degrees of interventions in each economy, as will be clear in the following sections.

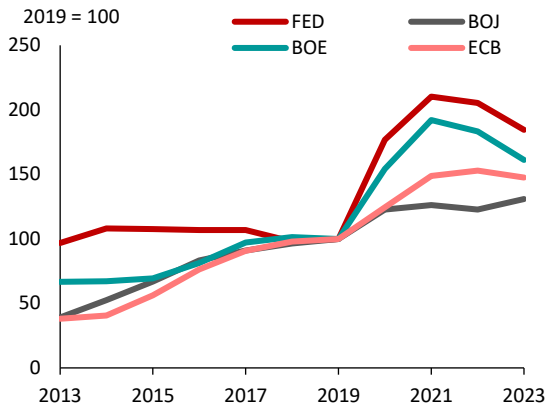
Differences aside, all four central banks' assets reached their all-time highs during the pandemic as did AE central banks.

Figure 1 ASEAN-4 Central Banks' Assets



Source: Central banks' websites, CEIC, Author's calculations

Figure 2 AE Central Banks' Assets

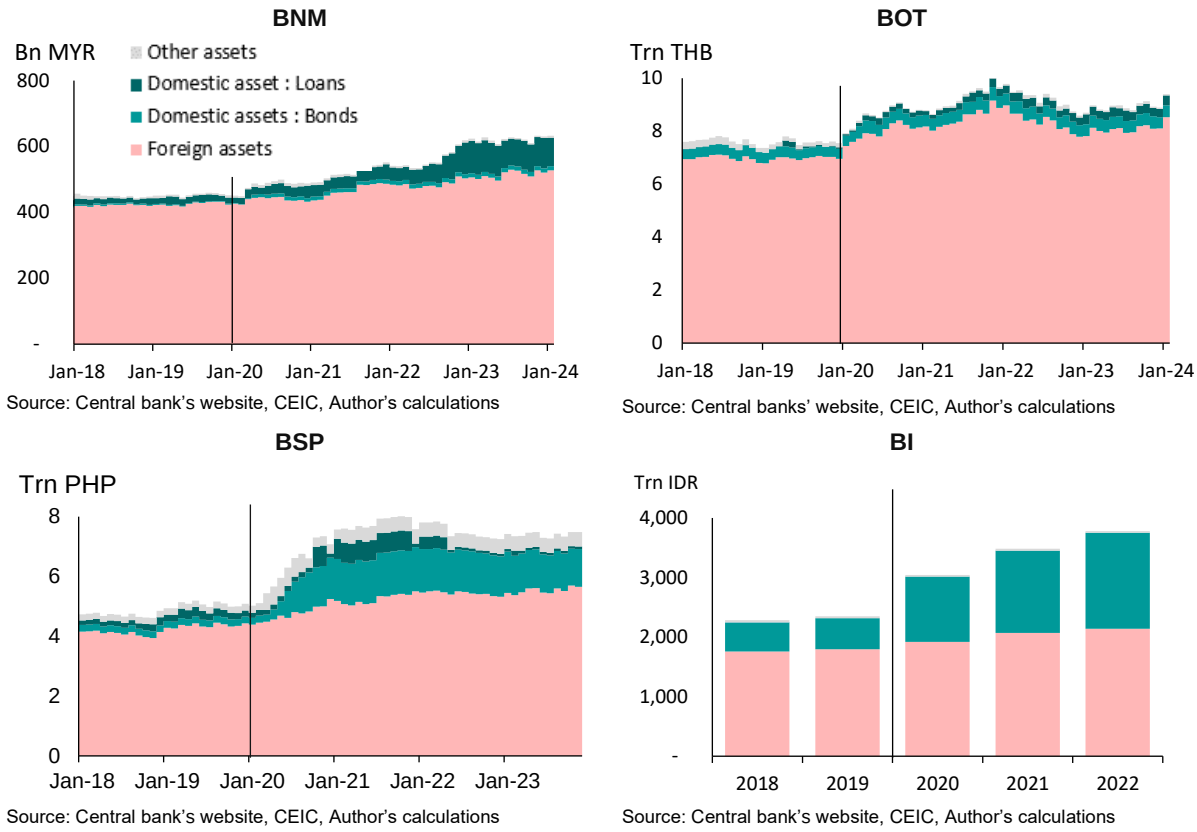


Source: Central banks' websites, CEIC, Author's calculations

Yet, the increases in ASEAN-4 central bank assets were smaller compared to those of AE central banks. Assets of the Federal Reserves (FED), the Bank of England (BOE), the European Central Bank (ECB), and the Bank of Japan (BOJ) increased by 105 percent, 83 percent, 53 percent, and 23 percent, respectively, between end-2019 and end-2022 (Figure 2). This largely reflects the expansive government and corporate bond purchase programs and liquidity facilities introduced during the pandemic that were larger than the ones implemented during the Global Financial Crisis. Compared to ASEAN-4 central banks, the more extensive use of balance sheet tools by AE central banks may be explained in part by their greater familiarities with unconventional tools which have been employed during the previous crises - the Global Financial Crisis and the European Debt Crisis. In contrast, such unconventional tools like large-scale asset purchases were only used in ASEAN-4 economies for the first time in 2020. Moreover, AE central banks had little or no room for policy rate cuts at the pandemic onset. In other words, their policy rates were closer to the effective lower bound, necessitating more reliance on unconventional tools.

Apart from the larger sizes, ASEAN-4 central banks' assets have also undergone a notable shift in their compositions since the pandemic. Traditionally, their assets have been dominated by foreign currency assets. These foreign assets were accumulated over the past two decades through foreign exchange interventions to curb excessive volatility in the local currency during episodes of large capital inflows and current account surpluses. However, since 2020, the share of domestic assets, such as local currency bond holdings and local currency lending, has increased sharply. This was most evident for BI, whose domestic asset share expanded from 24 percent of total assets in 2019 to 43 percent in 2022. The share also tripled from 6 percent to 19 percent for BNM, and doubled from 13 percent to 27 percent for BSP. In the case of BOT, the share of domestic assets increased only modestly from 8 to 9 percent, reflecting the relatively large foreign reserves. Overall, the development underscores a shift toward a more active presence in the domestic markets by ASEAN-4 central banks to influence local financial conditions beyond the short-term policy rate. The implications of this will be discussed further in later sections.

Figure 3 ASEAN-4 Central Bank's Assets



Source: Central bank's website, CEIC, Author's calculations

Source: Central banks' website, CEIC, Author's calculations

Source: Central bank's website, CEIC, Author's calculations

Source: Central bank's website, CEIC, Author's calculations

Comparing changes in ASEAN-4 Central Bank Assets and Policy Objectives

BI saw the largest increase in domestic assets due to its large-scale government bond purchases to support deficit financing related to the Covid-19 pandemic. In 2020, the Indonesian government passed a special legislation authorizing BI to purchase government bonds in the primary market to support the financing of fiscal deficit. Following that, BI and the Ministry of Finance signed three joint decrees (SKBs) that stipulate the principles and scope for the central bank's role in deficit financing during 2020 and 2022. BI notes that its financing of fiscal deficit was carried out with prudence, guided by principles such as a prioritization of market mechanisms and consideration for inflation impacts. [3] Over the three-year period, BI's holding of government securities expanded by around 1,180 trillion IDR, or 7 percent of 2019 GDP. As a result, BI's share of IDR-denominated government bond holding surged from 10 percent of total bond outstanding in December 2019 to 26 percent in December 2022. As agreed on the SKBs, some of the primary-market bond purchases were made at below-market rates or zero implicit interest rate (interests paid to BI were returned in full to the government), such as those purchased via private placements to fund vaccination programs, health-care spending, and social protections.

