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INDONESIA'S FINANCIAL MARKETS AND MONETARY POLICY DYNAMICS AMID THE COVID-19 PANDEMIC

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Abstract

This paper is based on a study that examines the impact of the Covid-19 pandemic on Indonesia's financial markets and monetary policy dynamics. The study explores five types of financial market in Indonesia: (1) the Indonesian rupiah (IDR) interbank money market; (2) the US Dollar (USD) interbank money market; (3) government conventional bond (SUN) markets; (4) the stock market; and (5) the USD/IDR spot market. It examines Bank Indonesia's (BI) three types of monetary policy instrument: (1) BI seven-day reverse repo rate; (2) minimum reserve requirement ratios; and (3) BI's monetary operations. The study finds that the Covid-19 pandemic causes different impacts of particular monetary policy instruments on Indonesia's financial markets during the pandemic compared to those in the non-pandemic period.

Keywords: Covid-19, monetary policy, Indonesia's financial markets, Bank Indonesia

JEL Classification: E58, G10

Contents

1. INTRODUCTION

The Indonesian government announced the first positive Covid-19 case in Indonesia on 2 March 2020. Since then, the number of new cases reported has increased rapidly. On 31 March 2020, the Indonesian government declared large-scale social distancing (PSBB) to slow the spread of the disease. As Indonesia's economy was at a high risk of entering a recession, the government ended the PSBB and introduced the 'new normal' policy in early June 2020 to slowly resume economic activities. The government gradually opened nine economic sectors in July 2020, although the number of new Covid-19 cases continues to increase.

To mitigate the negative economic impacts of Covid-19, the government announced the first fiscal stimulus package in late February 2020 and the second fiscal stimulus package on 13 March 2020. The government issued Government Regulation in Lieu of Law (Perppu) No. 1/2020 on 31 March 2020 that granted the government, the central bank (Bank Indonesia), and other related agencies the capacity to implement discretionary economic policies. On the same occasion, the government announced the third fiscal stimulus package, which was much bigger than the previous ones. In July 2020, Perppu No. 1/2020 was replaced by the legally stronger Undang-Undang (Law) No. 2/2020. The government later increased the 2020 budget deficit target from 1.8% of nominal GDP to 6.3%. The budget deficit increase will be mostly financed through the issuance of government debt securities (Surat Berharga Negara, SBN). The government launched the National Economic Recovery Program (PEN) in May 2020 containing specific programs to revive the economy.

Bank Indonesia (BI) runs expansionary monetary policies to stimulate the economy. From January 2020 to the end of September 2020, BI had cut the BI seven-day reverse repo rate (the policy rate) by 100 basis points (bps) in total to 4.00%. BI reduced the IDR minimum reserve requirement (GWM) ratio for conventional banks by 200 bps to 3.5% and for sharia banks by 50 bps to 3.5% (effective from 1 May 2020), and implemented various other macroprudential policies. BI cut the USD minimum GWM from 8% to 4%, effective from 16 March 2020. BI has also conducted a quantitative easing policy to inject liquidity in the economy, which from the beginning of the year until the end of September 2020 had amounted to IDR666 trillion. Perppu No. 1/2020 allows BI to purchase SBN instruments in the primary market through private placement, where previously BI could only buy SBN instruments in the secondary market. On 6 July 2020, BI and the government announced a burden-sharing scheme where BI will help partially to finance the government budget deficit by buying the SBN instruments and bearing some portion of interest payments for them.

The Covid-19 pandemic has affected Indonesia's financial market and monetary policy dynamics. However, studies on the impacts of Covid-19 on Indonesia's economy and Indonesian authorities' policy responses mostly focus on the real sector of the economy and the fiscal policy aspect. These include studies by Susilawati, Falevi, and Purwoko (2020), who find that the household sector is the most affected by the pandemic; Surhayadi, Al Izatti, and Suryadarma (2020), who discuss the increasing poverty rate due to the pandemic; and Hasibuan et al. (2020), who discuss the fiscal policy measures to cope with the pandemic.

This paper is based on a study that examines the impacts of the Covid-19 pandemic on Indonesia's financial markets and monetary policy dynamics. The paper proceeds as follows. Section 2 briefly discusses related literature on the impacts of Covid-19 on the economy and financial markets, and policy responses in various countries. Section 3 describes Indonesia's financial market dynamics during the pandemic. Section 4

discusses BI's monetary policy responses. Section 5 elaborates regression models that examine the impacts of the Covid-19 pandemic on the financial markets and monetary policy dynamics. Section 6 concludes.

2. RELATED LITERATURE

Recent economic studies on the Covid-19 pandemic mostly fall into the following categories: (1) analysis of the economic impacts, transmission channels of such impacts, and economic costs of the pandemic; (2) assessment of policy options to mitigate the pandemic impacts on the economy; and (3) analysis of the impacts of the pandemic on the financial system at the global, regional, and national levels. Many of these studies trace past pandemics to find similarities with the ongoing Covid-19 pandemic.

In general, pandemics impact the economy through both the supply and demand sides of each country's economy and can be transmitted across countries via trade, financial, and travel/tourism channels. Correia, Luck, and Verner (2020) show that the downturn in the US economy during the 1918 Great Influenza pandemic was driven by both the demand and supply sides. Verikios et al. (2011) find that the more integrated into the world economy a region is, the more likely it will be affected by a pandemic. They also find that global economic activity will be more strongly affected by a pandemic with a high infection rate than a high virulence rate.

Since the Covid-19 pandemic is still far from over, current estimates of the economic costs of this pandemic are only preliminary and will continue to change. Barro, Ursúa, and Weng (2020) suggest that the 1918 Great Influenza pandemic can provide a plausible worst-case scenario for mortality rates and economic contraction pertaining to the ongoing Covid-19 pandemic. Taking Covid-19 into account, in April 2020 the International Monetary Fund (IMF) (2020a) changed its global GDP growth projection for 2020 from 3.3% prior to the pandemic to –3.0%. In October 2020 (IMF 2020b), the IMF revised its forecast for 2020 global GDP growth to –4.4%. The Asian Development Bank (ADB) (2020) estimates that the economic losses of Covid-19 could reach 6.4% of global GDP under the three-month containment scenario and 9.7% of global GDP under the six-month containment scenario.

There is some degree of disagreement among researchers with respect to the best policy option to mitigate the health and economic impacts of Covid-19. For instance, Acemoglu et al. (2020) and Boissay, Rees, and Rungcharoenkitkul (2020) suggest lockdown, while Ozili and Arun (2020) suggest instead a restriction on internal movement. Pindyck (2020) suggests that the strategy of reducing the '"reproduction number' R0 decreases the number of deaths but extends the duration of the pandemic, increases the economic cost, and raises the possibility of a second wave of the pandemic. Kohlscheen, Mojon, and Rees (2020) expect the reduction of GDP due to confinement measures to drag on over several quarters.

Studies on the impacts of Covid-19 on the financial system tend to cover the following areas, which often overlap in the analysis: (1) the banking system and the credit market; (2) the debt securities market; (3) stock markets; and (4) the foreign exchange market. Studies on the impact of Covid-19 on emerging market economies' (EME) financial markets mostly analyze the dynamics of cross-border capital flows from the advanced economies to EMEs during the pandemic and their impacts on the EMEs' financial system stability.

There are several studies that examine the impacts of Covid-19 on the banking system. Aldasoro et al. (2020) see that all banks in advanced economies and EMEs are affected by the pandemic and expect the credit market to remain tight despite recovery in the financial markets. Ari, Chen, and Ratnovski (2020) see that the EU banking system is currently in a better position to cope with the non-performing loan (NPL) risk stemming from the pandemic compared to its position in the 2008 global financial crisis. Perkins et al. (2020) see that the US banking industry is still in a sound position but needs to anticipate the risk of loan defaults from banks that have a high concentration of loans in their portfolios.

A study by Rismanchi (2020) on banking regulatory measures by 33 jurisdictions and authorities to respond to the pandemic shows that advanced economies tend to use a combination of measures on capital, provisioning, liquidity, timetables, and other regulations. EMEs tend not to issue or only issue fewer regulatory measures on capital. Indonesia does not use regulatory measures on capital and provisioning, but uses liquidity and other types of measure.

