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Capital Flow Dynamics and Central Banks
– Lessons from the Asian Financial Crisis and Challenges Ahead –

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Asian capital flow dynamics which had been on an inflow trend that started in the early 2000s, has shown signs of change against a background of the normalization of U.S. monetary policy. This is drawing attention towards the resilience of emerging economies against capital outflows. While various initiatives drawn from the lessons learned in the Asian financial crisis have enhanced the resilence of Asian countries against capital outflows, there are new concerns, such as the increase in foreign currency-denominated bonds and domestic bonds held by foreign investors. In addition, the change in capital flows presents Asian central banks with the challenge of firmly establishing a transmission mechanism for monetary policy by controlling domestic interest rates. Specifically, money markets need to be developed further by enhancing central banks' funds-providing operations and by stimulating transactions between market participants. The Bank of Japan has been providing international financial cooperation to support such efforts in Asia.

Introduction

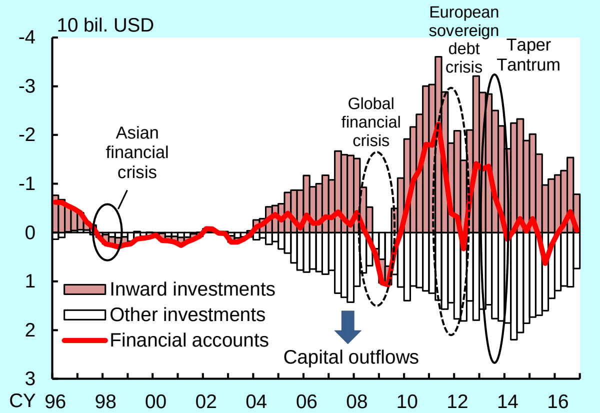
In emerging Asian countries, both capital inflows and outflows have increased in gross terms since the early 2000s, while in net terms, a capital inflow trend has continued. However, the capital inflow trend has shown signs of change since the Taper Tantrum[1] in the U.S. in 2013, and this is drawing attention towards Asian countries' resilience against capital flow dynamics.

This paper summarizes recent changes in capital flows in the ASEAN-4 countries (Indonesia, Malaysia, the Philippines and Thailand), and outlines the various initiatives introduced since the Asian financial crisis that have enhanced the resilience of these countries against capital flow dynamics. This paper also considers the issues of capital flow dynamics which Asian central banks are facing when conducting domestic monetary operations, and introduces the Bank of Japan's initiatives on international financial cooperation for addressing these issues.

Trends in Capital Flow in Asia

After the Asian financial crisis, gross inflows and outflows in the ASEAN-4 countries increased significantly during the early 2000s (Chart 1).

[Chart 1] Financial accounts of ASEAN-4 (Inward/Outward investments)



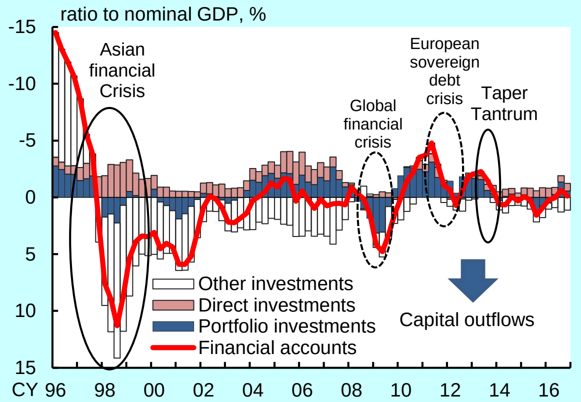
Notes: 1. The data are the sums of figures for Indonesia, Malaysia, the Philippines, and Thailand.
2. The figures for inward/outward investments are the sums of direct investments, portfolio investments, and other investments. (The figures for Malaysia are the sum of direct investments and portfolio investments). The figures for financial accounts are the sums of direct investments, portfolio investments, and other investment. All figures are 4-quarter backward moving averages.
3. The data before 1998 are those of Thailand; the data from 1998 to 1999 are the sums of the Philippines and Thailand; and the data from 1999 to 2003 are the sums of Malaysia, the Philippines, and Thailand.
4. Latest data are as at 16/Q4.
Source: HAVER.