Government bond purchases also drove BSP's domestic asset growth. BSP introduced a government securities (GS) purchase window in March 2020. Unlike BI's case, the BSP focused on bond purchases in the secondary market. The window was available

[3] A full description of the Joint Decrees (KB) between the Finance Ministry and Bank Indonesia is beyond the scope of this Working Paper. However, please refer to AMRO Selected Issue by Andriansyah & Nguyen (2021) for more details on the descriptions and governance of BI's debt financing role under each joint decree.

daily as a standby buyer of government bonds to help commercial banks off-load their less-liquid securities, ultimately restoring market confidence and ensuring the proper functioning of the bond market. It indirectly promoted commercial banks' demand for government securities and, consequently, helped keep the government's funding cost stable. Most purchases were made in 2020 at the height of financial market volatilities, and the average daily purchases declined in 2021 and 2022. Since December 2022, there has been no transaction in the GS window. All in all, BSP's government securities holding grew by 1.1 trillion PHP, or 5.8 percent of 2019 GDP between December 2019 and December 2022. In addition to the GS purchase window, BSP also provided short-term zero-interest loans to the government, which added to the growth of domestic asset, until it was fully paid off in May 2022.[4]

Table 1 Summary of ASEAN-4 Central Bank's government bond purchase schemes

	BI	BSP	BOT	BNM
Objectives	Support government deficit financing	Restore market confidence and support government bond demand	Ensure orderly market functioning	Ensure orderly market functioning
Increase in gov bond holding (% of 2019 GDP)	7.1	5.8	0.4	0.7
% Gov bond holding share of market at peak	27	20	9	1.3
Program duration	Apr 20 – Dec 22	Mar 20 – Nov 22	Mar – Apr 20	Mar – Dec 20

Source: Central bank websites, CEIC, Author's calculations

BNM's domestic asset expansion was more modest and led by lending to financial institutions rather than bond purchases. In March 2020, BNM increased the allocation of financing assistance under BNM's Fund for SMEs to provide immediate cash relief to SMEs affected by the Covid-19 outbreak. Then in 2022, at the start of the policy rate normalization, it ramped up liquidity provision in the interbank market through the repo window in response to signs of liquidity tightness in the market. Taken together, the two lending windows raised BNM's lending to financial institutions by 77 billion MYR between December 2019 and December 2022, or 5 percent of 2019 GDP. Meanwhile, although BNM also conducted outright government bond purchases, the total purchase was smaller at 11 billion MYR, or 0.7 percent of 2019 GDP. The more modest size reflects the objective of the bond purchase, which was to facilitate orderly market adjustments during periods of excessive volatility, rather than to support government financing.

Compared to other central banks, BOT saw smaller changes in its assets during the pandemic period. Foreign assets, which accounted for 92 percent of total assets in 2019, remained the main source of asset growth, driven by both the central bank's foreign exchange operations and asset valuations. On the other hand, domestic assets only rose by 2 percent of 2019 GDP between 2019 and 2022. Although outright government bond purchases in the secondary market have been a part of the monetary operations toolkit since pre-pandemic, during the pandemic the BOT only conducted limited bond purchase operations in March and April 2020 to ease temporary bond market dislocations. Its lending

[4] BSP entered into a repurchase agreement with the government at the onset of the pandemic. The first batch of the provisional advances (PA) matured in September 2020, and was then followed by several more tranches. The last tranche of PA was fully settled in May 2022.

to financial institutions via the soft-loan scheme, Rehabilitation Loans, and the Mutual Funds Liquidity Facility (MFLF), also small, contributed to the rest of the growth in domestic assets.

Box 1: Have central bank's government bond purchases achieved their objectives?

Given the different objectives of government bond purchases across ASEAN-4 economies, measures of effectiveness will differ accordingly. Yet, most central banks reported that the government bond purchases that took place during the Covid-19 pandemic contributed positively toward their intended objectives.

- **BOT** found that its bond purchases in the secondary market, along with other liquidity supports introduced in March – April 2020, led to **improvements in government bond market functioning**, in line with the objectives. This was evidenced by the overall **decline in government bond yields from their peaks in March 2020**, and the **narrowing of bid-ask spreads** in secondary market trading.[5]

- **BNM** assessed that its secondary market government bond purchases provided the necessary liquidity to the market which facilitated **orderly price adjustments**, as evidenced by the more **orderly changes in daily yield movements** following the interventions.[6]

- **BSP** noted improvements in government securities market liquidity and investors' demand following the establishment of the GS securities purchase window. It highlighted **stronger demand at Bureau of the Treasury's government securities auctions**, which saw consistent oversubscriptions in Q2 2020 compared to multiple undersubscriptions in March 2020. It also cited **declining yields as a result of strong market demand**. [7]

To supplement authorities' assessments, AMRO conducted a regression analysis to **assess whether larger government securities holding by ASEAN-4 central banks led to lower long-term government bond yields during 2020-2022.** We examined the key drivers of 10-year government bond yields for each ASEAN-4 country by regressing changes in the 10-year yields against changes in central bank bond holdings, along with other explanatory variables such as changes in US Treasury yields (10Y UST), foreign investors' bond holdings, domestic policy rate, fed funds futures, CPI inflation, brent crude prices, and dummy variables for the March-2020 period and the post-covid periods (March-2020 onwards). Combinations of these variables are chosen for each country-specific regression based on the model fits.

The following equation was estimated using OLS and monthly data:

$$\Delta 10y\ yield_t = \beta_0 + \beta_1 \Delta \log(central\ bank\ bond\ holding)_t + \beta_2 \Delta 10y\ UST_t + \\ + \beta_3 \Delta \log(foreign\ bond\ holding)_t + \beta_4 Other\ explanatory\ variables$$

[5] BIS Study Group (2019)

[6] BIS Study Group (2019)

[7] BSP (2020) and BSP (2020b)

Table A: Estimation results on 10-year government bond yields[8]

Explanatory Variables	Dependent Variables			
	Malaysia Δ10y yield	Indonesia Δ10y yield	Philippines Δ10y yield	Thailand Δ10y yield
Constant	-0.006	**-0.061****	-0.008	-0.016
Δ **log (Central bank bond holding)**	0.104	0.501	**-1.203****	-0.021
Δ **log (Central bank bond holding) * post-covid dummy**	**-0.482****	**-2.565***		1.929
Δ10y UST	**0.440*****	**0.440*****	**0.459*****	**0.430*****
Δ log (Foreign bond holding)	**-1.192*****	**-0.192*****		**-1.351****
March-2020 dummy	**0.848*****	**0.886*****	**1.573*****	0.202
Δ Policy rate			0.200	
Δ Fed Fund Futures			**0.448****	
Δ log (Brent crude price)			**0.774****	
Δ log (CPI)				**15.603****
Adjusted R^2	**0.598**	**0.458**	**0.364**	**0.367**

The estimation results show that in most cases larger central bank bond holdings contributed to lower long-term government bond yields. Central bank bond holdings are found to be statistically significant drivers of 10-year bond yields in all cases, except for Thailand. As expected, a larger central bank holding is associated with lower government bond yields. For Malaysia and Indonesia, the impacts were observed only from 2020 onwards, when BNM and BI engaged more actively in the government bond market. As for Thailand, the absence of a statistically significant impact may be explained by the temporary and limited interventions of the central bank during the focused period.

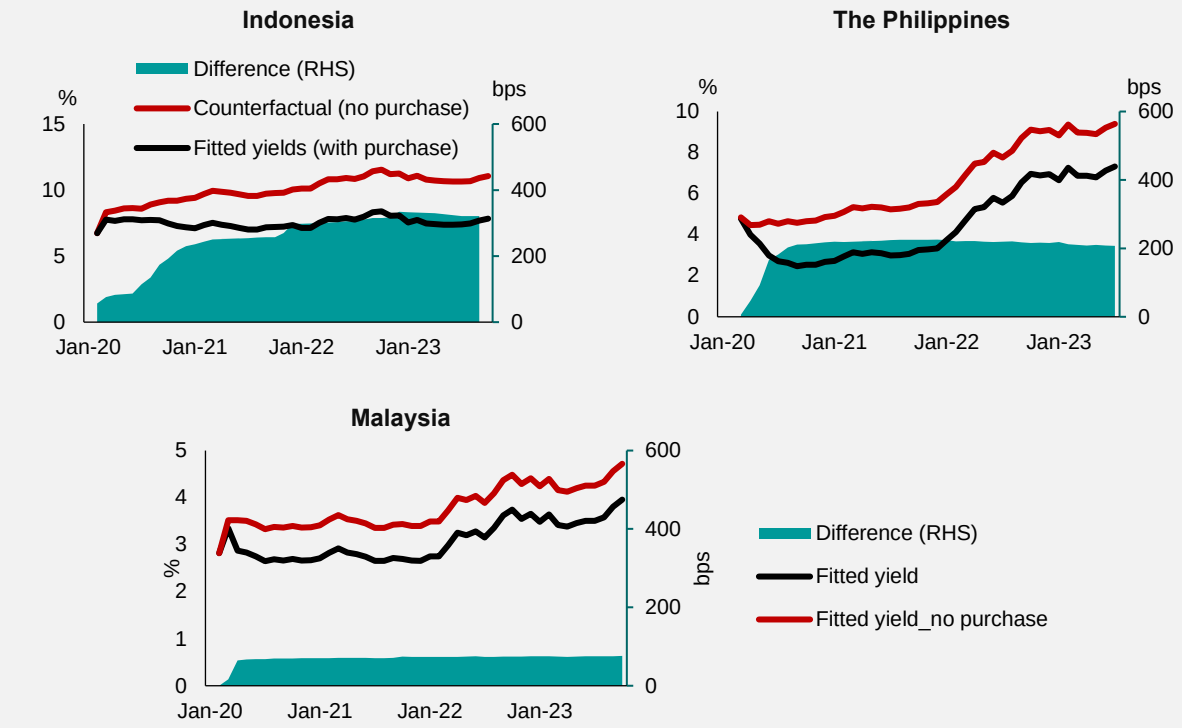
As for other explanatory variables, higher 10-year US treasury bond yield is associated with higher ASEAN-4 bond yields, suggesting that global investors' sentiments play a significant role in ASEAN-4 markets. Second, foreign investors' bond holdings are also significant determinants, with higher foreign holdings associated with lower bond yields. Short-term interest rates and CPI are drivers of bond yields in some but not all markets.

