INDONESIA'S EXIT STRATEGY FROM COVID-19: POLICY CONSIDERATIONS AND SCENARIO ANALYSES[1]

The Indonesian economy, together with the rest of the globe, is emerging from one of the worst economic crises in modern history. How should Indonesia adjust and coordinate its macroeconomic policies to ensure a strong and durable recovery? What are the important policy challenges in this process? This paper discusses these issues and examines the policy implications of different exit scenarios linked to major changes in global economic conditions, notably the expected tightening of U.S. monetary policy. The model simulations show that much will depend on the specifics of the shocks in the scenarios and underscore the importance of policy flexibility and coordination.

A. Introduction

1. With the economic recovery gathering pace in Indonesia, there is a growing need to recalibrate current macroeconomic policy settings. Since the onset of COVID-19 in early 2020, policymakers have taken a series of bold policy actions to counter the adverse economic impacts of the pandemic. The policy response was successful in restoring economic and financial stability, but nevertheless required suspending two central pillars of Indonesia's macroeconomic policy framework: namely, the annual budget deficit ceiling of 3 percent of GDP and the restriction on monetary budget financing by Bank Indonesia (BI). Under current laws, these pillars will be reinstated by 2023, in keeping with Indonesia's longstanding prudent macroeconomic management approach. As a result, the fiscal policy stance is expected to turn moderately contractionary over 2022–2023 as the fiscal deficit is lowered to comply with the 3 percent deficit target, and BI financing will end by end-2022. Monetary policy is expected to stay accommodative in the short term, but as the recovery gathers steam, a gradual exit from the accommodative stance will be needed to maintain macroeconomic stability and rebuild policy buffers against future economic shocks.

2. But the exit could be compounded by several challenges, amid still large uncertainties surrounding global growth prospects and COVID-19. Notably, spillovers from a faster than expected U.S. monetary policy normalization could lead to a tightening of domestic financial conditions when the economy still has considerable slack, interrupting Indonesia's recovery if this is not accompanied by stronger external demand. Furthermore, a new surge of COVID-19 could increase the trade-offs between preserving policy credibility and supporting the economy, given the commitment to return to the budget deficit ceiling in 2023.

3. This chapter discusses the policy considerations for Indonesia's exit strategy and the policy implications of different exit scenarios associated with U.S. monetary policy tightening. Depending on the nature and size of external spillovers from the expected tightening of

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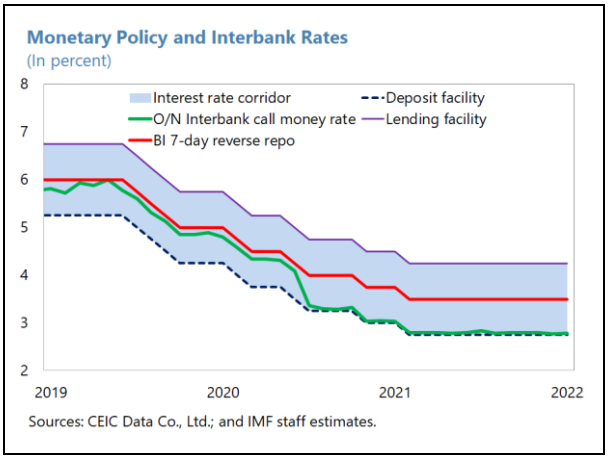
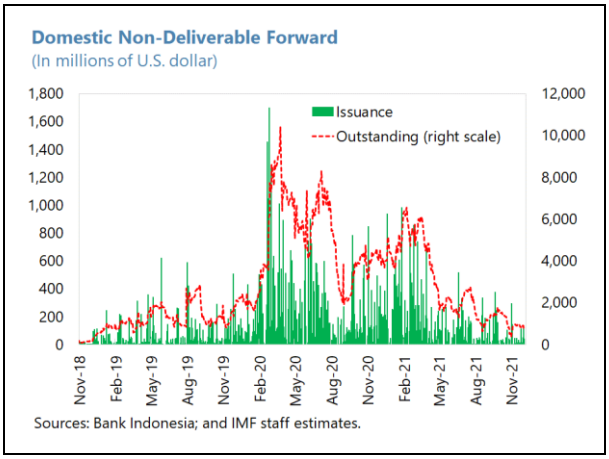
U.S. monetary policy, the exit strategy will need to be adjusted in terms of the timing, policy mix, and sequencing. This chapter discusses the broad policy considerations for Indonesia's exit policy mix under both the baseline scenario and alternative risk scenarios using model simulations.

B. Policy Response to COVID-19

4. BI faced the pandemic with a sound monetary policy framework. After formally adopting an inflation targeting framework in 2005, BI has made several refinements to its monetary policy framework, notably to reflect the experience from the Global Financial Crisis in 2008–9. BI's current "Flexible Inflation Targeting" framework can be characterized as an inflation targeting regime with strong emphasis on exchange rate and financial stability, as well as coherent use of multiple policy tools—including macroprudential and capital flow measures—to achieve these objectives. The framework is supported by ample foreign reserves and a network of bilateral swap lines with other central banks, and the introduction of the domestic non-deliverable forward (DNDF) market in 2018 provided an additional channel to counter excessive volatility in the FX market. This framework has served Indonesia well, contributing to stable inflation and credit growth in the run up to the pandemic while allowing the exchange rate to be market-determined.

5. At the beginning of the pandemic, BI's policy response largely relied on conventional policy tools to provide liquidity. The COVID-19 crisis began to intensify in Indonesia and other EMs around February 2020, triggering large capital outflows, a spike in risk premia, and large exchange rate depreciation pressures. In response to these initial external shocks, BI made active interventions in the FX spot and DNDF markets while simultaneously purchasing IDR-denominated government bonds in the secondary market. This "triple intervention" during the first quarter