After decreasing in response to the global financial crisis, capital flows continued to increase until the

European sovereign debt crisis, with capital inflows recording significant growth. However, both gross capital inflows and outflows decreased after the Taper Tantrum. A net inflow (net financial account) has continued for a long time, excluding the period of the global financial crisis and the European sovereign debt crisis, accelerating rapidly in the early 2010s. However, the inflow trend has shown signs of change since the Taper Tantrum, where it shows outflow at times, which is primarily due to changes in inward investment.[2]

With regard to net financial account by item (Chart 2), short-term credit (categorized in "Other investment"), having flowed in prior to the Asian financial crisis, suddenly shifted to an outflow in the aftermath of the crisis. As direct investment has continued to flow inward since then, portfolio investment has been the primary factor in changes in financial accounts since the early 2000s. Portfolio investment briefly shifted to a substantial net outflow after the global financial crisis, but the net inflow increased significantly as global monetary easing progressed and the search for yield intensified among investors. After the Taper Tantrum, however, the inflow of portfolio investment decreased and net outflows were periodically recorded. Regarding developments in investment trust fund flows in particular, bond inflows, which increased after the global financial crisis, have shifted to outflow, and there are some views that room for further outflow remains.

[Chart 2] Financial accounts of ASEAN-4
(Ratio to nominal GDP, by item)



Notes: 1. The data are the sums of figures for Indonesia, Malaysia, the Philippines, and Thailand.
2. The figures for financial accounts are the sums of direct investments, portfolio investments, and other investments. All figures are 4-quarter backward moving averages.
3. The data before 1998 are those of Thailand; the data from 1998 to 1999 are the sums of the Philippines and Thailand; and the data from 1999 to 2003 are the sums of Malaysia, the Philippines, and Thailand.
4. Latest data are as at 16/Q4.
Source: HAVER.

Resilience against Capital Flow Dynamics

Attention has become focused on Asian countries' resilience against capital flow dynamics, especially portfolio investment flows. Various policy responses have been made based on the lessons from the Asian financial crisis in terms of (i) external balance, (ii) the financial system, (iii) local currency-denominated bond markets, (iv) exchange rate policy, and (v) capital control. These policy responses enhanced the resilience of Asian markets.

External balance

External balances in many countries show a current account surplus and the accumulation of foreign exchange reserves, compared with immediately after the Asian financial crisis. Net external assets also show that resilience against capital outflow has been enhanced (Chart 3).

[Chart 3] Macro Indicators of ASEAN-4

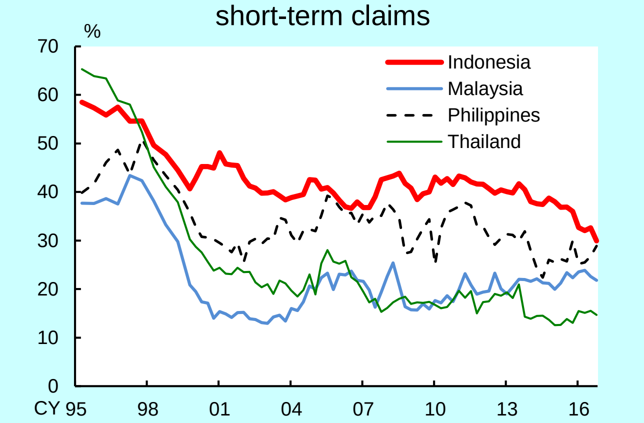
	Current accounts (ratio to nominal GDP, %)		Foreign exchange reserves (ratio to nominal imports, %)		International investment positions (assets/liabilities)		Nonperforming loans ratios (%)	
	Asian financial crisis	Latest	Asian financial crisis	Latest	Asian financial crisis	Latest	Asian financial crisis	Latest
Indonesia	-2.3	-2.5	4.8	8.7	0.3	0.4	8.1	3.2
Malaysia	-6.2	2.9	4.4	7.1	0.6	1.1	14.9	1.2
Philippines	-3.8	2.8	3.6	13.6	0.4	0.8	—	1.9
Thailand	-6.0	7.1	6.1	9.6	0.5	0.9	34.6	3.0