Based on the regression results, we can infer that government bond yields would have been higher in the absence of central banks' purchases. If we compare the difference between the actual yields and the implied counterfactual yields in a scenario where central banks' bond holdings were held constant from 2020 onwards, we can see that in the counterfactual case, 10-year bond yields would have been 200-300 bps higher in Indonesia, 200 bps higher in the Philippines, and 70 bps higher in Malaysia. These results are roughly in line with the scale of each central bank's bond purchases. Note that we do not

[8] Estimations are based on monthly data. Estimation periods for Malaysia and Thailand are between 2011-2023, for the Philippines is 2012-2023, and Indonesia is 2016-2023.

have an estimate for Thailand, as we did not find a statistically significant relationship between BOT's bond holding and yields.

Figure A Impacts on 10-year government bond yields from bond purchases during the pandemic



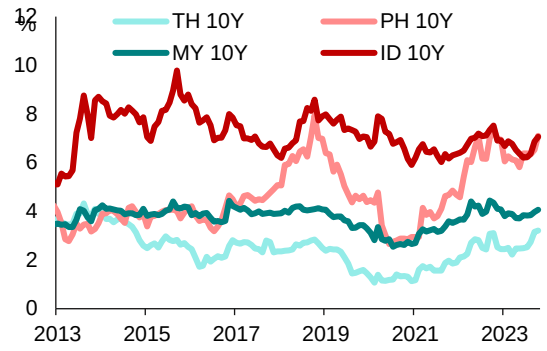
Source: Author's calculations

The need for more active and extensive interventions in the domestic bond markets by BI and BSP compared to BNM and BOT may have been driven by the following country-specific factors:

- **Lower liquidity of the government bond markets in Indonesia and the Philippines could have constrained the government's ability to raise funds from the market in an orderly manner during stress periods.** The size of government bond market as compared to the economy is the largest in Malaysia at 39 percent of 2019 GDP. They are slightly smaller at around 29 percent in Thailand and Indonesia, and 27 percent in the Philippines[9]. However, bond market liquidity surveys by ADB point to lower liquidity in Indonesia and the Philippines in the periods leading up to the Covid-19 pandemic[10]. The average bond transaction sizes for on-the-run issues in the two markets were around one-third to one-half of those in Malaysia and Thailand. Similarly, the bid-ask spreads tend to be higher in the Indonesian and Philippine markets, although spread in Indonesia narrowed in 2021-2022 (Figures 5 and 6). The lower market liquidity may have limited the government's ability to raise sizable funding from private investors in a short period of time, without causing significant increases in yields.

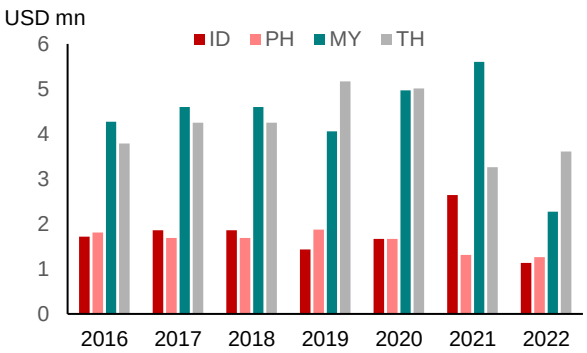
[9] Government bond market size includes outstanding central government debt in local currency.
[10] AsianBondOnline's Data Portal at https://asianbondsonline.adb.org/data-portal/

Figure 4 10-year government bond yields



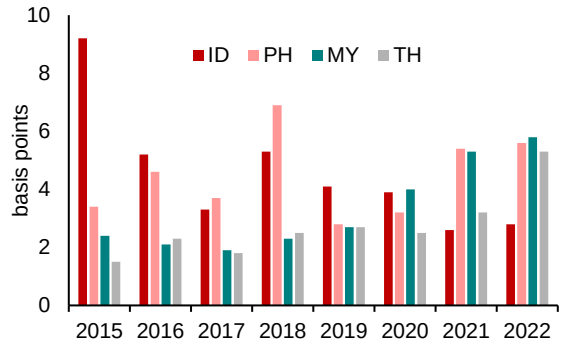
Source: Haver Analytics

Figure 5 Average on-the-run bond trading sizes



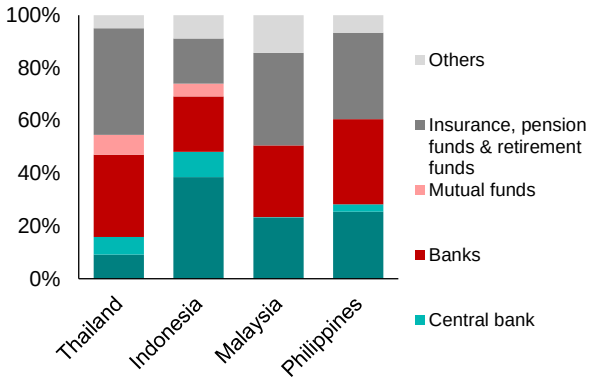
Source: AsianBondOnline LCY Bond Market Liquidity Survey

Figure 6 Average bid-ask spreads



Source: AsianBondOnline LCY Bond Market Liquidity Survey

Figure 7 Sovereign bond investor profile (Dec 2019)



Source: CEIC, Haver Analytics

- **Additionally, the relatively larger share of non-resident bond holding in Indonesia has rendered the bond market more susceptible to the risk of capital flow reversal.** Non-resident (NR) holding of Indonesia's local currency government bonds has expanded steadily since 2008, reaching close to 40 percent in 2019. However, in the wake of the pandemic, foreign investors retreated from emerging markets, and the NR holding share quickly fell to 25 percent within a year. At the same time, in the period of subdued investor risk appetites, local investors may have challenges absorbing all of the government bonds sold by non-residents as well as new supply in a short period of time. Therefore, having BI as a stand-by buyer was crucial to support market confidence and avoid disorderly market functioning.

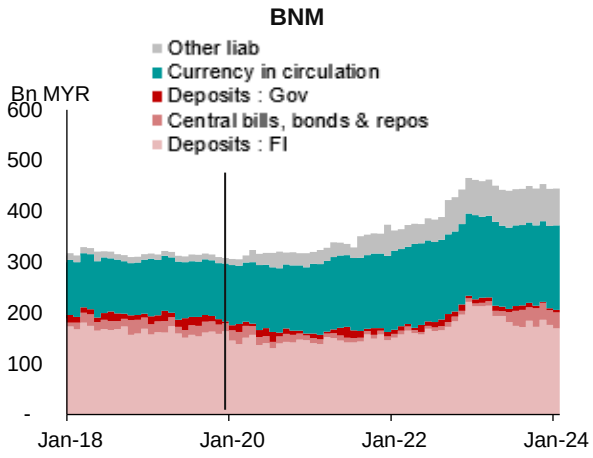
Changes in the Liabilities

Asset expansion gives rise to a corresponding increase on the liabilities side, mainly in the form of bank reserves. When central banks purchase assets from commercial banks or lend funds to them, the central banks will credit banks with reserves, i.e. banks' reserve accounts at the central bank. These reserves are highly liquid assets which form the liabilities of the central banks and serve as liquid assets of the commercial banks. Because they are the most liquid form of financial assets that banks hold and can be used to settle funds among themselves, the higher reserve balances indicate more liquidity in the interbank market. (Further details in Box 2 Bank reserves and ASEAN-4 central banks' liquidity management framework).