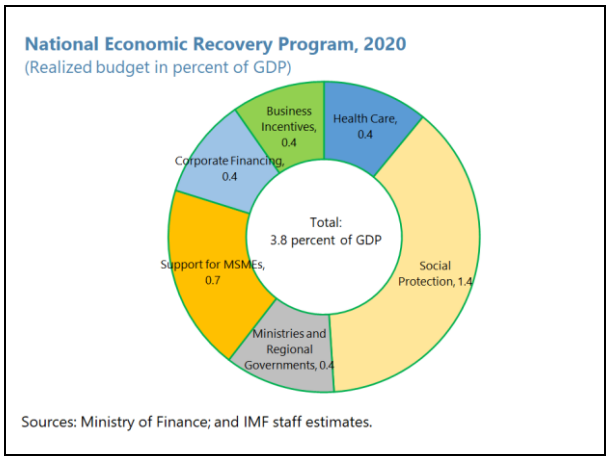


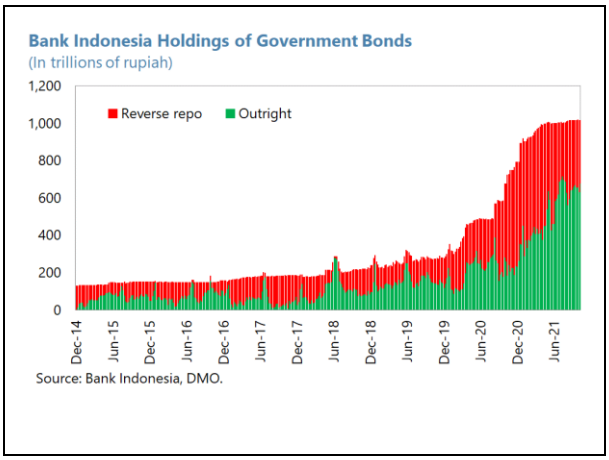
of 2020 was also accompanied by consecutive policy rate reductions in February and March (25 bps each), as a "pre-emptive measure" to maintain domestic economic growth momentum.[2] Then, since April 2020, BI's policy priority shifted more decisively toward monetary policy easing aimed at supporting domestic activity amid stricter social restrictions and reduced mobility. In addition to

[2] https://www.bi.go.id/en/publikasi/ruang-media/news-release/Pages/SP_222220.aspx.

further reducing the policy rate, BI proceeded to inject more liquidity into the banking system, including through a 200-bps reduction in the rupiah reserve requirement ratios for banks (May) and increases in BI repo and FX swap issuance. These liquidity injection measures were also complemented by an easing of macroprudential measures.[3]

6. But the exceptional nature and scale of COVID-19 shocks eventually led BI to resort to unconventional policy measures as part of an all-government policy response package. As the COVID-19 crisis deepened, the government increased its COVID-related spending on health and social protection through four successive fiscal packages. The additional government spending required a substantial widening of the budget deficit to 5.9 percent of GDP from 1.8 percent in the initial budget, well beyond the statutory budget ceiling of 3 percent of GDP. This extraordinary fiscal response was made possible through the issuance of Perppu No. 1 of 2020 (March),[4] which also allowed BI to purchase long-term government bonds in the primary market to finance the higher budget deficit. With this legal foundation, BI proceeded to purchase a total of IDR 473 trillion (3.1 percent of GDP) worth of government bonds from the primary market over April-December 2020, in addition to the IDR 166 trillion (1.1 percent of GDP) worth of secondary market purchases from the triple interventions conducted in Q12020.[5]





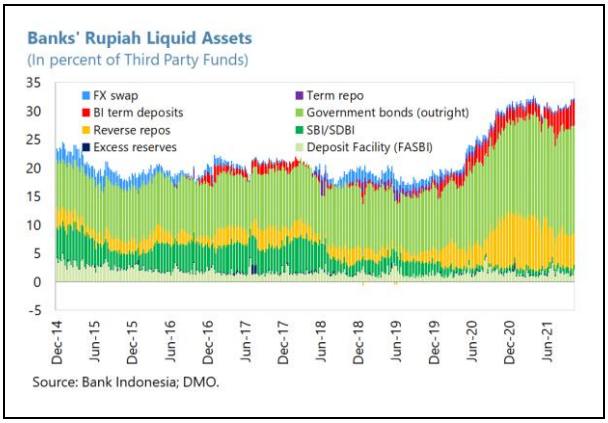
7. BI's combined policy response in 2020 helped stabilize domestic bond markets and enabled large-scale injection of liquidity into the banking system. Despite the increased issuance of government bonds and the rather weak recovery in nonresidents' local currency government bond holdings since April 2020, BI's policy rate reductions and large-scale government bond purchase program led to a sustained decline in long-term IDR-denominated bond yields throughout the remainder of 2020, and without causing notable exchange rate depreciation

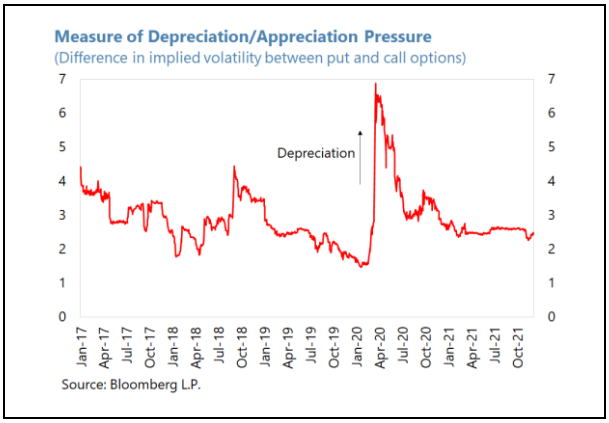
[3] These notably included the suspension of the macroprudential intermediation ratio and the reduction of the minimum down-payment limit for qualified motor vehicles.

[4] Later stipulated as Law 2 of 2020 (May).

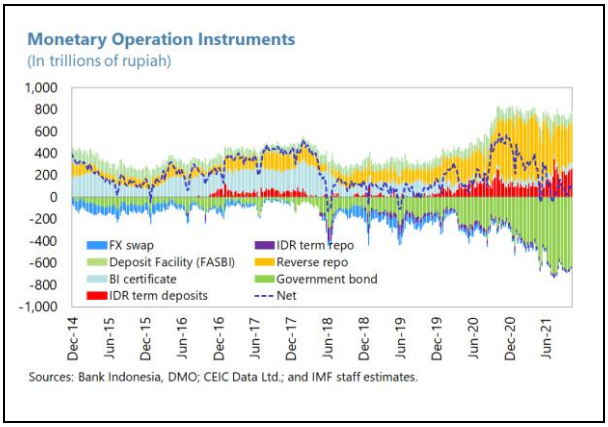
[5] See also Cerutti and Helbling (2021) for more background on BI's government bond purchase program and a comparison with other bond purchase programs in Malaysia, the Philippines, and Thailand.