Hördahl and Shim (2020) investigate the impacts of the Covid-19 pandemic on relations between bond portfolio outflows and exchange rates, and between bond outflows and long-term interest rates in 19 EMEs. Bond portfolio outflows from the EMEs are typically related to these countries' currency depreciation and long-term interest rates, but it is difficult to determine directions of causality. The Covid-19 pandemic affirms this relationship.

Hofmann, Shim, and Song Shin (2020a, 2020b) suggest that borrowing through domestic currency bonds has not insulated EMEs from the financial shock caused by Covid-19. Many governments in EMEs seek to attract foreign investors to buy debt securities in local currencies, as this strategy can help to reduce their reliance on international bank lending that contains a double mismatch risk (i.e., currency and maturity mismatches), as seen prior to the 1990s EMEs' financial crisis. Yet, this strategy exposes EMEs to the risk of capital outflows amid global financial shocks, as seen in the case of Covid-19.

Beirne et al. (2020) examine the impacts of fiscal policy stimulus packages and quantitative easing policies in 38 economies, finding that these policies have helped to restore overall investor confidence by reducing bond yields and boosting stock prices. They also find that the impacts of Covid-19-related quantitative easing measures by central banks in advanced countries were extended to EMEs and helped to stabilize capital flow dynamics in these countries.

Haroon and Rizvi (2020) examine the impacts of the Covid-19 pandemic on liquidity in 23 EMEs. They find that a decreasing (increasing) trend in the number of confirmed cases is associated with improving (deteriorating) liquidity in financial markets. They also find that policy interventions in terms of restrictions on movement and businesses are associated with improved liquidity. They conclude that flattening the curve of coronavirus infections helps reduce uncertainty among investors.

Ruiz and Villafranca (2020) compare the effects of four transmission channels of the Covid-19 pandemic on EMEs: (1) trade (measured as exports to the US, the EU, and the People's Republic of China as percentage of GDP); (2) tourism (contribution of the tourism sector as a percentage of GDP); (3) hydrocarbons (net energy exports as a percentage of GDP); and (4) containment (taken from the University of Oxford's Covid-19 government response stringency index). In the case of Indonesia, the impacts of Covid-19 are mainly transmitted through the containment channel.

García-Herrero and Ribakova (2020) see that EMEs have limited policy options or policy room to cope with the shrinking global liquidity. This is shown by less aggressive policy responses by central banks in EMEs than in their counterparts in the West since their respective currencies have weakened, thus increasing the costs of USD liabilities. García-Herrero and Ribakova suggest the IMF plays its role as the lender of last resort for EMEs but with some improvements to its current lending practices to make the lending more effective.

Esteves and Sussman (2020) suggest that the Covid-19 pandemic has only limited explanatory power over financial stress in EMEs. While, in the beginning, EMEs' economies were penalized more than advanced economies, EMEs began to benefit from the rebound in global markets despite the increasing death rates in their territories. Moreover, EMEs seem to be less penalized in this pandemic than in the 2008 global financial crisis.

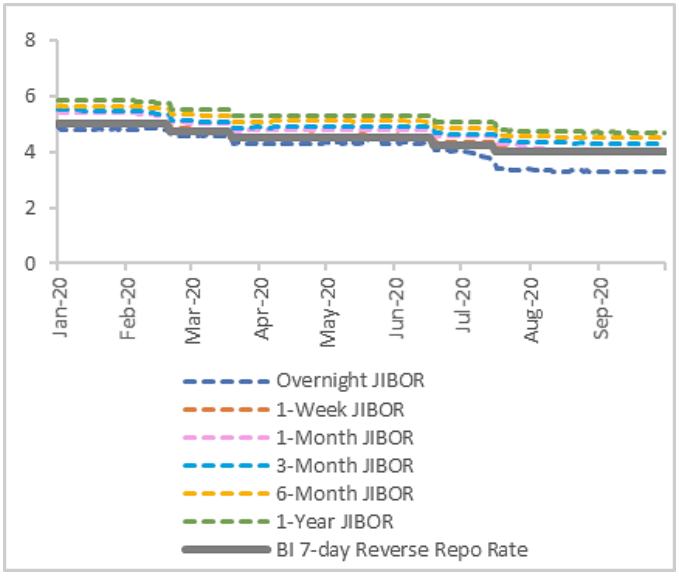
3. INDONESIA'S FINANCIAL MARKETS DYNAMICS AMID THE COVID-19 PANDEMIC

This section discusses the dynamics of Indonesia's IDR interbank money market, the USD interbank money market, conventional SBN markets, the stock market, and the USD/IDR foreign exchange (FX) market amid the Covid-19 pandemic. The SBN instruments are differentiated between conventional debt securities (SUN) and sharia debt securities (SBSN). The SUN instruments can be differentiated further based on their tenor: (1) SUN instruments with a maximum tenor of one year (the SPN); and (2) SUN instruments with a tenor of more than one year (the ON). This paper does not discuss SBSN instruments as the SBSN markets have different rules from those in the SUN markets.

The IDR interbank money market rates (JIBORs) moved in line with the BI rate (Figure 1). All JIBORs declined when the BI seven-day reverse repo rate was cut in February, March, June, and July 2020. From late June 2020, the overnight JIBOR fell more than other JIBORs with longer tenors. Liquidity in the banking system rapidly increased from late June 2020 as the government began placing a large number of funds in selected state-owned and private banks to be channeled to the real sector of the economy. As the fund needs to be quickly channeled to accelerate Indonesia's economic recovery, most of the fund is placed in overnight government accounts in these banks, causing rapid decline of the overnight JIBOR.

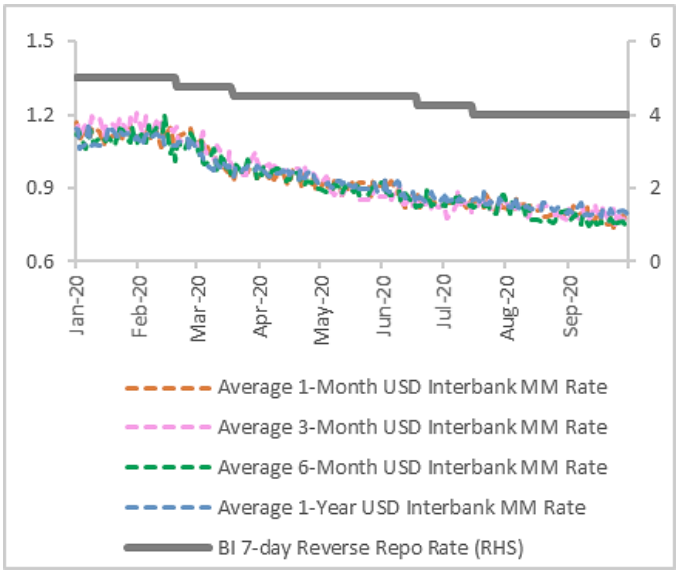
The average USD interbank money market rates moved more dynamically than the JIBORs (Figure 2). While these rates had declining trends from the beginning of the year until the end of September 2020, they did not move in tandem with the BI seven-day reverse repo rate as they were also affected by the movement of the IDR exchange rate against the USD.

Figure 1: IDR Interbank Money Market Rates and BI 7-day Reverse Repo Rate (%)



Source: Bloomberg.

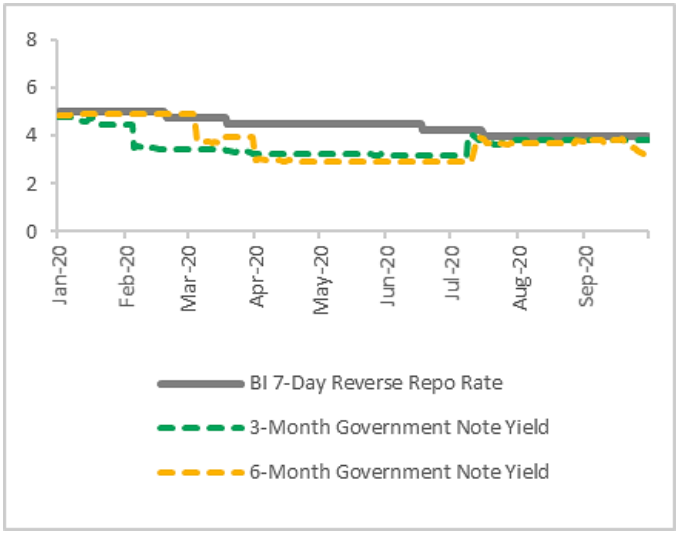
Figure 2: Average USD Interbank Money Market Rates and BI 7-day Reverse Repo Rate (%)



Source: Bloomberg.