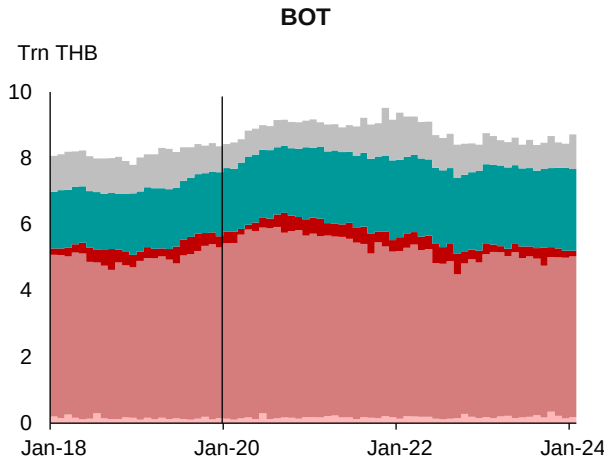
For ASEAN-4 central banks, the increase in bank reserves was consistent with the increase in assets (Figure 8)**.** The size of aggregate bank reserves and the level

demanded by the banking system will be one of the key considerations for any asset normalization plans, as will be discussed in Section V.

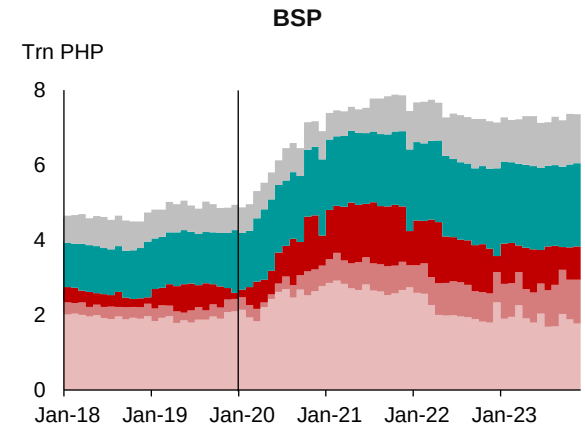
Figure 8 ASEAN-4 Central Bank's Liabilities



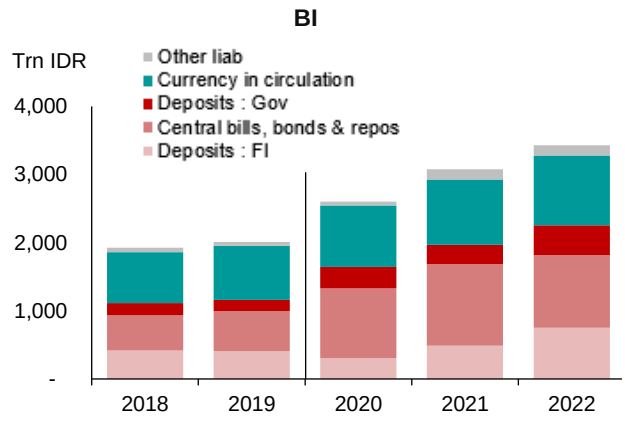
Source: Central bank's website, CEIC, Author's calculations



Source: Central bank's website, CEIC, Author's calculations



Source: Central bank's website, CEIC, Author's calculations



Source: Central bank's website, CEIC, Author's calculations

Box 2: Bank reserves and ASEAN-4 central banks' liquidity management framework

The role of bank reserves

"Bank reserves" are commercial banks' reserve balances at the central bank. Together with currency in circulation, they form "monetary base" or "base money" which is directly controlled by the central bank. Because bank reserves are the liability of the central bank, it carries no credit risk, and used as the means of payment and settlement among commercial banks. Given the central role of bank reserves in the smooth functioning of the financial system, central banks have to ensure sufficient supply of bank reserves in line with the demand to prevent any disruptions in financial intermediations. Not only that, ensuring an appropriate balance of bank reserves in the system is also crucial for achieving monetary policy objectives, that is to maintain the level of market interest rates close to the policy rate.

What factors determine the supply and demand for bank reserves?

Central banks are the sole supplier of bank reserves. Their transactions with financial market participants will increase or decrease the aggregate level of bank reserves. These central bank transactions can be grouped into two categories. The first includes outright purchases or sales of assets, both foreign and domestic, which will permanently add or drain bank reserves. For example, when a central bank purchases foreign currency or domestic government securities from a commercial bank, it pays for the assets by crediting bank reserves into the account of that bank. Thus, the overall balance of bank reserves in the system rises. The opposite is true when a central bank sells assets to commercial banks. The second type of operations are central bank lending or borrowing, which will temporarily affect the overall amount of bank reserves. When a central bank lends funds to a bank, such as for soft-loan programs, it injects more bank reserves into the system. Later, when the fund is repaid, reserve balance will fall. While some of these transactions are done precisely to influence the supply of bank reserves, others may be carried out for other policy objectives but have an impact on the level of bank reserves nonetheless. In addition, autonomous factors, including treasury account balances and maturing central bank operations, also contribute to fluctuations in bank reserves held by commercial banks.

The demand for bank reserves, on the other hand, depends largely on the economy and the banking system, while partly influenced by the central bank. Bank reserves, comprise required reserves (in accordance with reserve requirement regulations) and free reserves for settlement needs. Central banks can influence required reserves, but the holding of free reserves will depend on commercial banks' needs to cover payment and settlement flows as well as uncertainties.[11] This is particularly relevant for unremunerated reserves. The demand for currency in circulation also influences the holding of free reserves as banks need to meet customers' demand for currency by drawing down their reserves in exchange for banknotes from the central bank.

What are liquidity management operations and why are they necessary?

Central bank operations that are conducted with the purpose of managing the supply of bank reserves are called liquidity management operations. They serve to bring the supply of bank reserves to equal the demand, thereby ensuring that the market interest rates are stable and aligned with the policy rate. For instance, if the amount of free reserves is larger than the banking system's demand for settlement funds, banks with excess liquidity (excess free reserves) will have an incentive to lend out the excess reserves

[11] Rule (2015)

in the interbank market, pushing the market interest rates down below the policy rate. To prevent this, the central bank can reduce the level of free reserves by conducting outright asset sales or borrowing the excess reserves from the market. In the planning of liquidity management operations, the central bank needs to forecast the demand and supply of liquidity (liquidity forecasting), which entails the forecasts of autonomous factors, currency in circulation and other relevant factors.

Generally, the ASEAN-4 financial systems have ample liquidity. The supply of bank reserves has outpaced demand as a by-product of past central bank operations on the asset side, most notably foreign asset accumulations and, more recently, government bond purchases. Therefore, to prevent excess reserves from pushing down market interest rates, ASEAN-4 central banks employ a set of liquidity management operations to "mop up" or "absorb" excess liquidity from the system. Most of them are borrowing operations, such as central bank bill issuances, reverse repo borrowing, term deposits, and sell/buy FX swaps. Simply put, central banks use these operations to borrow excess reserves from commercial banks at interest rates close to the policy rate, so that the prevailing interbank interest rate remains anchored to the policy rate. Some central banks also use outright sales of assets to reduce excess reserves on a non-regular basis.

In addition to these liquidity absorption operations, BNM and BI also conduct a small amount of lending operations to address pockets of liquidity tightness that could arise from time to time.