Notes: 1. The figures for the Asian financial crisis are as of the following timing. Those for current accounts and foreign exchange reserves are the average values from 1995 to 1997 (foreign exchange reserves for Malaysia are as of 1998); those for international investment positions are as of 2001; those for nonperforming loan ratios are the peak values between 1998 and 2002.
2. The latest figures are as of the following timing. Those for current accounts and foreign exchange reserves are the average values from 2014 to 2016 (the figures for 2014 and 2015 are the actual values, while those for 2016 are the projected values); those for international investment positions are as of end-Dec. 2015; those for nonperforming loan ratios are as of end-Oct. 2016 for Indonesia, end-Mar. 2017 for Malaysia, and end-Dec. 2016 for the Philippines and Thailand.
3. Shaded areas indicate the items that have improved since the Asian financial crisis.
Sources: HAVER; CEIC; Bloomberg; IMF.

Financial system

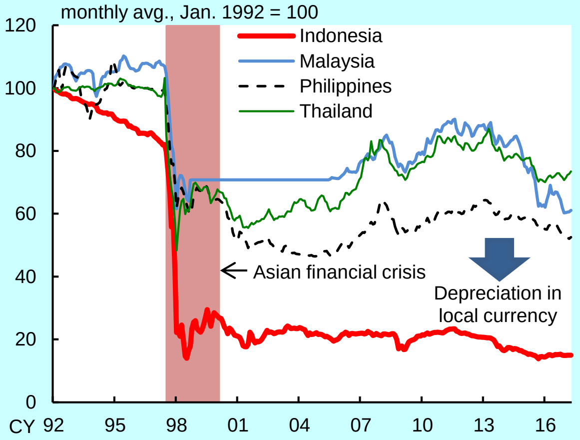
As to the financial system, the ratio of non-performing loans has been decreasing (Chart 3), and financial regulatory and supervisory frameworks have also been strengthened. Resolving the double mismatch of currency and maturity, which was one of the triggers of the Asian financial crisis, has contributed to a decline in the ratio of foreign currency-denominated short-term credit held by foreign banks (Chart 4).

[Chart 4] Ratios of foreign currency-denominated short-term claims



Notes: 1. The figures are the ratio of foreign currency-denominated short-term claims to all claims of foreign banks.
2. Latest data are as of end-Dec. 2016.
Source: HAVER.

[Chart 6] Exchange rates of local currencies of ASEAN-4 against U.S. dollar



Note: Latest figures are monthly average of Apr. 2017.
Source: Bloomberg.

Local currency-denominated bond markets

Asian countries have developed local currency-denominated bond markets in order to address issues such as the double mismatch of currency and maturity, and the bank-centric financial systems that are considered to be one of the causes of the Asian financial crisis. In fact, local currency bond markets have shown strong steady growth (Chart 5).

[Chart 5] Amounts of outstanding bonds issued in local currency and foreign currency

10 bil. USD

	Indonesia		Malaysia		Philippines		Thailand	
	local currency	foreign currency	local currency	foreign currency	local currency	foreign currency	local currency	foreign currency
end-Mar. 2001	5 (37%)	1 (4%)	7 (73%)	2 (17%)	2 (29%)	2 (27%)	3 (28%)	0 (0%)
end-Dec. 2016	16 (18%)	9 (10%)	26 (95%)	4 (15%)	10 (34%)	4 (14%)	30 (76%)	2 (4%)

Note: The figures are the sum of government bonds and corporate bonds. The figures in parentheses are the ratios to nominal GDP.
Source: Asian Bonds Online.

Exchange rate policy

Asian countries learned from the experience of the Asian financial crisis that fixed foreign exchange systems induced speculation, and they have thus opted to introduce more flexible foreign exchange systems, shifting from fixed currency regimes to floating currency regimes. This has in effect strengthened the adjustment mechanism to curb the negative impact of capital flow dynamics in the macro economy (Chart 6). Meanwhile, inflation targets have been introduced as policy anchors in monetary policy frameworks in place of fixed foreign exchange systems.