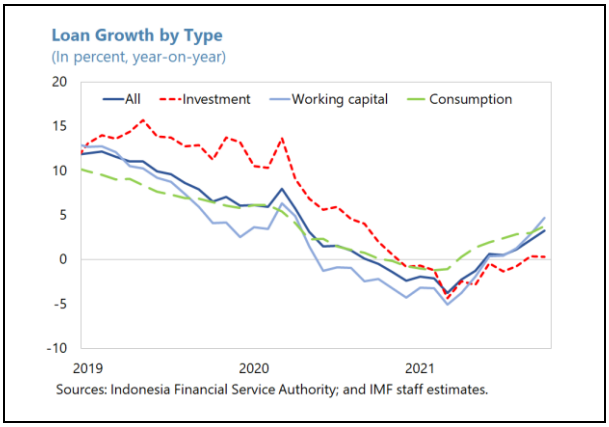
pressures, in line with the experience in other EMs that launched similar government bond purchase programs (IMF, 2021b). Higher demand for safe assets by domestic banks also contributed, which enjoyed strong deposit growth reflecting higher precautionary savings by households and firms. As a result, the share of banks' liquid assets rose rapidly from about 20 percent at end-April 2020 to a record of about 33 percent at end-November 2021.





8. BI further eased its monetary policy stance in 2021, mainly through additional liquidity injections. The economic recovery starting from the second half of 2020 encountered brief setbacks due to a series of COVID-19 waves in early and mid-2021. As a result, headline inflation continued to stay well below the lower bound of the BI's target corridor of 3±1 percent, while growth in bank lending to the private sector had remained negative during much of the first half of 2021, reflecting weak domestic demand and banks' increased risk aversion. Against this backdrop, BI continued to inject more liquidity into the banking system through additional primary market government bond purchases (IDR 358 trillion, or 2.1 percent of 2021 GDP) and reduced liquidity absorption using reverse repo operations, while also lowering the policy rate by 25 bps in February 2021. This further loosening of the monetary policy stance, together with the relaxation of some macroprudential measures,[6] helped support the recovery in credit growth during the second half of 2021 and the rebound in economic activity in 2021Q4.



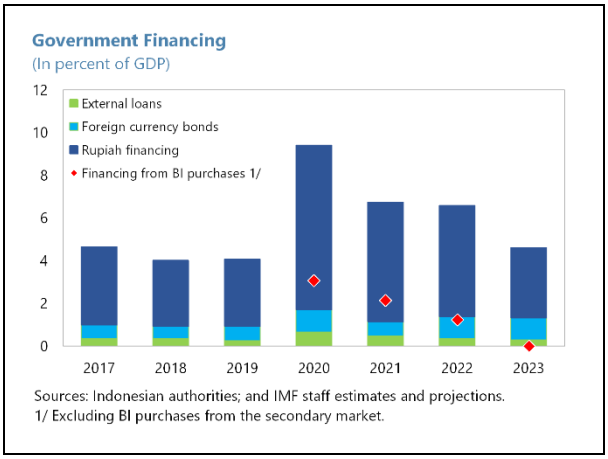


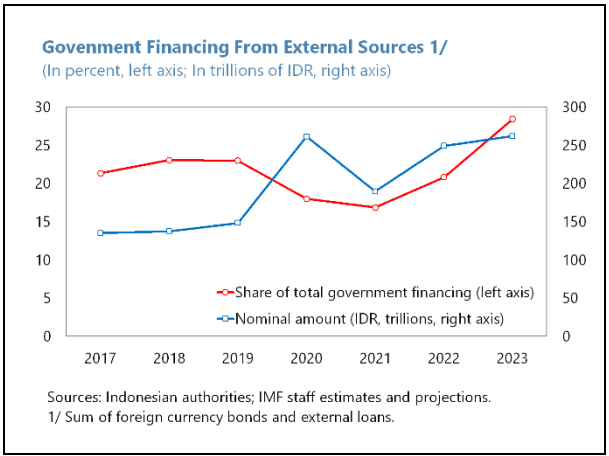
[6] This includes an easing of the loan-to-value ratio on property and car loans to up to 100 percent until end-2022.

C. Baseline Scenario

9. Under staff's baseline scenario, the recovery is expected to strengthen in Indonesia and globally over 2022–23, despite some headwinds from U.S. monetary policy tightening. In this scenario, the expected turnaround in the U.S. monetary policy stance in 2022 is expected to lead to a gradual and orderly rise in global long-term rates and depreciation of EM currencies, including the rupiah. While financial conditions in Indonesia and other EMs would tighten somewhat as a result, the potential adverse impact on domestic demand is expected to be largely offset by stronger exports, consistent with the projected global recovery under the baseline. The planned return to the 3-percent budget deficit ceiling in 2023 will impose a modest drag on growth over this period, which is expected to be more than offset by the projected rebound in domestic and external demand amid continued progress in vaccination and the easing of the pandemic by end-2022.

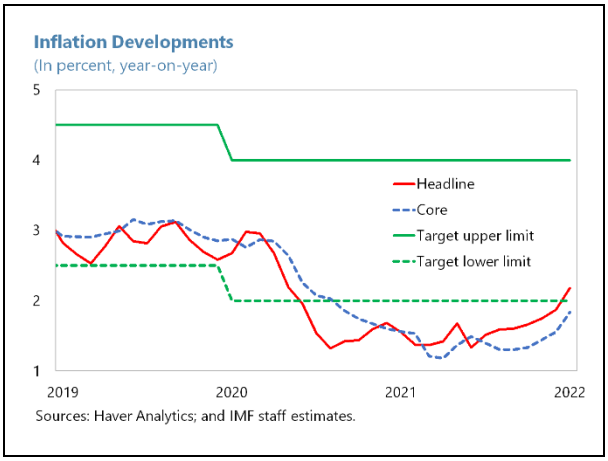
10. The IDR-denominated government bond market is expected to stay broadly stable. Under the baseline, domestic banks are expected to unwind some of their holdings of government bonds in favor of more credit to the private sector as economic activity continues to strengthen. Together with the planned discontinuation of BI's primary market government bond purchases by end-2022, this portfolio rebalancing by banks would put some upward pressures on long-term yields. However, the weaker domestic demand for IDR-denominated government bonds would largely coincide with reduced government financing needs over 2022–23, as well as a modest recovery in nonresidents' demand on the back of a strengthening recovery. As a result of this confluence of demand- and supply-side factors, Indonesia's long-term rates under the baseline are expected to rise gradually over 2022–23 along with other EM yields under stable market conditions.