Summary of liquidity management operations of ASEAN-4 central banks

Operations	BI	BNM	BOT	BSP
Funds absorbing operations	• Term deposit facility • Reverse repurchase agreements • BI Rupiah Securities issuances • Sukuk issuances • Sharia deposit facility • End-of-day deposit facility	• Bill issuances • Uncollateralized term tenders • Outright sales of securities • End-of-day deposit facility	• Bill issuances • Reverse repurchase agreements • Sell/Buy FX swaps • End-of-day deposit facility	• Bill issuances • Reverse repurchase agreements • Sell/Buy FX swaps • Term deposit • Overnight deposit (standing facility)
Funds injecting operations	• Repurchase agreements • End-of-day lending facility	• Term repurchase agreements • Buy/Sell FX swaps • Outright purchase of securities • End-of-day lending facility	• End-of-day lending facility	• Purchase of government securities • Overnight lending (standing facility)

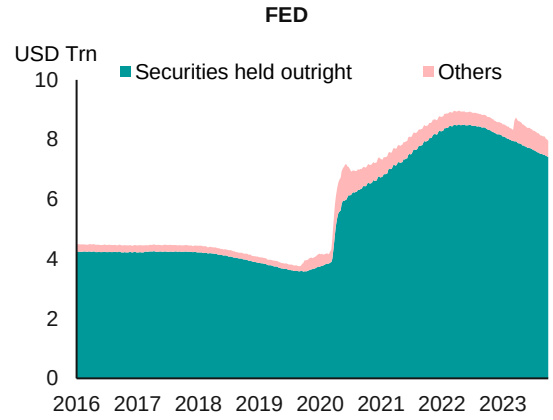
Source: Central bank's website

III. Balance sheet normalization plans

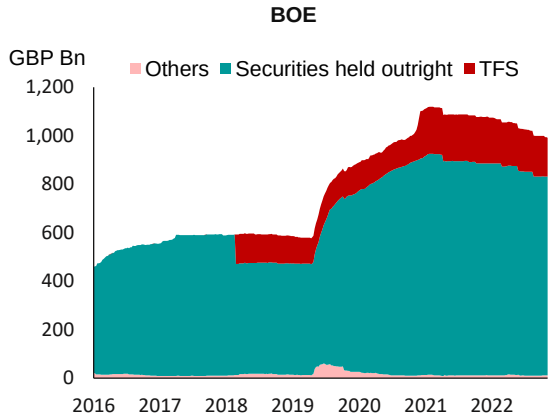
This section will discuss balance sheet normalization plans that ASEAN-4 central banks have communicated or carried out thus far. As noted earlier, while normalization of policy rates has been the focus of central bank communications and most analyst reports, less attention has been paid on the normalization of balance sheet tools. In this paper, the emphasis will be placed on the normalization of government securities holdings, which were the main drivers of asset expansion during the pandemic period. This is because the purchased securities often have long-term maturities, and hence, they can have long-term implications on the central banks' balance sheets as well as on the bond market itself. Meanwhile, the accumulation of other types of assets may serve other purposes, or will be naturally unwound. For instance, foreign assets are usually retained in the balance sheet to support the country's external stability and to be used for foreign exchange operations. At the same time, lending facilities are much smaller in scale and will normalize naturally given the short maturities of the instruments.

As a reference point, some AE central banks have begun their balance sheet normalization process according to the pre-announced principles and plans. The **Fed** announced a balance sheet normalization plan in May 2022, two months after the first lift of the federal funds rate target range. The actual reduction in Fed's securities holdings began in June 2022, when maturing securities exceeding the pre-announced caps were allowed to roll off. The Fed indicated that its securities holdings will be reduced in a predictable manner, and that over time it will only hold securities in the amount needed to implement monetary policy efficiently and effectively[12]. Meanwhile, the **BOE** announced its quantitative tightening principles in August 2021 and commenced asset reduction in February 2022, two months after the Bank Rate lift-off. The BOE plan includes both passive runoffs and active gilt sales. According to BOE's communications, the quantitative tightening not only supports the monetary policy tightening process, but also alleviates collateral shortages, removes distortions in the risk-free rate, and makes room for future rounds of QE if necessary. In December 2023, the **ECB** announced its plan to reduce the holding of securities purchased under the Pandemic Emergency Purchase Programme (PEPP) starting in the latter half of 2024. Finally, in March 2024, the **BOJ** ended its negative interest rate policy, Yield Curve Control policy and its purchases of ETF and J-REIT, while it would continue to purchase JGBs.

Figures 9 Normalization of AE assets

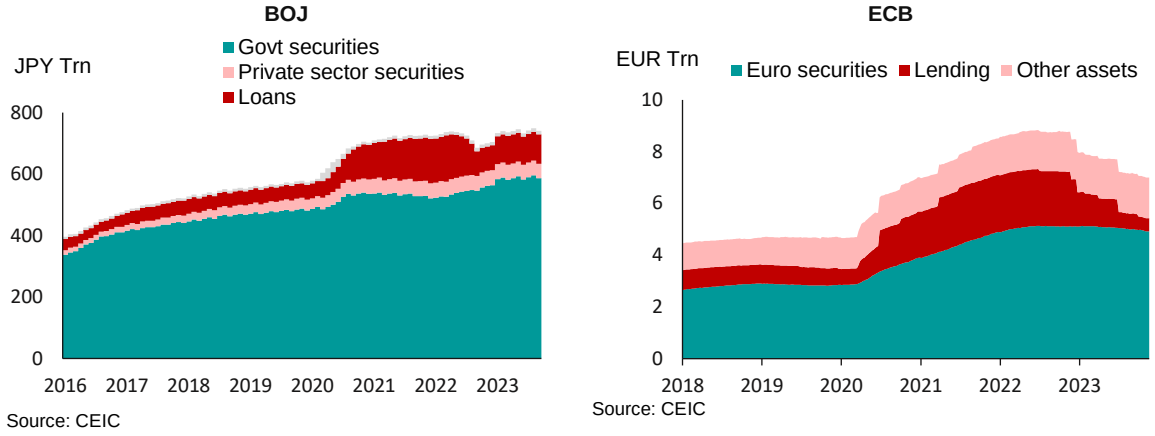


Source: CEIC



Source: CEIC

[12] Federal Open Market Committee (2022)



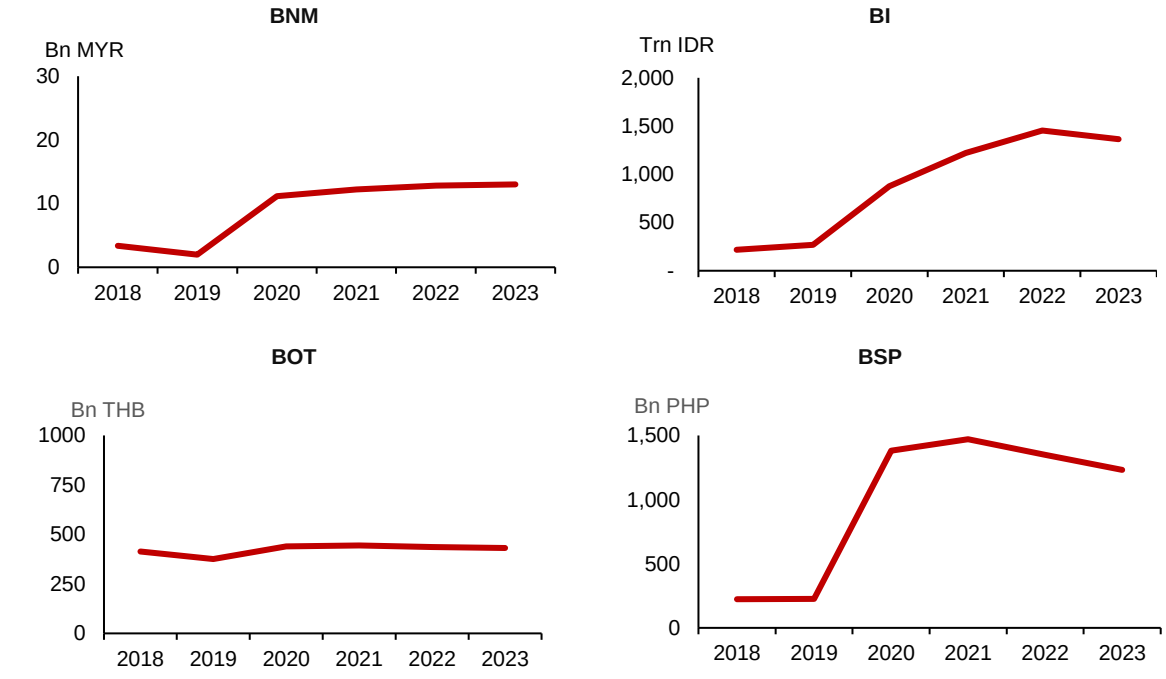
Source: CEIC

Source: CEIC

Similarly, most ASEAN-4 central banks have already communicated their intentions to reduce their government securities holdings. Starting with **BNM** and **BOT**, which saw a smaller growth in bond holdings, both have indicated that they will maintain their holding of securities until maturity. Considering the modest sizes of their bond purchases, such passive normalization is deemed reasonable and should not cause any material reactions on the market.