Figure 3 shows rather diverse movements of the three-month and six-month SPN yields in February and early March 2020. The yields of the SPN instruments did not always move in the same direction as the BI seven 7-day reverse repo rate. The SPN instruments market is less liquid than the markets for SUN instruments with longer tenors; hence the demand and supply interactions in this market are less responsive to policy rate change and other macroeconomic variables than in the longer-tenor SUN markets.

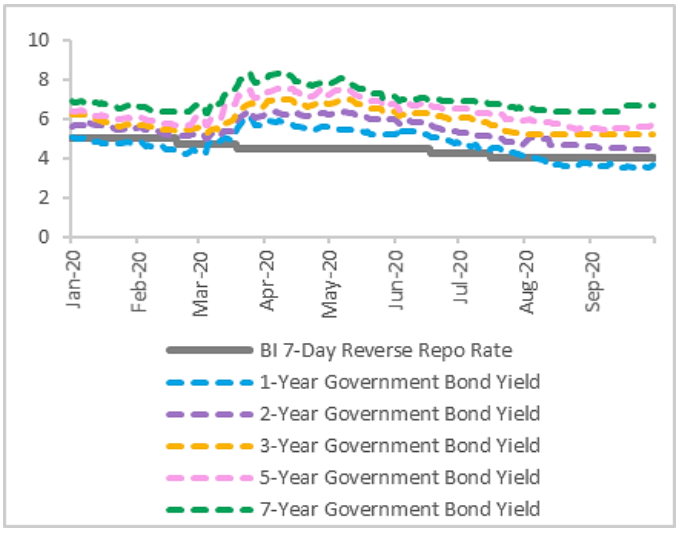
Figure 3: Short-term SUN (SPN) and BI 7-day Reverse Repo Rate (%)



Source: Bloomberg.

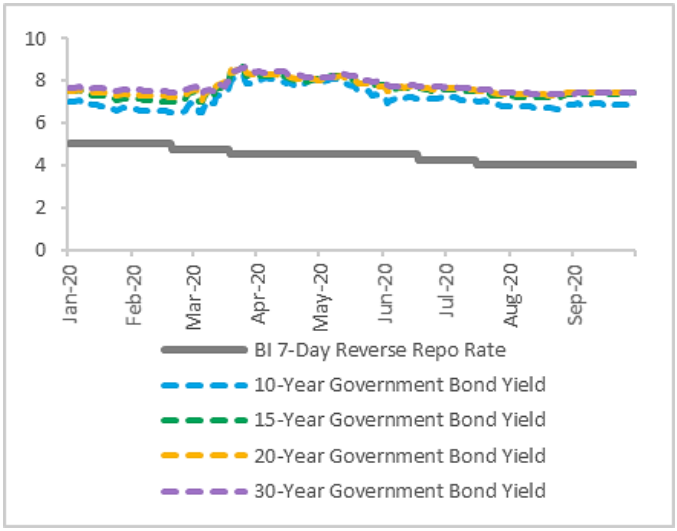
Figure 4 and Figure 5 show the dynamics of the medium and long-term SUN instruments, respectively. While the one-year SPN is categorized by Indonesian law as a short-term government bond, this study categorizes it as a medium-term bond in the regression models due to the co-movement of the one-year SPN yield with the yields of two-year, three-year, five-year, and seven-year SUN instruments rather than with the shorter tenor SPN yields.

Figure 4: Medium-term SUN and BI 7-day Reverse Repo Rate (%)



Source: Bloomberg.

Figure 5: Long-term SUN and BI 7-day Reverse Repo Rate (%)



Source: Bloomberg.

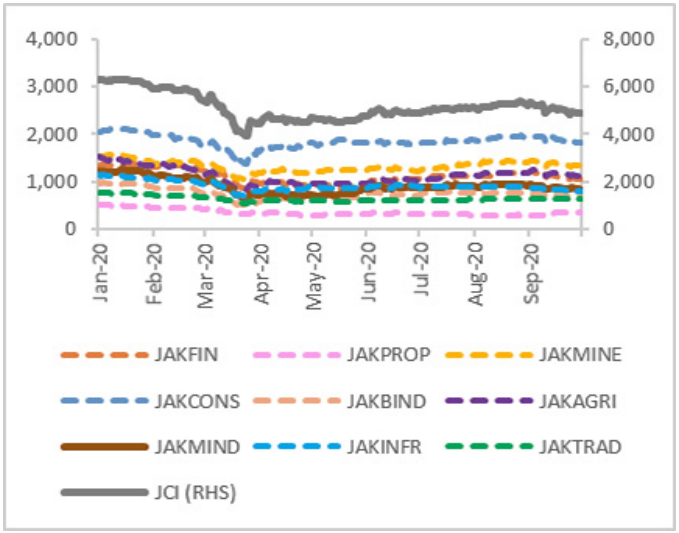
The yield of the medium and long-term SUN instruments moved in the opposite direction to the BI seven-day reverse repo rate in March 2020. The expectation factor played its role here. There was concern among foreign bond investors over the possibility of the government raising the budget deficit target to launch the third fiscal stimulus package, and uncertainty about the amount of increases in the budget deficit and SBN supply. As a result, foreign investors reduced their SBN holdings and caused the SBN yields to increase.

The yield of the medium and long-term bonds began to stabilize in April 2020, presumably because the Indonesian government had finally announced the PSBB policy and the fiscal stimulus package on 31 March 2020. Despite the rising budget deficit, the announcement of the third fiscal policy package helped to reduce concerns among investors as it gave clarity about the government's policy direction to cope with the pandemic and mitigate its negative impacts on the economy.

Figure 6 show the dynamics of the Indonesia Composite Index (JCI) and its sectoral composite indexes: (a) finance (JAKFIN); (b) construction, property, and real estate (JAKPROP); (c) mining (JAKMINE); (d) consumer goods (JAKCONS); (e) basic industry and chemical (JAKBIND); (f) agricultural (JAKAGRI); (g) miscellaneous industries (JAKMIND); (h) infrastructure, utility, and transportation (JAKINFR); and (i) trade services and investment (JAKTRAD).

The JCI and its sectoral composite indexes tanked in early and mid-March 2020, largely due to negative sentiment from the major global stock exchanges and news of the Covid-19 outbreak in Indonesia. The JCI and its sectoral composite indexes began to rebound (despite not yet returning to the pre-pandemic level) in late March 2020 amid an improvement in investors' sentiment. As Esteves and Sussman (2020) suggested that EMEs were less penalized during the Covid-19 pandemic compared to the 2008 global financial crisis, so the decline in the JCI during the pandemic was much smaller than its decline in the 2008 crisis. The JCI fell by 38% from the beginning of the year 2020 to the trough of the decline on 24 March 2020, compared to its 147% decline from the beginning of the year 2008 until its trough on 28 October 2008.

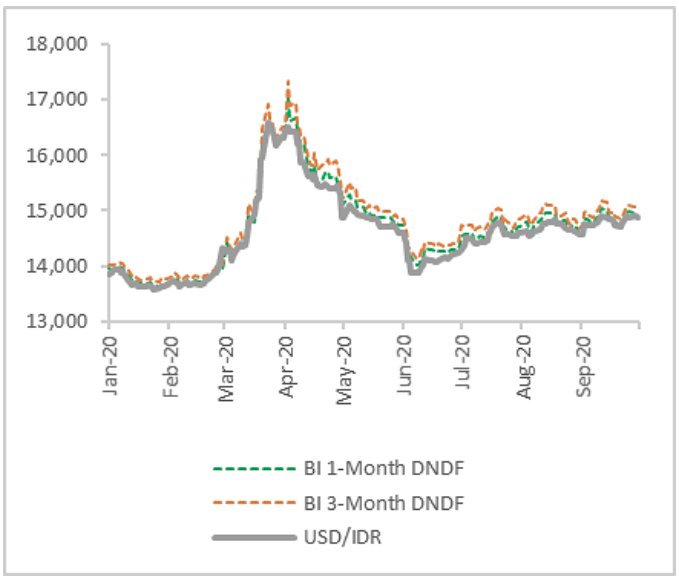
Figure 6: Indonesia Composite Index (JCI) and Sectoral Composite Indexes



Source: Bloomberg.