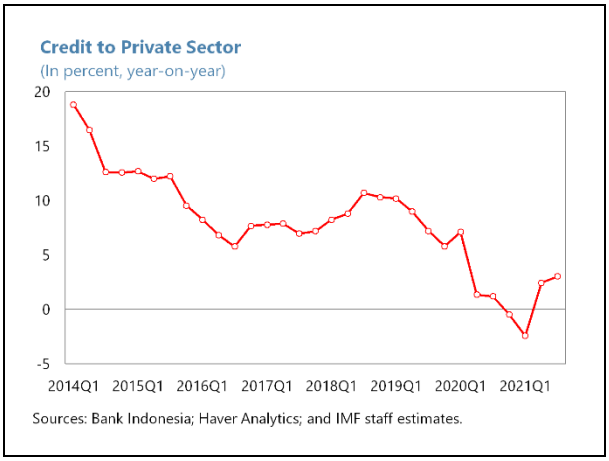




11. Monetary policy is expected to remain broadly accommodative in the short term. Given the considerable output gap (projected at about 3½ percent in 2022), well-anchored inflation expectations, uncertain global growth prospects due to the spread of Omicron, and the expected fiscal consolidation over 2022–23, BI's monetary policy stance is expected to stay easy and supportive of the ongoing economic recovery in the short term, consistent with BI's intention to

proceed with monetary policy normalization in a "measured and prudent way to avoid disrupting the national economic recovery process."[7]





D. Considerations for Exit Under Baseline Scenario

12. As the recovery proceeds, BI intends to undertake a gradual exit from the current policy settings. The exit process will involve a series of adjustments in both the policy mix and policy stance aimed at achieving BI's core stability objectives (i.e., price, currency, and financial), in line with the ongoing normalization in economic and financial conditions. At the initial stages of exit, BI is expected to focus on absorbing the current abundant excess liquidity in the banking system "in a measurable and very prudent manner" (Warjiyo, 2021b), before raising the policy rate in response to "early signals of rising inflation."[8] The discontinuation of BI's monetary budget financing by end-2022, as stipulated under Law 2 of 2020, would support BI's liquidity absorption efforts post 2022 and signal a decisive exit from BI's crisis-time unconventional policy toolkit.

13. The mix and sequencing of liquidity absorption tools could consider the ease of adjustment and the potential impact on bank lending. Given the large uncertainty surrounding the baseline outlook, there could be merit in starting the liquidity withdrawal using policy tools that are relatively nimble and easy-to-reverse if needed. Under this approach, open market operations (OMOs) such as reverse repos could take the lead at least initially. The reserve requirement ratios (RRRs) for banks could also be raised to absorb excess liquidity. Compared with OMOs, the RRRs have the advantage of not incurring additional sterilization costs for BI under the current policy setup[9] and better suited to absorb structural liquidity than reverse repos, which are generally

[7] https://www.bi.go.id/en/publikasi/ruang-media/news-release/Pages/sp_2331221.aspx.

[8] Excess banking system liquidity could weaken the strength of monetary policy transmissions (Agenor and others, 2004; IMF, 2013), including in Indonesia (Bathaluddin and Wahyu, 2012), which renders support to this sequencing approach (i.e., liquidity absorption first, policy rate hike later). But this baseline approach may not be appropriate if broad-based inflation pressures emerge earlier than expected, in which case faster policy rate adjustments could be warranted (for example, see next section, Scenario 1).

[9] In Indonesia, only bank reserves of up to 3 percent of deposit are remunerated. At the current RRR of 3.5 percent, the remaining 0.5 percent above the 3 percent threshold is unremunerated.

confined to short-term maturities. At the same time, however, this non-market instrument carries risks of discouraging banking sector intermediation by acting as a tax on lending (Gray, 2013) and tends to be relatively more difficult to change frequently, making it likely to be more desirable for a later stage of the liquidity withdrawal process once credit conditions have further improved.

14. Eventual increases in the policy rate in response to rising inflation could affect banks' financial health through several channels, but the overall impact on financial stability should be limited. An interest rate hike would reduce the market value of banks' fixed-income assets, notably government bonds, and could also lead to debt service problems in their loan portfolio. On the other hand, an increase in interest rates generally leads to higher net interest margin and thus improves banks' profitability. Several empirical findings, albeit based on advanced economies, show that the net effect on banks' net interest income tends to be positive (IMF, 2013b). Also considering the well-capitalized Indonesian banking system,[10] policy rate hikes do not appear likely to severely impact the overall banking system balance sheet, provided the adjustments are made in a measured and gradual manner.

15. Policy rate hikes would also adversely affect BI's balance sheet given its large government bond holdings, but the cost seems manageable. In addition to reducing the market value of BI's government bond holdings,[11] an increase in the policy rate would also raise the cost for liquidity absorption through OMOs in the exit phase. Furthermore, BI will transfer part of its interest income to the Ministry of Finance (MOF) under the burden sharing agreements with the MOF, imposing additional financial burden on BI. Appendix I examines these issues under different illustrative interest rate paths and shows that these costs would be mostly manageable in magnitude and thus unlikely to constrain BI's interest rate hike decisions.

16. Exchange rate and macroprudential policies could add more flexibility to the timing of BI's policy rate hike. In the absence of imminent inflation pressures as assumed in the baseline, allowing ample exchange rate flexibility would facilitate keeping the policy rate at levels conducive to economic recovery while preserving price stability.[12] In a similar vein, macroprudential measures could be tightened—and complemented by targeted microprudential measures—if excess banking system liquidity translates to excessive credit growth before signs of inflation pressures emerge, alleviating the need for premature policy rate hikes. Conversely, if inflation pressures intensify faster than expected in the baseline, the policy rate may need to be raised sooner to preserve price stability (see next section, Scenario 1).

[10] The regulatory capital to risk-weighted assets ratio as of end-September 2021 stands at about 25.2 percent.

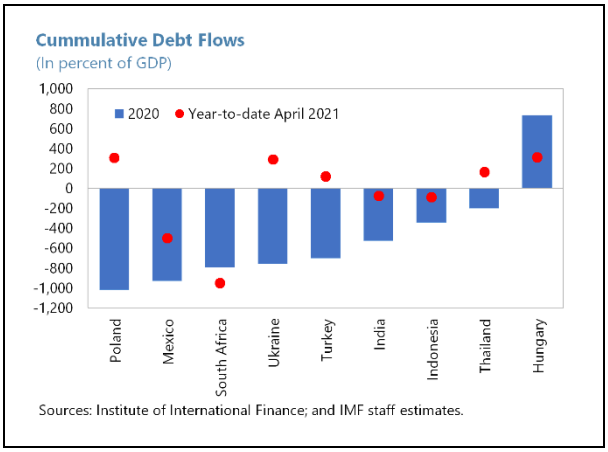
[11] These losses could be explicit or implicit, depending on BI's accounting treatment of these valuation changes (i.e., market value vs. book value). Regardless of the valuation method applied, however, market participants could see through the veil and adjust their responses to BI's monetary policy accordingly.