At the same time, the BSP plans to retain its government securities holding until maturity. In fact, its bond holding has started to decline since 2022 as the bonds mature. But because of its sizable holdings, any lumpy maturities that coincide with a rising global interest rate environment may cause a disruption in the bond market. Thus, to ensure orderly market adjustments, the BSP may prepare a plan to smooth out lumpy maturities, such as through partial reinvestments, so that the reduction in bond holdings is gradual and predictable in the period ahead. Any such plans should be communicated in advance to market participants.

Figures 10 ASEAN-4 Central Banks' government bond holding



Source: Central Bank's website, CEIC

Meanwhile, BI has not made any announcements on the normalization of the primary market bond purchases, and continued to be present in the secondary market. After the SKBs expired in December 2022, BI has stopped making government bond purchases in the primary market. However, the central bank has not made any announcements regarding the treatment of the purchased securities and their maturities. Meanwhile, it continued to conduct bond outright purchases and sales in the secondary market, which are part of the policy toolkit since pre-pandemic, to mitigate pressures on the rupiah and bond yields. Through buying long-term government securities and selling short-term ones, BI seeks to flatten the yield curve, thereby shoring up foreign inflows and supporting rupiah stability. At the same time, these so-called "Operation Twist" are designed to keep long-term government funding costs low against the rising global yields environment. On a net basis, BI's government bond holding fell slightly in 2023 due to secondary market interventions.

IV. Considerations for balance sheet normalization

The preceding section has accounted for normalization plans (if any) in ASEAN-4 central banks and AEs. In this section, key considerations for balance sheet normalization will be discussed guided by three important questions: **1) is normalization necessary? 2) how much to normalize? and 3) what will be the impact on the market?**

1. Is normalization necessary?

To answer whether a reduction in government bond holding is necessary, we have to consider the potential drawbacks of large and prolonged government bond holdings by central banks. Although central bank bond purchases can help reduce bond market volatilities or limit the rise in yields during the peak of the pandemic, over the longer term their interventions and accumulated holdings can have unintended or adverse consequences on other policy objectives. The followings are potential key risks associated with large and prolonged central banks' holding of government bonds.

1.1 Negative impacts on bond market liquidity. A large and prolonged presence of the central bank in the government bond market, either as a major bond holder or as a backstop buyer, may lead to changes in private investors' behaviour. Lessons learned could be drawn from the experiences of AEs post-GFC as follows:

- **Central banks' bond market interventions during the GFC had some negative impact on bond market liquidity according to BIS.** This is based on BIS Markets Committee survey on the impact of large central bank balance sheets on market functioning[13]. The report found that although asset purchases tend to improve market liquidity during periods of heightened uncertainties, for example by lowering the risk premium demanded by market participants, when central banks' holdings or purchase volumes are particularly high, they can start to have negative effects on market functioning. For one, the large, price-insensitive, and one-way flows of central banks can distort price signals, leading to uncertainties that deter private investors from taking positions. In addition, a scarcity of bonds held in private, price-sensitive hands can increase the search costs and deter participations, hence reducing liquidity.

[13] BIS Study Group (2019)

- **For a more concrete example, the experience from the Bank of Japan provides a valuable lesson learned[14].** The Bond Market Survey conducted by the BOJ in 2023 showed that from market participants' points of view, the functioning of the secondary government bond market deteriorated markedly following the introduction of the Quantitative and Qualitative Monetary Easing (QQE) policy framework that features large-scale government bond purchases. Survey responders specifically cited the increased share of BOJ's bond holdings and yield curve control policy as the leading causes of the worsened functioning.[15]

- **Importantly, the BIS report also notes that the level of central banks' holding at which these adverse impacts take effect is uncertain, depending on country specific market factors.** Therefore, it is of utmost importance that central banks continue to monitor market participants' behaviour using available liquidity indicators, including price and quantity ones. This way, they can promptly identify shifts in market functioning and market liquidity as their market presence grows. If any substantial deterioration in market liquidity is evident, central banks need to find mitigating measures or consider reducing the pace of bond purchases or the amount of holdings.

1.2 Risk of fiscal dominance. This is another key risk associated with the relationship between central banks and fiscal authorities. As a best practice, central banks must have operational independence to conduct monetary policy to safeguard price stability. However, sustained bond market interventions may heighten the government's reliance on lower-cost financing and complicate the central bank's exit from accommodative policy. This is because, with a large government bond holding, central banks' monetary policy and balance sheet decisions can effectively determine the funding costs of the government. As such, the government might have an incentive to put pressure on the central banks to delay warranted monetary policy normalization in order to keep the funding cost low. The delayed normalization from fear of fiscal unsustainability (fiscal dominance) may come at a cost of safeguarding price and financial stability, the central banks' core mandates, and ultimately its independence and credibility.

To minimize the potential risk of fiscal dominance in the longer run, central banks should terminate bond market interventions and scale back their holdings as soon as the economic and market conditions allow. Moreover, they should establish the principles and rules that govern when and how outright bond purchases can be conducted in the future. Crucially, the objectives of such interventions should be tightly linked to the central banks' core mandates.

1.3 Risks to the central banks' finances. Because central banks are set up to carry out public policy mandates and not to maximize profits, their policy actions can and do at times lead to losses on their balance sheets.[16] For example, the accumulation of foreign assets to bolster currency stability can lead to losses from the carry cost of liquidity sterilization or foreign exchange valuations. Meanwhile, outright purchases of government bonds carry interest rate risks and can lead to losses when interest rates are on the upward trend both from 1) a negative carry if the short-term interest rates that central banks pay on their

[14] The BOJ introduced Quantitative and Qualitative Monetary Easing (QQE) in April 2013, and added Yield Curve Control policy in September 2016.

[15] BOJ (2023)

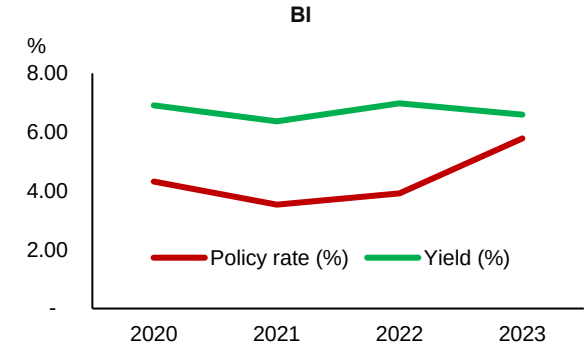
[16] Carstens (2023)

liabilities become higher than the yields on government bonds, and 2) valuation losses if the government bonds were marked to market.

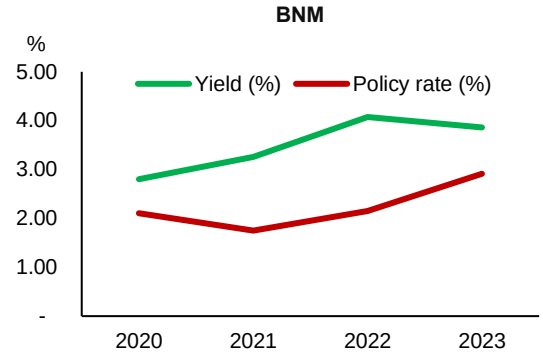
Based on simple estimates, most of the government bonds purchased by ASEAN-4 central banks have so far yielded a positive carry, but the situation may change if policy rates increase further. To assess the net returns from government bond holdings, we can compare the yields on government bonds when they were purchased against the policy rates.[17] As shown in Figures 11, the carry from government bonds that were purchased at market rates have appeared to be positive in all the four markets during 2020 – 2022. However, in 2023 the carry may have narrowed or turned negative, especially for BSP, after central banks raised the policy rates beyond the yields on bonds purchased over the past three years. If the policy rates increase further in 2024, there is a risk that the carry can turn more negative, leading to losses to the central banks.