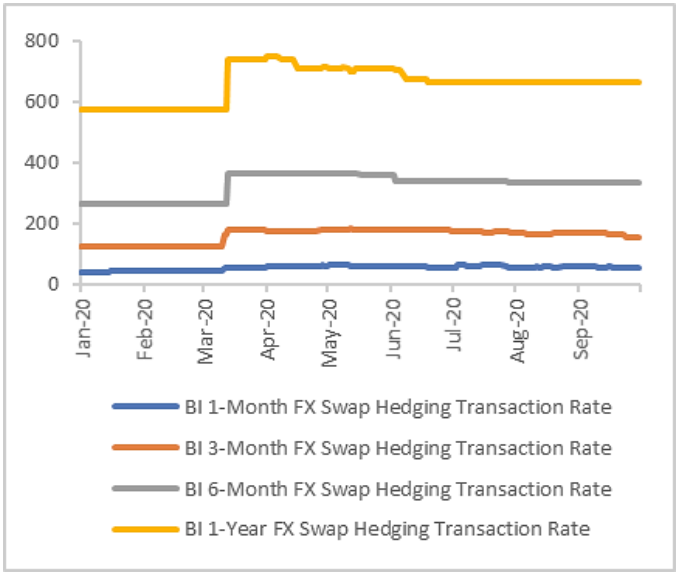
Figure 7 displays the movement of the USD/IDR spot rate, the one-month BI domestic non-deliverable forward (DNDF) rate, and the three-month DNDF rate during the pandemic. IDR underwent rapid depreciation in the spot market from 14,318 per USD at the end of February 2020 to 16,310 per USD at the end of March amid capital outflows from the SUN instruments and the stock market. Substantial pressures on the IDR caused BI FX swap hedging transaction rates to increase sharply in the second week of March 2020 (Figure 8). The USD/IDR begin to rebound in early April 2020 as the global financial market began to stabilize and as the Indonesian government announced the Perppu on 31 March 2020.

Figure 7: USD/IDR Spot and DNDF Rates



Source: Bloomberg.

Figure 8: BI FX Swap Hedging Transaction Rates (Swap Points)



Source: Bloomberg.

Despite the Covid-19 pandemic, total ownership of the tradable SUN instruments increased from IDR 2,267 trillion at the beginning of the year to IDR 2,660 trillion at the end of September 2020. There was a substantial change in the composition of the tradable SUN instrument ownership during the pandemic. Ownership by non-resident (foreign) investors (which are not foreign governments or central banks) declined from 37.4% of total tradable SUN instruments at the beginning of the year to 27.3% of the total at the end of September 2020. In contrast, the share of ownership by conventional banks increased from 19.3% of the total at beginning of the year to 38.1% at the end of September 2020. As demand for banking credit slowed, banks increased their fund placement on the SUN instruments. BI also increased its ownership of tradable government SUNs. Part of the increase in banks' ownership of tradable SUN came from BI's monetary operation.

The composition of stock ownership in the Indonesia Central Securities Depository (KSEI) has also changed during the pandemic. The total value of stocks deposited in the KSEI fell from IDR 3,248 trillion at the end of February 2020 to IDR 2,727 trillion at the end of March 2020. Both local and foreign ownership of Indonesian stocks fell in March 2020 before rebounding in April 2020, and stood at IDR 3,023 trillion at the end of September 2020. There was a substantial change in the composition of stock ownership. At the end of January 2020, foreign investors held 52.5% of the total value of stocks in the KSEI, while local investors held 47.5%. At the end of September 2020, local investors held 51.7% versus foreign investors' 48.3%.

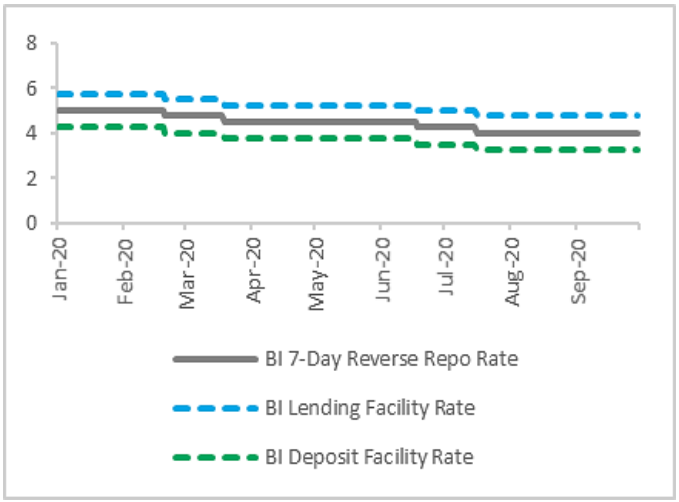
The market size of the SBI instruments is much smaller compared to those of the SUN markets and the stock market. There was a substantial decline in the number of SBIs issued by BI, from IDR 35.4 trillion at the end of February 2020 to IDR 9.3 trillion at the end of July 2020. At the end of July 2020, around 90% of the SBI instruments were owned by banks. BI reduces the frequency of SBI auctions and uses the SUN instruments more often for its monetary operations.

4. MONETARY POLICY RESPONSES

This section explores BI's three main policy responses to protect the Indonesian economy from the negative impacts of the Covid-19 pandemic: (1) BI seven-day reverse repo rate cuts; (2) BI's monetary operations; and (3) the cut in minimum requirement (GWM) ratios for conventional and sharia banks.

BI cut the BI seven-day reverse repo rate by 25bps each in February, March, June, and July 2020 (Figure 9), and it cut the BI lending facility and the BI deposit facility by the same magnitude as the policy rate. BI expected these cuts to help to promote banking credit growth to stimulate the economy. These BI seven-day reverse repo rate cuts may not be optimal if the demand side of the economy (particularly household consumption) is still weak, as weaker demand for goods and services causes real sector investors to reduce their borrowing from banks. Indonesia's demand side has weakened since the end of the commodity price boom in 2012. The economy grew by 5.0% on average from 2015 to 2019, compared to 5.6% from 2009 to 2014. Although BI had already cut the BI 7-day Reverse Repo Rate by 100 bps to 5.00% in 2019, banking credit growth slowed to 6% (from 12% in 2018) and GDP growth slowed to 5.0% (from 5.2% in 2018). The Covid-19 pandemic has worsened the demand-side problem.

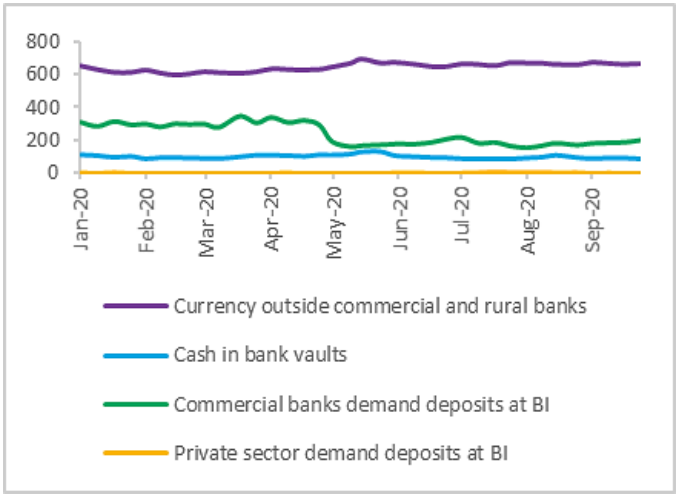
Figure 9: BI 7-Day Reverse Repo, BI Lending Facility, and BI Deposit Facility Rates (%)



Source: Bloomberg.

Figure 10 displays the composition of the monetary base (reserve money) from the beginning of the year to the end of September 2020. Currency in circulation comprises currency outside commercial and rural banks and the cash in bank vaults. There has been an increasing trend for currency outside commercial and rural banks since early March 2020, which may indicate cash hoarding by households as a precautionary measure in the time of the pandemic. BI's policy to cut the IDR GWM ratios has caused the total bank deposits in BI to fall substantially in early May 2020.