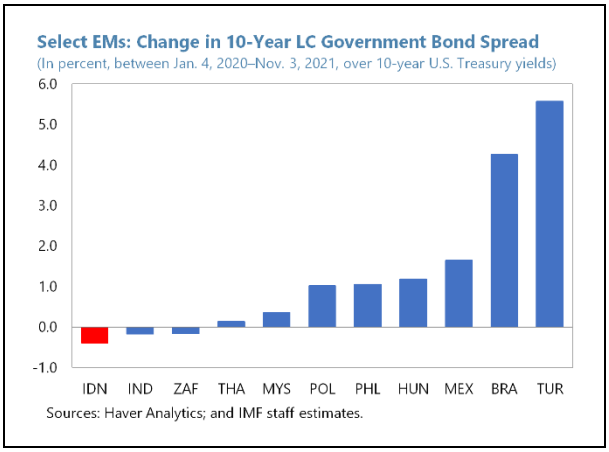
[12] The next section also considers alternative scenarios under which the exchange rate acts as a shock-amplifier. In this case, FX interventions—typically implemented in Indonesia through the triple intervention strategy—are shown to help protect price and financial stability.

17. Unwinding of BI's government bond holdings could be undertaken with a long-term horizon and in an organic manner by not rolling over maturing bonds. International experience shows that central banks tend to predominantly prefer unwinding their assets accumulated from unconventional monetary policy in this way, rather than actively offloading them. This approach is often based on the assessment that outright asset sales is unlikely to be a reliable substitute for policy rate adjustments when it comes to ensuring price stability[13] and the possible large price impact given the shallow depth of the secondary market. If the pace of unwinding needs to be adjusted, BI could also consider partly rolling over the maturing bonds through secondary market purchases.

E. Policy Response Under Alternative Scenarios: Model Simulations

18. Compared with other major EMs, Indonesia seems well positioned to weather externals shocks. During recent episodes of heightened U.S. Treasury yield volatility (notably, over Feb.-Mar. 2021), Indonesia experienced relatively moderate outflows in the bond market and exchange rate depreciation, reflecting its strong economic fundamentals. Looking forward, Indonesia appears to be in a strong position to absorb external shocks: it has ample FX reserves; the need for foreign financing is limited with a current account estimated at close to balance in 2021; the public debt ratio is relatively low; and it has improved capacity to deal with COVID-19 infections. The long-term local-currency government bond yield also maintains a comfortable margin over the global benchmark, which should also help reduce capital outflow pressures under risk scenarios.





19. Nonetheless, if risks to the baseline paths for U.S. monetary policy and COVID-19 materialize, Indonesia's exit policies will need to be readjusted accordingly. A faster-than-expected tightening of U.S. monetary policy than in the baseline, for example, will have different impacts on the rest of the world depending on the underlying drivers. If driven by stronger growth in the U.S., the positive spillovers to the rest of the world from higher trade could more than offset the adverse spillovers from tighter global financial conditions. If the accelerated tightening of U.S. monetary policy reflects inflation surprises in the U.S. caused by global supply-side disruptions,

[13] See, for example, Box A, *Monthly Policy Report*, from Bank of England (August 2021).

the net economic impact on emerging markets could be negative. On the other hand, the tightening of U.S. monetary policy could also be slower-than-expected in the context of another global infection wave from a new COVID-19 variant. In that case, more considerable deviations from the baseline exit path could be required (as discussed below).

20. Four illustrative scenarios are constructed to emphasize the uncertainty of shocks around the baseline scenario and to highlight the data-dependent nature of future policy actions (Figure 1). The scenarios are based on different assumptions of U.S. monetary policy spillovers and the pandemic (Appendix II, Table 2), and all numbers should be interpreted as deviations from the baseline. It is worth noting that the policy instruments in the simulations are much narrower and more simplified than in the real world.[14] Nevertheless, this model exercise is meant to shed light on the different underlying policy tradeoffs to different external shocks.

- **Under Scenario 1, more favorable-than-expected external conditions could speed up the return to normal**. Specifically, the U.S. interest rates increase as a reflection of a stronger-than-expected U.S. economy. The positive spillovers to the Indonesian economy through higher exports offset the contractionary effects coming from higher interest rates. Supply-driven inflationary tensions ease, causing U.S. inflation to fall. Output gap in Indonesia narrows, as both domestic demand and net exports strengthen. Inflation rises but only slightly, reflecting a rather flat Phillips curve. The combination of higher output and inflation calls for a faster increase in the monetary policy rate than in the baseline. The impact on the exchange rate and long-term interest rates are nonetheless small.

- **Under Scenario 2, less favorable external conditions delay the exit**. It is assumed that supply-side disruptions and higher commodity prices continue to weigh on the global economy, which brings out a difficult trade-off between output and inflation for some countries. Inflation in major economies including the U.S. surprises on the upside, and the Fed tightens monetary policy faster than expected. Higher U.S. interest rates and tighter financial conditions trigger capital outflows, a weakening of EM currencies, and higher long-term interest rates. The tighter financial conditions without the positive spillovers from abroad would imply somewhat weaker-than-expected output, and the policy rate would fall below the baseline.

- **Scenario 3 illustrates the challenge that EMs might face if another COVID-19 surge occurs due to a new variant, alongside the tightening of EM financial conditions**. The scenario assumes that another round of mobility restrictions and reduced confidence cause output to fall below the baseline both in Indonesia and the rest of the world, accompanied by a looser than expected monetary policy in the U.S. Financial conditions in EMs tighten by more than in the previous scenario, with larger exchange rate depreciation and higher long-term interest rates

[14] BI implements a flexible inflation-targeting framework which integrates monetary and financial system stability through a policy mix of monetary, macroprudential, exchange rate and capital flow instruments, while strengthening the institutional arrangements in order to optimize the role of policy coordination and communication (BI website: monetary policy objectives).

due to higher risk premia. BI responds by intervening in the FX market,[15] limiting the extent of depreciation and thereby the impact on inflation,[16] at the cost of some decline in BI's foreign exchange reserves. At the same time, in response to the widening of output gap and tightening of financial conditions, the policy rate is lowered below the baseline in order to keep inflation within BI's target band at 2−3 year horizons.