Capital control

Since the Asian financial crisis, many countries have been introducing controls over capital flow. One of the major capital controls is the real demand principle in currency transactions. Among foreign exchange regulations, while Hong Kong and Singapore remain unrestricted, transactions by non-residents in the ASEAN-4 countries are, in principle, restricted to real demand (Chart 7). In addition, ASEAN-4 prohibits non-residents from making offshore deposits in local currency, preventing them from taking short positions in local currencies.

[Chart 7] Regulations of foreign exchange transactions in ASEAN-4

	Spot exchange		Foreign exchange swap	
	With real demands	Without real demands	With real demands	Without real demands
Thailand	Possible	Possible	Possible	Trade volume is limited
Philippines	Buy: Possible Sell: Certificate is required	Buy: Possible Sell: Prohibited	Buy: Possible Sell: Certificate is required	Buy: Possible Sell: Prohibited
Malaysia	Certificate is required	Prohibited	Certificate is required	Prohibited
Indonesia	Certificate is required	Prohibited	Certificate is required	Prohibited

Sources: Each central bank.

Asian countries' central banks have also established frameworks for tracking capital flows, and have created systems for monitoring foreign exchange transactions, such as requiring online reporting of transactions by non-residents and those exceeding a certain amount.

Asian central banks have been strengthening capital controls in order to reduce holdings in foreign currencies in offshore and domestic markets and foreign currency-denominated debt as policy response during capital outflow periods since 2013. For example, Malaysia has announced the regulation prohibiting banks from conducting NDF[3] transactions. Indonesia has made holdings in foreign currencies and currency hedging mandatory for debt exceeding a certain amount.

New Causes for Concern

Emerging Asian countries have learned many lessons from the Asian financial crisis, which enhanced resilience against capital flow dynamics. On the other hand, with the further development of Asian bond markets in line with financial globalization, there are new causes for concern, such as (i) an increase in foreign currency-denominated bonds, and (ii) the increase in bond holdings by foreign investors.

Increase in foreign currency-denominated bonds

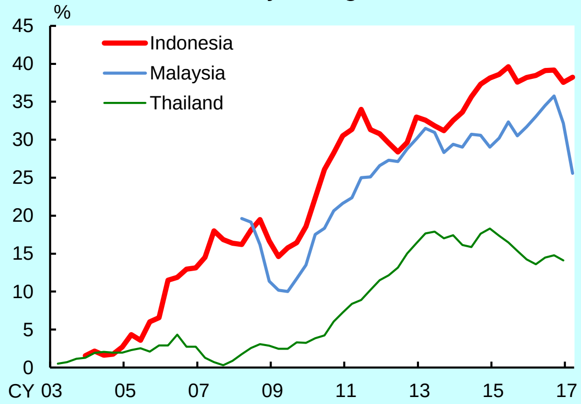
Local currency-denominated bond markets have expanded in Asia as a result of initiatives drawn from the lessons learned in the Asian financial crisis. However, as dollar interest rates have declined due to U.S. monetary easing after the global financial crisis, companies and banks have rather increased foreign currency-denominated bonds issuance, in their efforts to minimize funding costs (Chart 5). Such developments can also be observed in domestic industries with little foreign currency revenue, and some have highlighted the risk of an increase in the burden of repayments in the event of a local currency depreciation.

Bond holdings by foreign investors

The ratio of bonds held by foreign investors has also been increasing in Asian local currency-denominated bond markets (Chart 8).

It has become easier for foreign investors to enter the market as the local currency-denominated bond market has become deeper as well as more liquid. As exchange systems have become more flexible in Asia, foreign investors have also started to invest more actively in local currency-denominated bonds, aiming to profit from appreciations in local currencies. However, there is a limited number of domestic market participants willing to buy when foreign investors sell in Asian bond secondary markets. This makes these markets susceptible to changes in foreign investors' behavior. In Malaysia for example, after the U.S. presidential election in November 2016, the sale of bonds by foreign investors triggered a sudden rise in long-term interest rates and a depreciation of the local currency.