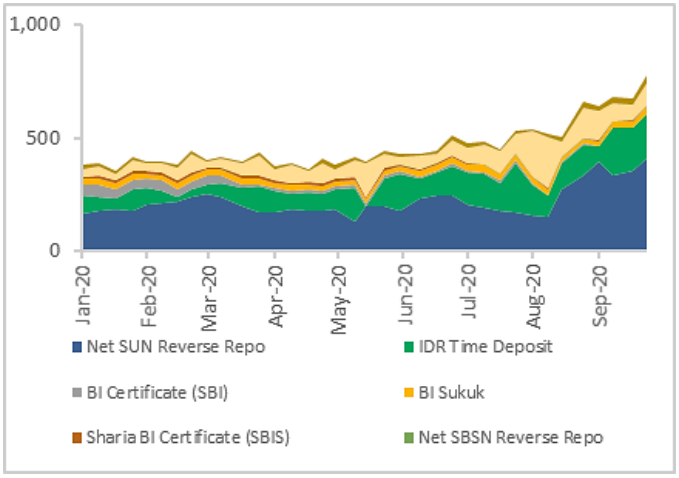
Figure 10: Monetary Base Composition (IDR trillion)



Source: Bloomberg.

Figure 11 shows BI's IDR monetary operation balance from early in the year to the end of September 2020. The components of BI's monetary operation balance are: (1) BI certificates (SBI); (2) IDR time deposits placed by banks in BI; (3) SUN reverse repo; (4) SUN repo; (5) sharia BI certificate (SBIS); (6) BI sukuk; (7) SBSN reverse repo; (8) SBSN repo; (9) BI standing facility; and (10) BI sharia standing facility. The net SUN reverse repo instrument in the figure is obtained by subtracting the SUN repo from the SUN reverse repo. Likewise, the net SBSN reverse repo is obtained by subtracting the SBSN repo from the SBSN reverse repo. Components (1) to (8) make up BI's total open market operation (OMO) balance, while components (1) to (10) make up BI's total monetary operation balance. An increase (decrease) in BI's monetary balance indicates that BI conducts a net liquidity absorption (injection) operation.

Figure 11: BI's IDR Monetary Operation Balance (IDR trillion)

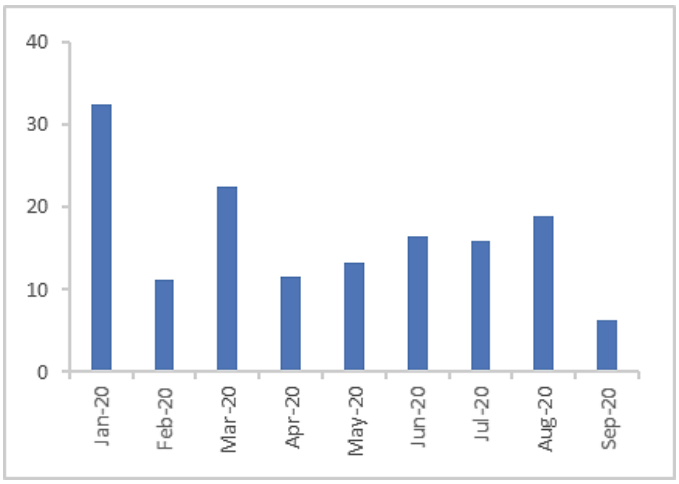


Source: Bank Indonesia.

While running monetary policy easing to cope with the pandemic, BI is still checking inflationary pressures by absorbing the excess liquidity in the economy. Figure 11 shows that BI's monetary operation balance has been increasing since late April 2020. IDR liquidity in the economy has been ample due to the following factors: (1) the IDR GWM ratio cut from 1 May 2020; (2) the retrieval of IDR deposits by banks to meet their customers' demand for cash during Ramadan in May 2020; (3) the government placement of funds in selected banks from late June 2020.

BI cut the USD GWM from 8% to 4% in March 2020 to increase USD liquidity in the banking system, as banks needed to meet the demand for USD from their clients. Yet BI's USD interbank money market balance increased in March 2020, as BI issued more USD term deposits to absorb USD and strengthen its FX reserves amid strong pressures on the IDR (Figure 12). BI used its FX reserves to stabilize the IDR FX market to reduce IDR volatility. BI's USD interbank OMO balance fell in April 2020 as pressures on the IDR receded; it gradually increased from May 2020, before falling substantially in September 2020.

Figure 12: BI's USD Interbank Money Market OMO Balance (USD billion)



Source: Bank Indonesia.

5. COVID-19 IMPACT ON INDONESIA'S FINANCIAL MARKETS AND MONETARY POLICY DYNAMICS

5.1 Model Specifications

This study develops four pooled-data ordinary least squares (OLS) models to examine the impacts of monetary policy on Indonesia's financial markets: (1) the IDR interbank money market (Model 1); (2) the USD interbank money market (Model 2); (3) the government IDR conventional debt securities (SUN) market (Model 3); and (4) the stock market (Model 4). The study also constructs a time-series OLS model for the IDR spot exchange rate against the USD (Model 5). The sample range covers all working days from 1 January 2020 to 30 September 2020.

Three policy variables form the main interests of this study: (1) the BI seven-day reverse repo rate; (2) the minimum reserve requirement (GWM) ratios for conventional banks (i.e., the IDR and the USD GWM ratios); and (3) BI's monetary operations. The BI seven-day reverse repo rate is stated as a one-day lag variable in Models 1, 2, 3,

and 4, since its announcement comes in the evening and thus starts to impact the financial market the following day. The current value of this variable is used in Model 5, as the FX market operates 24 hours. The appropriate monetary operation type for Model 1 is BI's IDR interbank money market open market operation (OMO) which uses BI certificates (SBI), banks' IDR time deposits in BI, and BI deposit certificates. The appropriate monetary operation for Model 2 is BI's USD interbank money market OMO that uses USD term deposits. The appropriate monetary operation for Model 3 is BI's IDR SUN OMO. The appropriate type of monetary operation for Model 4 is BI's total IDR monetary operation.

Three Covid-19-related control variables are used in all models: (i) the Covid-19 dummy variable; (ii) the PSBB dummy variable; and (iii) the fiscal policy package dummy variable. In addition to these Covid-19-related control variables, each model has other control variables. The Covid-19 dummy variable has a value of 1 for every date from 30 January 2020 (the day when the WHO declared a global emergency status for the Covid-19 outbreak) until 30 September 2020, and 0 otherwise. The PSBB variable is to differentiate between the period before the government imposed large-scale social distancing (PSBB = 0), the period when social distancing was imposed (PSBB = 1), and the period when the government officially ended social distancing and replaced it with the 'new normal' policy (PSBB = 2). The fiscal policy package (FISPACK) variable differentiates between the period before the announcement of the first fiscal package (FISPACK = 0), the period between the announcement of the first fiscal policy package and the announcement of the second package (FISPACK = 1), the period between the announcement of the second package and the announcement of the third package (FISPACK = 2), and the period from the announcement of the third fiscal package to 30 September 2020 (FISPACK = 3).

To pin down the impact of the Covid-19 pandemic on the relationships between monetary policy instruments and the dependent variable in each model, three interaction variables are introduced to the models: (i) an interaction variable between the BI seven-day reverse repo rate and the Covid-19 dummy; (ii) an interaction variable between the GWM variable and the Covid-19 dummy; and (iii) an interaction variable between the BI monetary operation and the Covid-19 dummy. Each of the interaction variables is obtained by multiplying the respective monetary policy instrument variable with a Covid-19 period dummy variable.

The generic form of regression equation in Model s1, 2, 3, 4, and 5 is stated as:

$$Y_t = c + \beta_1\, GEN\_CON_{i,t\ or\ t-1} + \beta_2\, COVID\_CON_{j,t} + \beta_3\, MPOL_{k,t\ or\ t-1} + \beta_4\, MPOL\_COVID_{k,t\ or\ t-1} + \varepsilon_t$$

where Y is the dependent variable; c is the constant term; GEN_CON is a set of general control variables that affect the dependent variable; COVID_CON is a set of control variables that are specifically related to the Covid-19 pandemic; MPOL is a set of BI's monetary policy instrument variables (which are the main interest of this study); MPOL_COVID is a set of interaction variables between the monetary policy and the Covid-19 dummy; and ε is the error term. Indexes i, j, and k are indexes for variables in the model, and t is the time index; β_1, β_2, β_3, and β_4 are coefficient matrixes for the respective variables in the models

The dependent variable in Model 1 is IDR interbank money market rates, which are JIBORs of various tenors. The regressors are listed in Table 1. The pooled JIBOR data comprise the following tenors: (i) overnight, (ii) one week, (iii) one month, (iv) three months, (v) six months, and (vi) one year. The dependent variable in Model 2 is the average USD interbank money market rates. The regressors are listed in Table 1. The pooled average USD interbank money market rate data comprise the following tenors: (i) one month, (ii) three months, (iii) six months, and (iv) one year.