21. Finally, Scenario 4 illustrates the benefits of an integrated policy package including fiscal policy to combat the challenges should they arise. In the Indonesian context, this could mean a delayed return to the budget deficit ceiling of 3 percent in order to provide additional support to the economy. The scenario assumes that a fiscal package amounting to about 1 percent of GDP is deployed to support the economy, financed by an increase in the fiscal deficit and issuance of new government bonds at market price. This package significantly mitigates the impact on output from the pandemic. If market participants consider that the risk of fiscal dominance is low, the fiscal package may only imply small increases in the long-term interest rate.[17] The use of the fiscal space would also help preserve the monetary policy space when external stability concerns are heightened.

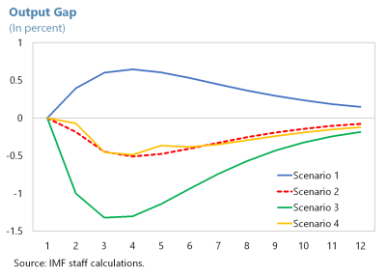
22. The model simulation results above generally underscore the need for policy flexibility and coordination under the current uncertain external environment. Allowing the exchange rate to play the role of a shock absorber will be an important policy approach under most circumstances, except when external financial conditions become disruptive and warrant FX interventions. The policy rate will need to be adjusted to preserve price stability. This could mean a faster hike path than the baseline path as in Scenario 1, or a slower and more gradual path as in Scenarios 2−4 in which output gap widens, with 2- to 3-year-ahead inflation possibly falling below the baseline (e.g., Scenarios 2 and 4). In this case, the policy rate will need to be raised more gradually than in the baseline or even lowered. But if inflation surprises on the upside despite the wider output gap, possibly due to a higher exchange rate passthrough, BI will need to respond with a higher policy rate path to anchor inflation and inflation expectations. Finally, as shown by Scenarios 3 and 4, there could be exceptional circumstances in which monetary policy alone may not be enough to sustain the ongoing recovery (e.g., an outbreak of a new COVID-19 variant), and fiscal stimulus may be useful to provide additional demand support.

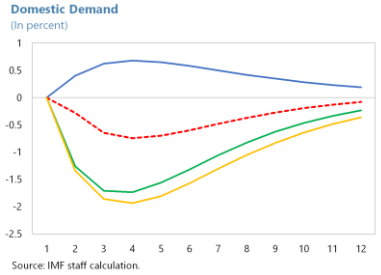
[15] The model includes an endogenous FXI rule that reacts to nominal exchange rate movements. Since FXI data is not available, the change in central bank FX reserves is used as a proxy to mimic central bank interventions in the spot market. If central banks use FX swap or other instruments to influence the exchange without affecting the level of reserves as they increasingly do nowadays, those interventions will not be captured by this proxy.

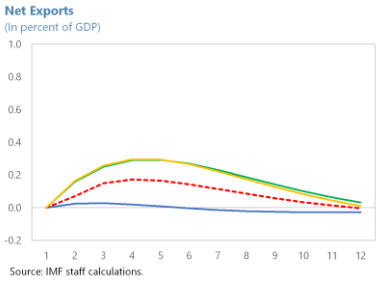
[16] The pass-through effect from exchange rate depreciation is estimated to be modest, reflecting BI's monetary policy credibility, and is in line with some recent studies such as Carriere-Swallow and others (2021).

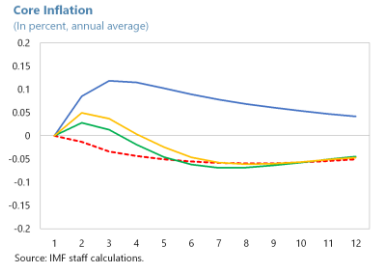
[17] This may not hold in EMs with weak policy credibility, in which case the policy rates may need to be raised to anchor inflation expectations, resulting in higher long-term rates.

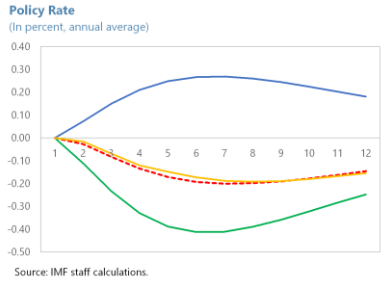
Figure 1. Indonesia: Illustrative Alternative Scenarios

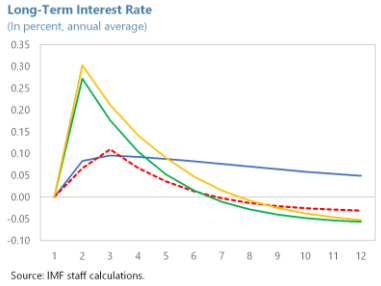


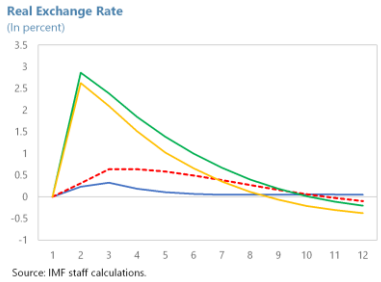


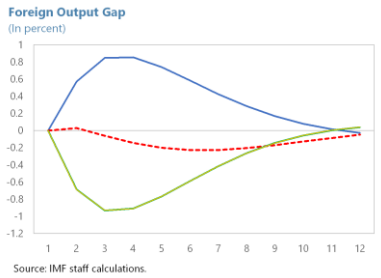


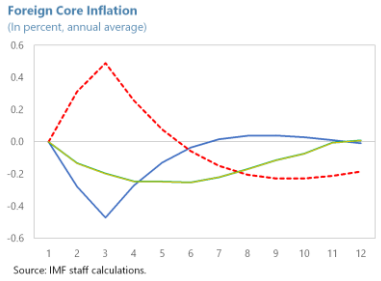


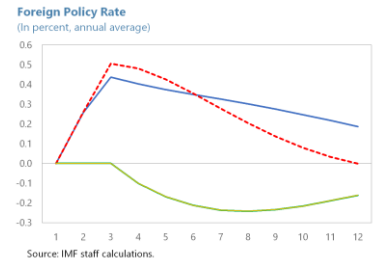












Appendix I. Impact of Monetary Budget Financing on BI's Balance Sheet

1. BI's primary market government bond purchase program is considerable in size, but some of its features will help protect BI against potential valuation losses. BI's primary market purchases of IDR-denominated government bonds, which amounts to about a cumulative IDR 616 trillion (4 percent of 2020 GDP) as of end-November 2021, have been carried out through 3 joint decrees (*Keputusan Bersama*, or KB) between BI and the MOF, launched in April (KB I, or "Market Mechanism") and July 2020 (KB II, or "Burden Sharing Agreement") and August 2021 (KB III, or "Coordination Agreement"), respectively (Table 1).[1] The cumulative total purchase amount under these arrangements is expected to reach about IDR 1,055 trillion (6.8 percent of 2020 GDP) by end-2022. Of this amount, about 79 percent (IDR 837 trillion) will feature a coupon rate equal to the variable 3-month reverse repo rate, providing some protection for BI against valuation losses associated with future interest rate changes. While BI would remain exposed to such losses for the remaining amount (IDR 218 trillion), which consists of government bonds purchased under the Market Mechanism, these bonds are marketable and tradable, which allows BI to sell them in the secondary market as needed going forward.[2]