[Chart 8] Ratios of Asian countries' government bonds held by foreign investors



Notes: 1. The figures are those of local currency-denominated bonds.
2. Latest figures are as of end-Mar. 2017 for Indonesia and Malaysia, and as of end-Dec. 2016 for Thailand. The figures for the Philippines are unavailable.
Source: Asian Bonds Online.

Capital Flow and Domestic Monetary Operations

As the long-continued capital inflow trend has shown signs of change, central banks are presented with challenges not only from the perspective of external vulnerability, but also from the standpoint of monetary operations in domestic money markets.

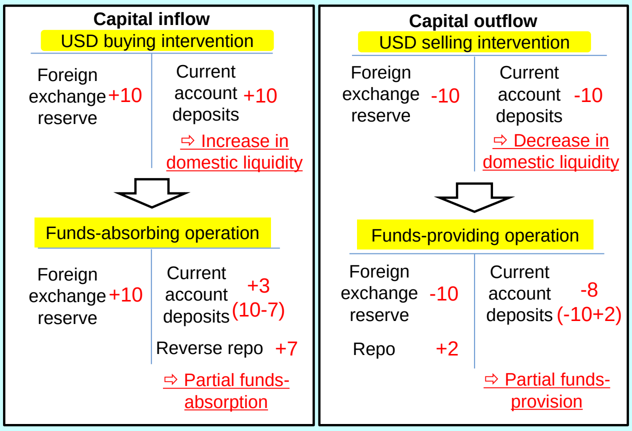
Mechanisms of foreign exchange intervention and domestic monetary operations

The mechanism by which changes in capital flow affect central banks' monetary operations through foreign exchange markets in small open economies can be described as follows (Chart 9).

In the case of capital inflow, domestic liquidity increases when the central bank conducts foreign exchange intervention by selling local currency to alleviate upward pressure on the value of the currency. To negate the increase in funds supply associated with intervention, it is necessary to absorb and neutralize (sterilize) the increased liquidity. However, to maintain the effect of foreign exchange intervention in adjusting the speed of currency fluctuations, it is more efficient to keep an accommodative environment with limited funds absorption.

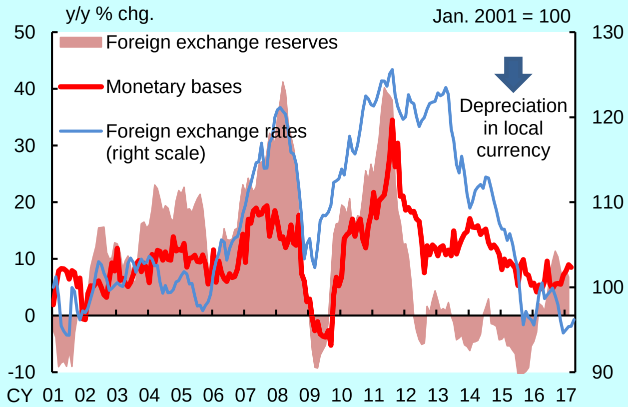
On the other hand, in the case of capital outflow, domestic liquidity decreases when the central bank conducts foreign exchange intervention by buying local currency to alleviate downward pressure on the value of the currency. It is necessary to conduct funds-providing operations through domestic monetary operations to counter the decreased liquidity. However, when the central bank intervenes in foreign exchange to prevent excessive depreciation, maintaining a tight environment is necessary to ensure the effectiveness of the intervention.

[Chart 9] Change in capital flow and central bank's balance sheet



The changes in foreign exchange reserves, monetary bases, and foreign exchange rates against the U.S. dollar among the ASEAN-4 countries indicate the mechanism described in the preceding paragraph has been working in those countries (Chart 10).

[Chart 10] Monetary bases and foreign exchange rates of ASEAN-4



Notes: 1. The figures for foreign exchange reserves and monetary bases are the sum of Indonesia, Malaysia, the Philippines, and Thailand. The figures for monetary bases from Jan. 2001 to Dec. 2003 are the sum of Malaysia and the Philippines; and those from Jan. 2004 to Mar. 2007 are the sum of Malaysia, the Philippines, and Thailand.
2. The figures for foreign exchange rate are the average of each country's currency against the U.S. dollar.
3. Latest figure for foreign reserves is as of end-Feb. 2017, that for monetary bases is as of end-Mar. 2017, and that for foreign exchange rate is monthly average of Apr. 2017.