The above-mentioned exercise applies to government bonds that were purchased at the market rate. In the case of BI, while it still receives a positive carry from the bonds purchased at market-rate, there may be some losses from purchases of bonds at below-market rates. However, these losses were expected by design under the agreement to support government deficit financing.

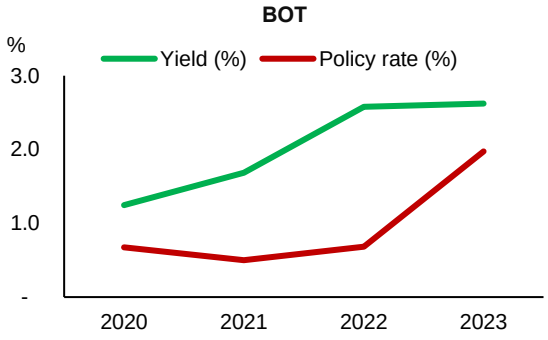
Figures 11 Average policy rates and returns on government bonds



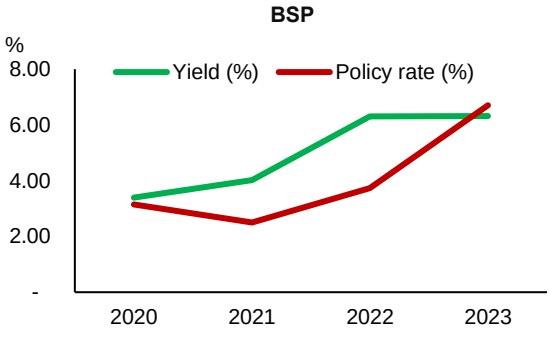
Source: Haver Analytics, CEIC, Debt Management Office



Source: Haver Analytics, CEIC, Debt Management Office



Source: Haver Analytics, CEIC, Debt Management Office



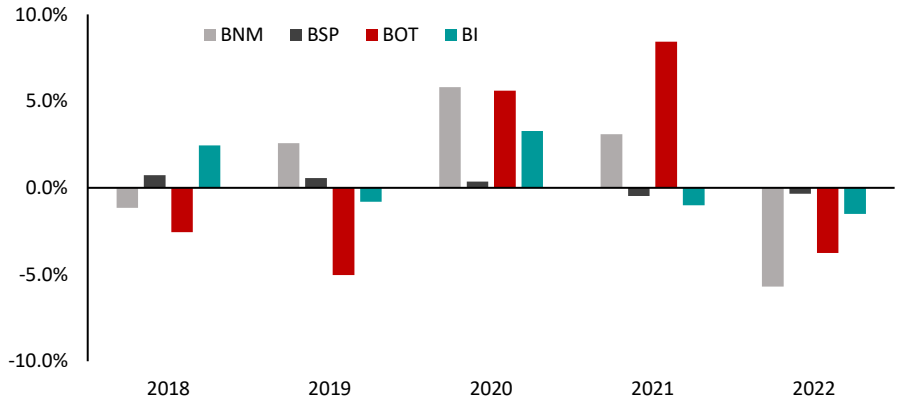
Source: Haver Analytics, CEIC, Debt Management Office

Although in principle a central bank's financial position should not compromise its ability to achieve its mandates, there are risks that losses may generate negative public perceptions that complicate central banks' operations. Over

[17] Yields on government bonds from each year's purchases is proxied by the average government bond yield at tenor close to the average-time-to-maturity of government bonds outstanding in that year, with the key assumption that central banks' bond purchases are representative of the market outstanding. The policy rates represent the average absorption cost incurred each year from the additional liquidity injected by government bond purchases.

the past decade, ASEAN-4 central banks as well as those in other regions have experienced several years of financial losses or even negative equity (Figure 12), during periods of high volatilities in asset prices and foreign exchange valuations. Despite that, they have been able to function normally. Nevertheless, if bond yields increased sharply, leading to significant interest rate losses, these losses may trigger public scepticism on the rationale of the balance sheet policy, or raise doubts on the central bank's ability to continue operating as usual. Ultimately, this amounts to a loss of public trust. In addition, if recapitalization by the fiscal authority is needed to cover such losses, it may affect the central bank's independence going forward. Given these potential risks, a timely unwinding of assets can help avoid the challenges to central bank operations. Furthermore, the risks can be mitigated in part by effective communications that foster a public understanding of the nature of central bank's finances.

Figure 12 Changes in capital (% of total assets)

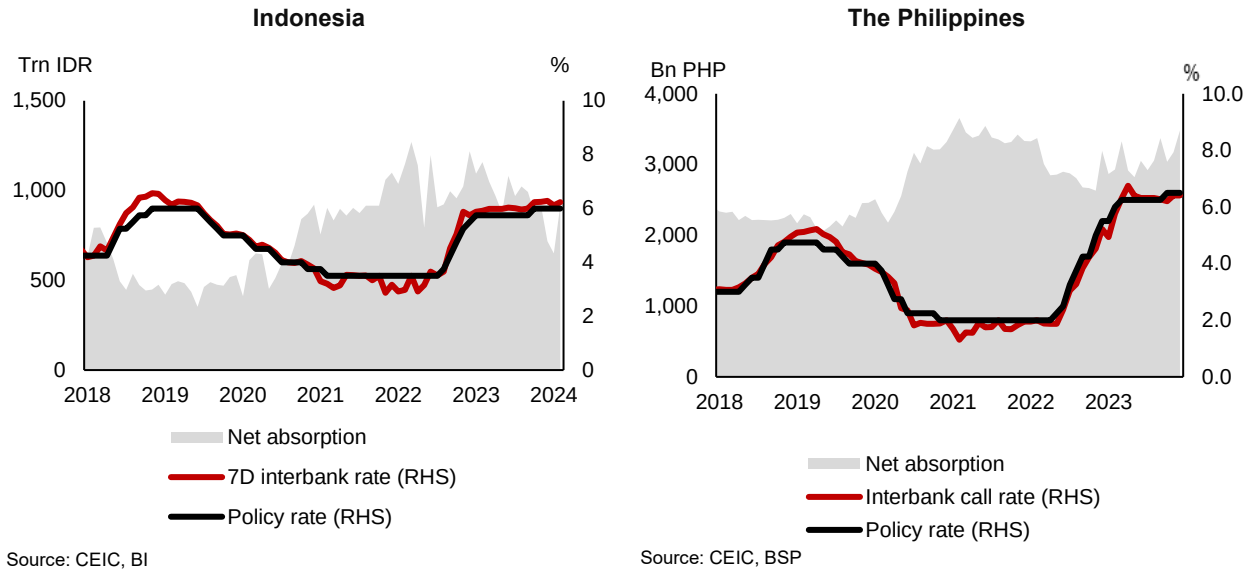


Source: Central banks' websites, CEIC

1.4 Challenges on short-term interest rate control. Apart from the potential risks outlined above, a larger size of central bank assets also increases bank reserves in the banking system, which may interfere with short-term interest rate control. Naturally, the demand for reserves grows with the demand for currency and commercial banks' settlement balances. When a large sum of reserves is added to the market from government bond purchases, the excess liquidity, beyond what is demanded by the financial system, will have to be sterilized. If a central bank is unable to fully sterilize the liquidity, for instance due to limited liquidity absorption tools, it would put downward pressures on short-term interest rates, compromising monetary policy signalling and pass-through. This can be particularly problematic during hiking cycles.

However, short-term interest rate control has not posed problems for ASEAN-4 central banks so far. Because central banks in this region have had prior experiences with excess liquidity management even before the pandemic, they have in place a set of liquidity absorption tools, including term deposits, reverse repurchase agreements, and bill issuances. Moreover, in response to the increased excess liquidity from recent asset expansion, some central banks have expanded the size of existing tools or introduced new ones. For example, BI raised the Reserve Requirement Ratio from 3.5 percent to 9 percent and introduced the Bank Indonesia Rupiah Securities (SRBI) to absorb excess liquidity. Similarly, BSP expanded its Reverse Repurchase Agreement volumes and introduced new 56-day bills to its toolkit. As a result, they have been able to guide short-term interest rates upward in line with policy rate increases despite the rise in level of excess reserves.