Table 1. Indonesia: MOF-BI IDR Government Bond Purchase Agreements

	Amount (IDR trillions)	Coupon Rate	Coupon Type	Interest Income for BI 3/
KB I: Market Mechanism 1/	218.4	Market rate	Fixed	Market rate
KB II: Tranche A (for public goods)	397.6	3-month reverse repo rate	Floating	0
KB II: Tranche B (for non-public goods) 2/	177.0	Market rate	Fixed	0
KB III: Tranche A	341.0	3-month reverse repo rate	Floating	3-month reverse repo rate
KB III: Tranche B	98.0	3-month reverse repo rate	Floating	0

Sources: Data provided by the authorities; and IMF staff estimates.

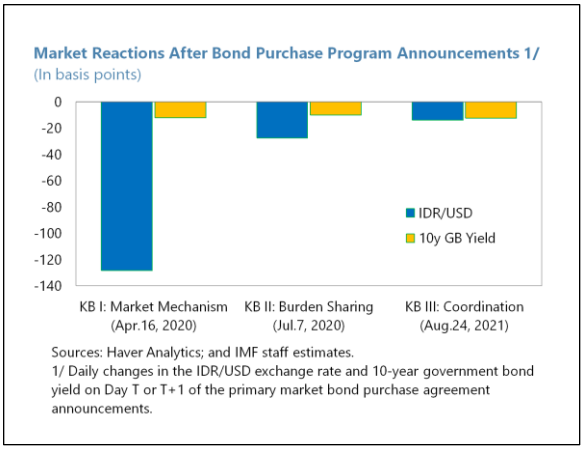
1/ As of September 17, 2021.
2/ No government bond purchases by BI. Interest expense sharing only at the rate of [market rate - (policy rate - 1)].
3/ Under the burden sharing agreements.

2. Initial market reactions following the announcements of these arrangements were muted. In the case of KB II and III, the IDR/USD exchange rate depreciated by a modest

[1] See Warjiyo (2021a) and Appendix VII in the accompanying staff report for more details of these arrangements.

[2] It should also be noted that while BI's government bond holdings from its secondary market purchases (as part of the triple intervention strategy) are also be exposed to potential valuation losses due to changes in market interest rates, the losses could be much more limited as these bonds are likely to have been bought at low prices during times of market turmoil.

28 and14 basis points (bps) on a daily basis, respectively, immediately following their public announcements.[3] The impact was larger for KB I (128 bps), however, likely reflecting the relatively higher FX market volatility around the month of the announcement (April 2020). Meanwhile, the reactions in the bond market were also rather muted, with the 10-year government bond yield declining by about 10−13 bps following the announcements.[4] Several factors likely have contributed to the generally subdued market price reactions, including the authorities' commitment to phase out these arrangements by end-2022 and inflation staying below the target range since June 2020.



3. An illustrative exercise is conducted to calculate the plausible range of the costs for BI's burden sharing and liquidity sterilization under a set of hypothetical policy paths. Specifically, we consider three different paths for the policy rate ("Flat," "Gradual," and "Steep") over the period of 2023−25, together with three different levels of liquidity sterilization,[5] which collectively leads to a total of 9 distinct policy paths (Table 2). For each of these scenarios, we examine the possible range of the costs for BI due to revenue transfers to the MOF under the burden sharing and coordination agreements, as well as the interest expense that would be required to sterilize the liquidity injected from primary market purchases under these two agreements. These estimates are then compared with BI's financial positions at end-2020 to obtain a sense of their quantitative significance for BI's financial health. The cost impacts of the market mechanism are not considered in this exercise, as the interest income for BI should be net positive even after considering the sterilization costs. In this respect, the cost estimates from this exercise could be seen as the upper bound of actual costs.

4. The results shows that BI's government bond holdings under KB II and III would likely not materially hinder BI's ability to adjust its monetary policy stance as needed. Under the most hawkish scenario considered, in which BI raises its policy rate from the current 3.5 percent to 6 percent by end-2025 ("Steep" in Table 2) while sterilizing 70 percent of the liquidity injection from its primary market government bond purchases (up from about 40 percent as of end-November 2021), the total cumulative cost to BI would amount to about IDR 164 trillion

[3] These are comparable to the estimates obtained from a sample of 13 EMs (IMF, 2020b), which range between 24−30 bps on or the day after the announcement of asset purchase programs.

[4] These daily changes in the exchange rate and government bond yield are comparable to the estimates from a recent empirical analysis based on 13 emerging markets (IMF, 2020b), which shows initial announcement effects of 24−30 bps on sample EM exchange rates and 18−28 bps on local currency government bond yields.

[5] The level of liquidity sterilization is defined as the ratio of BI's reverse repos over its total government bond holdings (the sum of government bonds held outright and sold to banks as reverse repos and minus repos purchased from banks).

over 2023–25, of which IDR 79 trillion would be due to revenue transfers to the MOF. This cost would be partly offset by BI's interest income from these government bonds estimated at about IDR 122 trillion, leaving a net cumulative cost for BI of IDR 42 trillion, which would be equivalent to about 19 percent of BI's end-2020 capital and reserves (IDR 219.8 trillion). With this cost estimate, BI's capital ratio of 8.6 percent at end-2020 would be reduced to about 7 percent.