This study runs separate regressions in Model 3 for three groups of SUN instruments based on their tenors: (a) Model 3A for the short-term SUN (i.e., SPN) group; (b) Model 3B for the medium-term SUN group; and (c) Model 3C for the long-term SUN group. The dependent variables in Models 3A, 3B, and 3C are the respective SUN yields. The regressors are listed in Table 1. The SPN group comprises three-month and six-month SPN instruments. The medium-term SUN group in this regression model comprises one-year, two-year, three-year, five-year, and seven-year SUN instruments. The long-term SUN group comprises the 10-year, 15-year, 20-year, and 30-year SUN instruments. The appropriate US Treasury securities (UST) for the SUN groups in the regressions are: (i) three-month UST for the SPN group; (ii) five-year UST for the medium-term SUN group; and (iii) ten-year UST for the long-term SUN group. The yield of the UST variable is stated as a one-day lag variable as Indonesia's financial markets operate after the US markets close.

The dependent variable for Model 4 is the sectoral composite index in the Indonesia Stock Exchange. The regressors are listed in Table 1. The Chicago Board Options Exchange's Volatility Index (the VIX index), with a one-day lag, is incorporated into the model to control the impact of global stock market volatility stemming from US stock market volatility. The S&P 500 index (with a one-day lag), the Strait Times index, and the Shanghai Composite index are incorporated in the model to control the impacts of major stock market indexes on the Indonesia Stock Exchange.

The dependent variable for Model 5 is the USD/IDR spot exchange rate. The regressors are listed in Table 1. The USD currency index (the DXY index) is incorporated into the model to control the indirect impact of USD valuations against major currencies on the IDR. As there are no publicly available data on BI's intervention in the FX market, Model 5 does not include BI's FX daily intervention variable. No lag is used for the variables in the model as the FX markets are open 24 hours across the globe.

The data for this study are taken from BI's website, the Ministry of Finance's website, Bloomberg, the CEIC, and Indonesia's major media. As the year on year inflation data are monthly-based, these data are interpolated to daily data. BI's monetary operation balance data are interpolated from weekly to daily. All non-dummy variables are stated as day over day (d/d) percentage change to make them stationary. The Augmented Dickey-Fuller and the Phillip-Peron tests confirm the stationarity of these variables.

This study uses cross-section weight for the regressions in Models 1, 2, 3, and 4 to treat the heteroskedasticity problem. It adds appropriate autoregression (AR) terms to treat serial correlation problems. Variance inflation factor (VIF) tests are conducted to check whether the models encounter a multicollinearity problem; variables that cause the multicollinearity problem are discarded from the final models.

Table 1: Variables in the Models

	Model 1	Model 2	Model 3A	Model 3B	Model 3C	Model 4	Model 5
Dependent variable	• JIBORs	• Average USD interbank money market rates	• Short-term SUN (SPN) yields	• Medium-term SUN yields	• Long-term SUN yields	• Sectoral composite indexes in the Indonesia Stock Exchange	• USD/IDR spot rate
GEN_{CON}	• Inflation	• Inflation • USD/IDR	• Inflation • USD/IDR • Indonesia Composite index (JCI) • 3-month US Treasury debt security (UST) yield (1-day lag)	• Inflation • USD/IDR • Indonesia Composite index (JCI) • 5-year US Treasury debt security (UST) yield (1-day lag)	• Inflation • USD/IDR • Indonesia Composite index (JCI) • 10-year US Treasury debt security (UST) yield (1-day lag)	• Inflation • USD/IDR • 10-year SUN yield • VIX index • S&P 500 index (1-day lag) • Strait Times index • Shanghai Composite index	• Inflation • Indonesia Composite index (JCI) • Average 1-month USD interbank money market rate • month SPN yield • 5-year SUN • 10-year SUN yield • DXY index
$COVID_{CON}$	• Covid-19 dummy • PSBB dummy • FISPACK dummy	• Covid-19 dummy • PSBB dummy • FISPACK dummy	• Covid-19 dummy • PSBB dummy • FISPACK dummy	• Covid-19 dummy • PSBB dummy • FISPACK dummy	• Covid-19 dummy • PSBB dummy • FISPACK dummy	• Covid-19 dummy • PSBB dummy • FISPACK dummy	• Covid-19 dummy • PSBB dummy • FISPACK dummy
$MPOL$	• BI 7-day reverse repo rate • IDR GWM ratio • BI's IDR interbank OMO balance	• BI 7-day reverse repo rate • USD GWM ratio • BI's USD interbank OMO balance	• BI 7-day reverse repo rate • IDR GWM ratio • BI's IDR SUN OMO balance	• BI 7-day reverse repo rate • IDR GWM ratio • BI's IDR SUN OMO balance	• BI 7-day reverse repo rate • IDR GWM ratio • BI's IDR SUN OMO balance	• BI 7-day reverse repo rate • IDR GWM ratio • BI's total IDR open market operation balance	• BI 7-day reverse repo rate • USD GWM ratio
$MPOL\_COVID$	• BI 7-day reverse repo rate X Covid-19 dummy • IDR GWM ratio X Covid-19 dummy • BI's IDR interbank OMO X Covid-19 dummy	• BI 7-day reverse repo rate X Covid-19 dummy • USD GWM ratio X Covid-19 dummy • BI's USD interbank OMO X Covid-19 dummy	• BI 7-day reverse repo rate X Covid-19 dummy • IDR GWM ratio X Covid-19 dummy • BI's IDR SUN OMO balance X Covid-19 dummy	• BI 7-day reverse repo rate X Covid-19 dummy • IDR GWM ratio X Covid-19 dummy • BI's IDR SUN OMO balance X Covid-19 dummy	• BI 7-day reverse repo rate X Covid-19 dummy • IDR GWM ratio X Covid-19 dummy • BI's IDR SUN OMO balance X Covid-19 dummy	• BI 7-day reverse repo rate X Covid-19 dummy • IDR GWM ratio X Covid-19 dummy • BI's total IDR open market operation balance X Covid-19 dummy	• BI 7-day reverse repo rate X Covid-19 dummy • USD GWM ratio X Covid-19 dummy

5.2 Results and Analyses

The analyses in this sub-section are based on the ceteris paribus assumption. Regression results for Models 1, 2, 3, and 4 are displayed in Appendix Table 1 and results for Model 5 in Appendix Table 2. Table 2 summarizes the significance of monetary policy instrument variables in the models.

Table 2: Monetary Policy Instruments Significance in the Models*
(Coefficient sign in brackets)

Dependent Variable / Regressors	MODEL 1 IDR Interbank MM Rate	MODEL 2 USD Interbank MM Rate	MODEL 3A SPN Yields	MODEL 3B Medium-term SUN Yields	MODEL 3C Long-term SUN Yields	MODEL 4 Sectoral Composite Indexes of Indonesia Stock Exchange	MODEL 5 USD/IDR
BI 7-day reverse repo rate (lag 1)	Significant (+)	Significant (+)	Not significant	Not significant	Not significant	Not significant	Not significant
IDR GWM	Not significant	–	Significant (–)	Significant (–)	Not significant	Significant (–)	–
USD GWM	–	Significant (+)	–	–	–	–	Significant (–)
IDR interbank MM OMO	Not significant	–	–	–	–	–	–
USD interbank MM OMO	–	Not significant	–	–	–	–	–
IDR SUN OMO	–	–	Not significant	Significant (–)	Not significant	–	–
IDR total monetary operation	–	–	–	–	–	Significant (–)	–
BI 7-day reverse repo rate (lag1) X Covid-19 dummy	Significant (+)	Significant (–)	Not significant	Not significant	Not significant	Significant (–)	Significant (–)
IDR GWM X Covid-19 dummy	Not significant	–	Not significant	Significant (+)	Significant (+)	Significant (+)	–
IDR interbank MM OMO X Covid-19 dummy	Not significant	–	–	–	–	–	–
USD interbank MM OMO X Covid-19 dummy	–	Not significant	–	–	–	–	–
IDR SUN OMO X Covid-19 dummy	–	–	Not significant	Significant (+)	Not significant	–	–
IDR total monetary operation X Covid-19 dummy	–	–	–	–	–	Not significant	–

Note: *significant if the variable is significant at α = 1%, 5%, or 10%; not significant otherwise.

Source: Author's calculations.