Figures 13 Excess reserves and short-term money market interest rates



Source: CEIC, BI

Source: CEIC, BSP

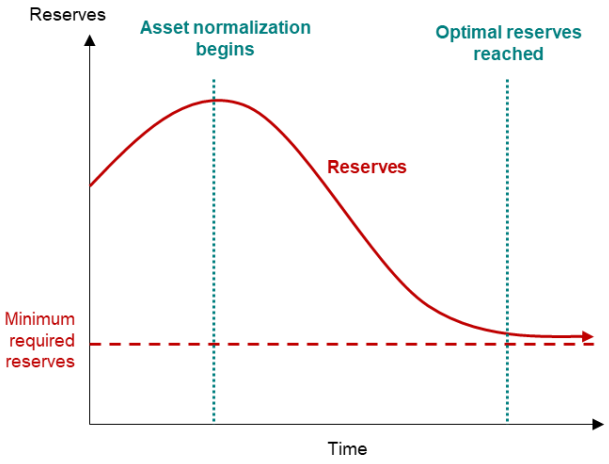
2. How much to normalize?

If an assessment of the costs and risks associated with a large balance sheet indicates the need for asset normalization, the next question is by how much they should be reduced. Should the central banks aim to bring their balance sheets back to the level prevailing pre-pandemic? The key to answering these questions is the optimal size of the balance sheets, which can be assessed from the following two standpoints.

The first standpoint from the liabilities side is to consider the optimal level of bank reserves required for a smooth financial market functioning and monetary policy implementations. This is the main consideration that AE central banks, such as the Fed and the BOE, pays attention to when deciding how much to shrink their balance sheets. When central banks' bond holding falls, reserves will decline in tandem, all else being equal. Then, at some point down the road, they will reach the level needed by the financial system for interbank cash settlements and to satisfy consumers' demand for cash. At that point, the balance sheet will have to start expanding again, this time led by the growing demand for reserves. In this way, the optimal level of reserves guides how far assets should runoff.

To determine the optimal level of reserves, central banks can observe the developments in the money market for signs of tightening as reserve balances decline. As mentioned earlier, demand for reserve money is mainly driven by the growth in currency and financial institutions' settlement cash. While the former tends to be more straightforward to monitor or project, the latter can be more uncertain. For instance, under uncertain environments, financial institutions may prefer to hold higher cash buffers. Moreover, the aggregate demand for settlement cash will also depend on the distribution of reserves across the financial system and how well the private money market functions. Thus, the level of reserves demanded must be observed from developments in the money market, including movements of the short-term interest rates, transaction volumes, and demand for central bank liquidity adjustment windows. For instance, if the short-term interest rates start rising above the policy rate, it can signal that reserves have fallen below the minimum level required.

Figure 14 Level of reserves during asset normalization



The second standpoint from the asset side is to consider the desirable level of government bonds that the central bank wants to hold in the long run. While foreign assets are held for the purpose of foreign exchange operations and external stability, some amount of domestic bonds may also be desirable for liquidity management purposes. This consideration is particularly relevant for ASEAN-4 central banks that use reverse repo operations to mop up excess liquidity, because government securities are needed as collaterals for these operations. For example, the BSP used to cap the amount of reverse repo operations at 305 billion PHP prior to the pandemic, but raised it to over 400 billion PHP since mid-2023 thanks to a larger pool of collaterals that became available from pandemic-period bond purchases. Going forward, the BSP, as well as other central banks, should determine the amount of government bonds that they want to maintain, taking into account the need for liquidity absorption and the absorption tools available to them. The optimal holding level should also take into account implications on bond market functioning and development. Once the desired level is determined, the rest of the securities can be allowed to roll off.

3. What will be the impact of normalization on the bond market?

Finally, central banks may be concerned about the impact of balance sheet runoffs on the government bond yields. When their government bond holdings decline, either by passive maturities or by active sales, private investors will have to absorb the full amount of additional supply. All else being equal, this will exert upward pressures on the government bond yields. Moreover, the balance sheet reduction plan can have additional signalling effects or add risk premia to bond yields. Higher government bond yields will not only raise the funding cost of governments, but also increase the borrowing costs for the private sector.

To gauge the potential impacts from asset normalization on long-term government bond yields, we can refer to the regression results on the impact of ASEAN-4 central banks' bond purchases on bond yields, as presented in Box 1. To summarize, the regression analysis suggested that in a counterfactual scenario where central banks had not accumulated any government bonds over the 2020-2022 period, the 10-year government bond yields would have been 200-300 bps higher for Indonesia, 200

bps higher for the Philippines, and 70 bps higher for Malaysia.[18] These estimates provide a rough guide on how much yields may increase in future periods should the central banks' bond purchases are fully reversed.

Nonetheless, the counterfactual exercise has several caveats. First, the impact of an accumulation or a decumulation of central bank's government bond holdings may not be symmetric, not least because of the difference in their signalling effects. Bond purchases may have a stronger impact on yields because they were interpreted as the central banks' commitment to maintaining ultra-easy policy stance. On the other hand, balance sheet unwinding that takes place gradually and passively in the background may have a smaller impact on the market.

Furthermore, the actual impact on bond yields will depend on the market environments at the time. For instance, the pool of active private investors who are willing to hold more bonds, relative to the central banks' holding shares, will be critical to how well the market can absorb excess supply. Markets with more diverse types of investors, such as commercial banks, investment funds, pension funds, and non-residents, would have a stronger investor base to rely on. Moreover, the pressures on the market will be larger if asset normalization coincides with a rise in net government bond supply. Thus, a coordination between the central bank and the Ministry of Finance will be crucial to ensure smooth transition. Finally, the yield reactions will depend on the global market sentiments and bond yield trends at the time of normalization. During periods of heightened global bond market volatilities, the pace of asset normalization should be slowed down to avoid exacerbating the impact of global factors on the bond market. To summarize, central banks can minimize the disruptions from an asset runoff by factoring in investors' risk appetite and government supply backdrop when planning the timing and pace of the normalization.

V. Conclusion and Policy Discussion

As the nature and degree of balance sheet expansion as well as policy objectives differ across countries, each ASEAN-4 central bank must follow its own approach to normalize its balance sheets, if normalization is deemed necessary. That said, the need to normalize the balance sheet may be less compelling over the short term, as ASEAN-4 central banks have developed liquidity management tools to enable effective control of short-term interest rates.

Yet, over the longer term, large and prolonged holdings of government bonds by the central banks can potentially interfere with the price discovery mechanism of the bond market, and normalization would be required akin to AE cases. While benefits and costs of balance sheet normalization need to be wholistically assessed, central banks' prolonged presence in the market can hinder market development, especially if the central bank is the dominant player. Therefore, in some cases such as where market liquidity is judged to have materially deteriorated, active normalization may be required to restore normal market functioning.

In the case where active normalization is required, an exit strategy must be carefully designed to ensure orderly market adjustments. An unwinding of government bond holding by central banks requires close cooperation with the government, especially in

[18] Based on the regression results, we can estimate the possible impact on yields from balance sheet normalization by conducting a counterfactual exercise, assuming a scenario where the central banks' bond holdings were unchanged from pre-crisis.

setting the pace and timeline for the run-off and the new bond issuance to avoid causing disorderly bond market conditions or potential liquidity problems.

Clear communication should form an integral part of the exit strategy. Similar to AEs, active normalization of central bank balance sheet is market sensitive, and to avoid unwelcomed reactions, market expectations need to be managed and aligned with the central bank's intention through clear communication. Communication needs to be well-timed and covers the following grounds:

- A clear indication of what the central bank plans to do with its current bond holding.
- The rationales for normalization of the balance sheets.
- A clear statement that central bank bond purchases were temporary crisis-related measures to avoid possible perception of fiscal dominance.
- The modes and conditions in which future interventions in the bond market may take place.

All in all, transparency, credibility, and operational independence are key ingredients to successful implementation of normalization plans. While transparency can be enhanced through clear communication, credibility and operational independence are deeply ingrained in the central bank's governance structure and practice. It is important to strike the right balance between close monetary-fiscal coordination in the conduct of macroeconomic policies, while maintaining operational independence to ensure effective policy implementation and achievements of central banks' policy goals.

Over the medium to long term, central banks should continue to develop the bond market in collaboration with other stakeholders. A deeper and more liquid bond market can complement the banking sector as a stable financing source for the economy and serve as a first line of defense in times of heightened market uncertainties.

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