Table 2. Indonesia: Cumulative Costs of Monetary Budget Financing (KB II and III) for Bank Indonesia Under Illustrative Scenarios

	2023	2024	2025	2023	2024	2025	2023	2024	2025
Degree of sterilization 1/	50 percent			60 percent			70 percent		
Percent of 2020 BI capital (IDR 219.8 trillion)									
Flat	3.5	7.0	10.5	4.7	9.4	14.1	5.9	11.7	17.6
Gradual	3.2	6.1	8.8	4.6	9.2	13.8	6.1	12.4	18.8
Steep	3.1	5.8	8.2	4.6	9.2	13.7	6.2	12.6	19.2
Percent of 2020 BI revenue (IDR 87 trillion)									
Flat	8.9	17.7	26.6	11.8	23.7	35.5	14.8	29.7	44.5
Gradual	8.0	15.4	22.3	11.7	23.3	34.9	15.4	31.2	47.4
Steep	7.7	14.6	20.6	11.7	23.2	34.6	15.6	31.8	48.6
Percent of 2020 BI surplus (IDR 26.3 trillion)									
Flat	29.3	58.7	88.0	39.2	78.4	117.6	49.1	98.1	147.2
Gradual	26.5	51.1	73.8	38.7	77.2	115.3	51.0	103.3	156.9
Steep	25.5	48.2	68.1	38.6	76.7	114.4	51.6	105.2	160.7
Policy rate									
Flat	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Gradual	4.25	4.75	5.25	4.25	4.75	5.25	4.25	4.75	5.25
Steep	4.50	5.25	6.00	4.50	5.25	6.00	4.50	5.25	6.00
Interest rate assumptions 2/									
Policy rate									
Flat	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Gradual	4.25	4.75	5.25	4.25	4.75	5.25	4.25	4.75	5.25
Steep	4.50	5.25	6.00	4.50	5.25	6.00	4.50	5.25	6.00
3-month reverse repo rate									
Flat	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
Gradual	3.85	4.35	4.85	3.85	4.35	4.85	3.85	4.35	4.85
Steep	4.10	4.85	5.60	4.10	4.85	5.60	4.10	4.85	5.60
Market rate (average of 5-8 year maturities)									
Flat	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25
Gradual	6.75	7.25	7.75	6.75	7.25	7.75	6.75	7.25	7.75
Steep	7.00	7.75	8.50	7.00	7.75	8.50	7.00	7.75	8.50

Sources: Data provided by the authorities; and IMF staff estimates.

1/ Defined as the share of BI's government bonds held by banks for reverse repos out of BI's total government bonds purchased (= government bonds held outright by BI + held by banks as reverse repos - held by BI as repos for liquidity injection to banks) under KB II and III by end-2022, which is expected at about IDR 837 trillion.

2/ The three scenarios for interest rates ("Flat," "Gradual," and "Steep") are for illustration purposes only and should not be viewed as IMF staff's forecasts.

Appendix II. Model Description, Estimation Procedure, and Scenario Assumptions

1. The scenarios are constructed using an estimated log-linearized formulation of Adrian and others (2021). Adrian and others (2021) presents a micro-founded New Keynesian model to analyze monetary policy and financial stability issues in open economies with financial fragilities and weakly anchored inflation expectations. The risk-bearing capacity of agents trading in the FX market is limited as in Gabaix and Maggiori (2015), which gives rise to inefficient fluctuations in the uncovered interest rate parity (UIP) risk premium. The micro-founded private- and UIP-borrowing spreads allows to quantify the effects of FX intervention on the UIP risk-premium and the exchange rate.

2. To provide the quantitative aspect of the policy tradeoffs, we assume that both the interest rate policy and FX intervention are implemented in a rule-based manner and analyze their implications.

- The interest rate is simplified to follow a Taylor-rule-type reaction function where the policy rate (i_t) reacts to the expected one-year-ahead inflation ($\bar{\pi}_{c,t+4|t}$) and the contemporaneous output gap (y_t). It has some degree of interest-rate smoothing (ρ), and i.i.d. shocks (ε_t^i) to capture deviations from the simple reaction function.

$$i_t = \rho i_{t-1} + (1-\rho)\left[(1+\gamma_\pi)\bar{\pi}_{c,t+4|t} + \gamma_y y_t\right] + \varepsilon_t^i$$

- The exchange rate intervention policy is modeled as a rule followed by the central bank. The central bank intervenes in the FX market in response to portfolio capital flows, affecting the amount of funds intermediated by financiers, and hence at least partly offsetting the corresponding movements in the UIP premium. The change in central bank foreign exchange reserves (ΔR_t) is used as a proxy for the size of the intervention. It responds to exchange rate movements (ΔS_t) with the coefficient ($\gamma_{\Delta S}/(1-\gamma_{\Delta S})$) capturing the intensity of such response. Like the interest rate, it also has some degree of smoothing ($\rho_{\Delta R}$) and i.i.d. shocks (ε_t^{FXI}) to capture deviations from the simple reaction function.

$$\Delta R_t = \rho_{\Delta R}\Delta R_{t-1} - (1-\rho_{\Delta R})\,\Delta S_t \gamma_{\Delta S}/(1-\gamma_{\Delta S}) + \varepsilon_t^{FXI}$$

3. The model is estimated using the Bayesian likelihood methods with standard priors in the literature, based on Indonesia data during 2003Q4-2020Q3. The estimation is conditional on a pre-estimated foreign economy model which comprises a smaller set of variables including GDP, price and wage inflation, policy rate, and government expenditures. The U.S. economy is used as the proxy for the foreign economy in this case. Table 1 summarizes the observables and shocks.

Table 1. Indonesia: Observables and Structural Shocks			
Observables (Domestic)	**Observables (Foreign)**	**Shocks (Domestic)**	**Shocks (Foreign)**
Output gap Core inflation Real exports Real imports Real government consumption Nominal wage growth Real bilateral exchange rate Policy rate Long-term (10-year) interest rate Central bank foreign reserves	Output gap Core PCE inflation Nominal wage growth Real government consumption Policy rate	Domestic demand shock Price mark-up shock Export demand shock Import demand shock Government spending shock Wage mark-up shock UIP shock Policy rate shock Financial spread shock FXI shock Import price mark-up shock	Domestic demand shock Price mark-up shock Wage mark-up shock Government spending shock Policy rate shock

Table 2. Indonesia: Scenario Assumptions 1/		
Scenario 1	Domestic demand shock: +0.5, +0.5	Foreign demand shock: +1, +1 Foreign inflation shock: -0.1, -0.1 Foreign interest rate shock: +0.05, +0.05
Scenario 2	Financial spread shock: +0.25, +0.25	Foreign demand shock: +0.2, +0.2 Foreign inflation shock: +0.1, +0.1 Foreign interest rate shock: +0.05, +0.05
Scenario 3	Domestic demand shock: -0.20 Exchange rate shock: +0.80 Financial spread shock: +1.0	Foreign demand shock: -1
Scenario 4	Domestic demand shock: -0.20 Exchange rate shock: +0.80 Financial spread shock: +1.0 Government expenditure shock: +1, +1, +1, +1	Foreign demand shock: -1
1/ Each number represents the size of the shock in a given quarter. All shocks are unanticipated shocks.		

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