All models are fit for the regressions, as shown by the F-test results that reject the null hypothesis of the unfitness of the model. These models are also free from a serial correlation problem, as shown by the values of Durbin-Watson (DW) statistics, which are close to 2. The adjusted R2 value for the SPN group (Model 3A) is very low, implying that the model has very low explanatory power for variations in the SPN yield. As explained in Section 3, the rather illiquid market for the SPN causes the prices and yields in this market to be less sensitive to changes in macroeconomic variables than those for longer tenor SUN instruments.

The BI seven-day reverse repo rate variable is statistically significant in Model 1 and Model 2, but not significant in other models. The BI seven-day reverse repo rate has significant impacts on the IDR and the USD interbank money market rates. It does not have significant impacts on the SUN yields, the sectoral composite indexes of the Indonesia Stock Exchange, and the USD/IDR exchange rate.

BI often hikes the policy rate to defend the IDR from massive capital outflows. The regression result from Model 5 shows that the policy rate hike is not effective in defending the IDR because other factors have more influence on the USD/IDR exchange rate. Nevertheless, the policy rate hike is needed to assure the FX market participants that BI is responsive to the situation while it continues intervening (i.e., selling USD) in the FX market.

The coefficient of the BI seven-day reverse repo rate variable is positive in Model 1, implying that in the absence of the pandemic, a hike (cut) in the BI seven-day reverse repo rate increases (reduces) the JIBOR. When BI cuts the BI seven-day reverse repo rate, it also cuts the BI deposit facility rate and BI lending facility rate. As the BI deposit facility rate falls, banks are induced to reduce their fund placement in BI, which increases IDR liquidity supply in the interbank money market and causes the JIBOR to fall. A cut in the BI lending facility rate reduces the borrowing cost from BI vis-à-vis borrowing from other banks. If a bank needs liquidity, it prefers borrowing from BI to borrowing from other banks, which also reduces demand for IDR interbank money market funding and causes the JIBOR to fall. The interaction variable between the BI seven-day reverse repo rate and the Covid-19 dummy is significant and has a positive coefficient in Model 1. It implies that the pandemic strengthens the impact of the BI seven-day reverse repo rate on the JIBOR.

The coefficient of the BI seven-day reverse repo rate is positive in Model 2, which implies that a BI seven-day reverse repo rate hike (cut) increases (reduces) the average rates of the USD interbank money market, but the policy rate impacts are marginal. One plausible explanation is that a policy rate hike often takes place when the IDR is under pressure due to capital outflows. Under such a condition, banks tend to increase their holdings of USD money market instruments, presumably to anticipate the risk of further IDR depreciation. The interaction variable between the BI seven-day reverse repo rate and the Covid-19 dummy in Model 2 is significant and has a negative coefficient, implying that the impact of the BI seven-day reverse repo rate on the average USD interbank money market rates is less in the pandemic than in the non-pandemic period.

The IDR GWM variable is significant in Models 3A, 3B, and 4. It is not significant in Model 1 and Model 3C. In the absence of the Covid-19 pandemic, the IDR GWM policy significantly affects SPN yields, medium-term SUN yields, and sectoral indexes of the stock market. The IDR GWM has a higher impact on the composite indexes of the stock market than on other instruments. This is shown by the value of the IDR GWM coefficient in Model 4, which is bigger than the coefficient values in Models 3A and 3B.

The coefficients of the IDR GWM variable are negative in Models 3A and 3B, implying that an increase (decrease) in the GWM ratio reduces (increases) the yield of the SPN instrument and the medium-term SUN instrument. Based on BI regulation, the IDR GWM comprises primary GWM (which is banks' IDR deposits in BI) and secondary GWM (which are in the form of the SUN instruments, BI certificates, and/or BI deposit certificates). When BI reduces the IDR GWM ratio, banks reduce their demand for the SPN and medium-term SUN instruments, causing yields to increase (or prices to fall).

The interaction variable between the IDR GWM and the Covid-19 dummy is not significant in Model 3A, implying that there is no significant difference in the impacts of the IDR GWM ratio on the SPN yields during the pandemic and non-pandemic periods. The interaction variable is significant and has a positive sign in Model 3B. This implies that the impacts of the IDR GWM on the medium-term SUN yields are higher during the pandemic than in the non-pandemic period.

The coefficient of the IDR GWM variable is negative in Model 4, implying that an increase (decrease) in the IDR GWM ratio reduces (increases) the sectoral composite indexes of the Indonesia Stock Exchange. A decline in the GWM ratio increases IDR liquidity in the banking system and the whole economy. As the IDR liquidity expands, demand for stocks increases, causing stock prices and the sectoral composite indexes of the stock market to increase. The interaction variable between the IDR GWM and the Covid-19 dummy is significant and has a positive sign in Model 4, implying that the

impacts of the IDR GWM ratio on the sectoral composite indexes of the stock market are higher during the pandemic than in the non-pandemic period.

The USD GWM variable is significant in Model 2 and Model 5. This implies that in the absence of the Covid-19 pandemic, the USD GWM ratio has a significant impact on the USD interbank money market and the IDR exchange rate against USD. The interaction variable between USD GWM and the Covid-19 dummy is discarded from Model 2 and Model 5 as it creates a multicollinearity problem.

The USD GWM variable has a positive coefficient in Model 2, implying that an increase (reduction) in the USD GWM ratio increases (reduces) the average USD interbank money market rate. When BI cuts the USD GWM ratio, USD liquidity supply in the interbank money market increases and causes the average USD interbank money market rate to fall.

The USD GWM variable has a negative coefficient in Model 5, implying that when the USD GWM ratio increases (falls), the IDR strengthens (weakens) against the USD. The result is counterintuitive if seen as causality, but sensible if seen as concurrency between the two variables. BI raised the USD GWM ratio from 1% to 8% in 2011 to absorb excess USD liquidity in the banking system when the IDR underwent an appreciating trend. BI cut the ratio from 8% to 4% in March 2020 to inject USD liquidity into the banking system when the IDR was under pressure due to the Covid-19 pandemic. That said, this study acknowledges the regression result as an anomaly that needs to be examined thoroughly in future studies.

The variable of BI's OMO balance in the IDR interbank money market and the interaction variable between BI's OMO balance in the IDR interbank market and the Covid-19 dummy are not significant in Model 1. Likewise, the variable of BI's OMO balance in the USD interbank market and the interaction variable between BI's balance and the Covid-19 dummy are not significant in Model 2.

BI's SUN OMO balance is significant in Model 3B, but not significant in Model 3A or Model 3C. This may indicate that the BI's SUN open market operations are more actively conducted in the medium-term SUN market than in the long-term SUN market and the SPN market. The variable of the BI's OMO balance in Model 3B has a negative coefficient, meaning that in the absence of the Covid-19 pandemic, an increase (decrease) in the BI's OMO balance reduces (increases) the medium-term SUN yields. When BI buys medium-term SUN instruments from the SUN market, the medium-term SUN yields fall (prices increase). Nonetheless, the impact of the BI's SUN OMO on medium-term SUN yields is rather marginal.

The interaction variable between BI's SUN OMO balance and the Covid-19 is significant in Model 3B, but not significant in Model 3A or Model 3C. The coefficient sign of this variable in Model 3B is positive, implying that the impact of BI's SUN OMO on the medium-term SUN yields is bigger during the Covid-19 pandemic than in the non-pandemic period.

The variable of BI's total IDR monetary operation balance is significant in Model 4 and has a negative coefficient. This implies that in the absence of the Covid-19 pandemic, an increase in this variable reduces the sectoral composite indexes of the stock market. When BI absorbs liquidity from the banking system and the overall economy, liquidity in the economy dwindles. Tighter IDR liquidity in the economy causes demand for Indonesian stocks to fall and leads to a decline in stock prices and the sectoral composite indexes of the stock market. The interaction variable between BI's total IDR monetary operation and the Covid-19 dummy is not significant. This means that

there is no significant difference in the impact of BI's total IDR monetary operation on the sectoral composite indexes of the stock market during the pandemic and the non-pandemic periods.

6. CONCLUSIONS

This study finds that the BI seven-day reverse repo rate is effective in impacting the JIBOR, and its impact on the JIBOR during the Covid-19 pandemic is greater than in the non-pandemic period. That said, the fall in the JIBOR does not necessitate acceleration in banking credit growth as the demand for banking credit is still weak, in line with the weakening demand side of Indonesia's economy. A big push from the fiscal side is thus needed to restore the demand side.

The IDR GWM instrument significantly impacts the sectoral composite indexes of the stock market, the SPN yields, and medium-term SUN yields, where these impacts are greater during the pandemic than in the non-pandemic period. This study finds that the GWM instrument has greater impacts on the stock market than on the SUN markets. While statistically significant, the impact of the USD GWM instrument on the USD interbank money market is marginal.

BI's purchases of SUN instruments through OMO in the secondary market and private placement in the primary market will help to finance the government's expansionary fiscal policies during the pandemic. BI's OMO in the SUN market is less likely to distort the SUN market, as the SUN OMO has a marginal impact on the medium-term SUN yields and does not have a significant impact on the SPN or the long-term SUN yields.

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APPENDIX

Table A1: Factors Affecting Interbank MM Rates, SUN Yields, and Sectoral Composite Indexes of Indonesia Stock Market†

(coefficient values in %, t-statistics probability in brackets)

Dependent Variable / Regressors	MODEL 1 IDR Interbank Money Market Rates	MODEL 2 USD Interbank Money Market Rates	MODEL 3A SPN Yields	MODEL 3B Medium-term Government Bond (SUN) Yields	MODEL 3C Long-term Government Bond (SUN) Yields	MODEL 4 Sectoral Composite Indexes of the ISX
Constant	–0.002375 (0.0000*)	0.000576 (0.0620*)	–0.003370 (0.2738)	–0.001784 (0.0790*)	–0.000879 (0.4145)	0.002261 (0.8659)
Inflation (lag 1)	0.012999 (0.4660)	0.012658 (0.4169)	–0.092371 (0.5083)	–0.103210 (0.0062***)	0.032633 (0.3995)	–0.023158 (0.9652)
USD/IDR	–	0.002247 [lag 1] (0.0306**)	–0.001958 (0.7340)	0.055869 (0.0000***)	0.060586 (0.0000***)	–0.340213 (0.0000***)
Indonesia Composite Index	–	–	–0.000800 (0.7388)	–0.011062 (0.0000***)	–0.011070 (0.0000***)	–
Yield of Indonesia 10Y SUN	–	–	–	–	–	–4.259291 (0.0000***)
Yield of UST Debt Security# (lag 1)	–	–	0.206439 (0.0223**)	0.060271 (0.0020***)	0.122806 (0.0000***)	–
VIX Index (lag 1)	–	–	–	–	–	0.000663 (0.7143)
S&P 500 Index (lag 1)	–	–	–	–	–	0.036335 (0.0069***)
Strait Times Index	–	–	–	–	–	0.275256 (0.0000***)
Shanghai Composite Index	–	–	–	–	–	0.043673 (0.0007***)
Covid–19 (dummy)	–0.002314 (0.3012)	–0.004929 (0.0064***)	–0.017840 (0.1346)	–0.015170 (0.0060***)	–0.006672 (0.2527)	–0.328776 (0.0000***)
PSBB (dummy)	–0.002681 (0.1232)	0.000742 (0.5228)	0.006645 (0.4386)	–0.018347 (0.0000***)	–0.007653 (0.0882*)	0.158875 (0.0038***)
FISPACK (dummy)	0.002454 (0.0620*)	0.000583 (0.5342)	0.005464 (0.4115)	0.011457 (0.0003***)	0.005577 (0.0985*)	0.022280 (0.5918)
BI 7-day Reverse Repo Rate (lag 1)	0.598601 (0.0000***)	0.035943 (0.0119**)	0.058285 (0.5126)	0.009050 (0.7206)	–0.008885 (0.7291)	0.235964 (0.5371)
GWM ‡	0.002480 (0.9168)	0.006100 (0.0935*)	–0.131750 (0.0888*)	–0.062879 (0.0612*)	–0.054371 (0.1100)	–2.091102 (0.0000***)
BI IDR Interbank MM OMO	–0.000153 (0.1054)	–	–	–	–	–
BI USD Interbank MM OMO	–	–0.000058 (0.3074)	–	–	–	–
BI IDR SUN OMO	–	–	0.000020 (0.5522)	–0.000032 (0.0069***)	0.000003 (0.8003)	–
BI IDR Total Monetary Operation	–	–	–	–	–	–0.013037 (0.0010***)
BI 7-day Rev. Repo Rate (lag1) X Covid-19 dummy	0.265036 (0.0000***)	–0.059118 (0.0733*)	0.151170 (0.2884)	–0.021019 (0.6986)	0.037630 (0.4939)	–1.826399 (0.0264**)
IDR GWM X Covid-19 dummy	–0.002842 (0.9076)	–	0.134099 (0.1025)	0.067851 (0.0569*)	0.062107 (0.0852*)	2.026879 (0.0002***)
BI IDR Interbank MM OMO X Covid-19 dummy	0.000156 (0.1046)	–	–	–	–	–
BI USD Interbank MM OMO X Covid-19 dummy	–	0.000033 (0.6439)	–	–	–	–
BI IDR SUN OMO X Covid-19 dummy	–	–	–0.000645 (0.4418)	0.000832 (0.0344**)	0.000402 (0.3230)	–
BI IDR Total MO X Covid-19 dummy	–	–	–	–	–	–0.004663 (0.6759)
AR(1)	–0.080529 (0.0000***)	–0.591965 (0.0000***)	–	0.117862 (0.0000***)	0.152927 (0.0000***)	–
AR(2)	–	–0.320678 (0.0000***)	–	–	–	–

continued on next page

Table A1 *continued*

Dependent Variable / Regressors	MODEL 1 IDR Interbank Money Market Rates	MODEL 2 USD Interbank Money Market Rates	MODEL 3A SPN Yields	MODEL 3B Medium-term Government Bond (SUN) Yields	MODEL 3C Long-term Government Bond (SUN) Yields	MODEL 4 Sectoral Composite Indexes of the ISX
Weighted Statistics						
No. of Pool Balanced Observations	5,190	3,896	946	4,315	3,452	7,929
R^2	0.403119	0.284933	0.024723	0.270850	0.332173	0.229453
Adjusted R^2	0.401851	0.282723	0.011120	0.268476	0.329453	0.227895
Prob (F-Stats.)	0.000000***	0.000000***	0.036379**	0.000000***	0.000000***	0.000000***
DW Statistics	2.012803	2.130683	2.118846	1.999404	1.976820	1.956485

Notes: † all variables except the dummies are stated as % d/d change.

* significant at α = 10%; ** significant at α = 5%; *** significant at α = 1%.

3-month UST bill for government notes group; 5-year UST bond for medium-term bonds group; 10- year UST bond for long-term bonds group.

‡ IDR GWM for Models 1, 3, and 4. USD GDWM for Model 2.

The interaction variable between the USD GWM and the Covid-19 dummy is discarded from Model 2 as it causes a multicollinearity problem.

Source: Author's calculations.

Table A2: Factors Affecting USD/IDR†
(coefficient values in %, t-statistics probability in brackets)

Dependent Variable	USD/IDR (% d/d change)
Regressors	
Constant	-0.003195 (0.8370)
Inflation (% d/d change)	1.304981 (0.0479**)
JCI (% d/d change)	-0.065797 (0.0000***)
Average 1-month USD Interbank Money Market Rate (% d/d change)	-0.168200 (0.6181)
Yield of 3-Month SPN (% d/d change)	-0.121304 (0.4822)
Yield of 5-Year SUN (% d/d change)	2.022168 (0.0000***)
Yield of 10-Year SUN (% d/d change)	1.691390 (0.0000***)
DXY Index (% d/d change)	0.151718 (0.0000***)
Covid-19 (dummy)	0.030581 (0.5267)
PSBB (dummy)	0.009693 (0.7633)
BI 7-day Reverse Repo Rate (% d/d change)	-0.089479 (0.8173)
USD GWM (% d/d change)	-0.190285 (0.0333**)
BI 7-day Reverse Repo Rate X Covid-19 dummy	-2.724363 (0.0008***)
Number of Observations	680
R-squared	0.484330
Adjusted R-squared	0.475053
Prob (F-statistics)	0.000000***
Durbin-Watson statistics	1.874693

Notes: † all variables except the dummies are stated as % d/d change.

* significant at α = 10%; ** significant at α = 5%; *** significant at α = 1%.

The FISPACK variable and the interaction variable between the USD GWM and the Covid-19 dummy are discarded from Model 5 as these variables cause a multicollinearity problem.

Source: Author's calculations.