Source: Bloomberg.

This means that while the pressure of capital inflows increased and local currencies appreciated before 2013 (except during the global financial crisis and the European sovereign debt crisis), central banks intervened in foreign exchange by buying U.S. dollars and selling local currency to alleviate the upward pressure on the value of the local currency. It led to an increase in foreign reserves and in the monetary base. In the following years, when the local currency depreciated with the change in capital flow dynamics, foreign exchange reserves shifted from plateau to downtrend. The domestic financial environment simultaneously shifted to tight, and the trend in monetary base also decreased.

Capital outflow and issues in domestic monetary operations

Many emerging Asian central banks have taken advantage of capital inflows as a factor of monetary operations. However, as the inflow trend has weakened, central banks have faced new issues in domestic monetary operations.

During capital outflow periods, foreign exchange intervention becomes limited as it reduces foreign exchange reserves (selling foreign currency and buying local currency). Therefore, in order to stabilize foreign exchange rates, it becomes important to affect interest rate spreads by controlling domestic interest rates through funds-providing operations. Interest rate control is also important from the standpoint of financial stability. This is because outstanding debt has increased considerably in many countries as they took advantage of capital inflow trend while the financial markets remained accommodative for many years. In fact, Bank Indonesia and the Bangko Sentral ng Pilipinas introduced interest rate corridors[4] in order to enhance money market functions in conducting monetary policy.

However, many emerging Asian economies face challenges in enhancing a transmission mechanism of monetary policy through the formation of yield curves in domestic markets.

One reason is that central banks need to establish monetary operation tools in order to transmit the effects of monetary policy. Specifically, Asian central banks tend to have many funds-absorbing operations that were used during capital inflow periods, while their funds-providing operation tools have been underdeveloped (Chart 11).

[Chart 11] Monetary operation tools of ASEAN-4

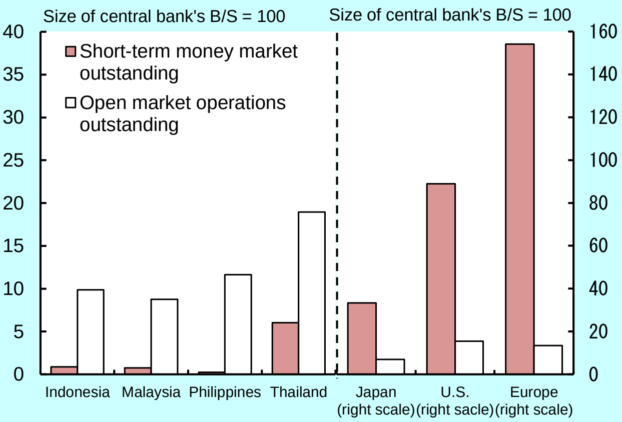
	Funds-absorption	Funds-provision
Thailand	Issuance of CB notes Reverse repo Sale of GBs	Repo FX swap Purchase of GBs
Malaysia	Issuance of CB notes Repo*	Reverse repo*
Indonesia	Issuance of CB notes Term deposits Reverse repo	FX swap Repo
Philippines	Term deposits Révérese repo Sale of GBs	FX swap Repo Purchase of GBs

Scarcely conducted

Note: Bank Negara Malaysia calls funds-absorbing operations "repo" and funds-providing operations "reverse repo".
Sources: Each central bank.

The limited number of transactions among market participants in money markets has also impeded the formation of the yield curve in markets. Transactions in money markets in Asian countries are less than half the amount outstanding of domestic monetary operations by central banks, indicating that money markets in Asia are notably small compared to those in Japan, the United States and Europe (Chart 12). In addition, although reference rates for each term exist, actual market transactions are mainly overnight transactions, and hence the number of term transactions is quite low. It is argued that yield curve formation based on real market transaction is imperfect.

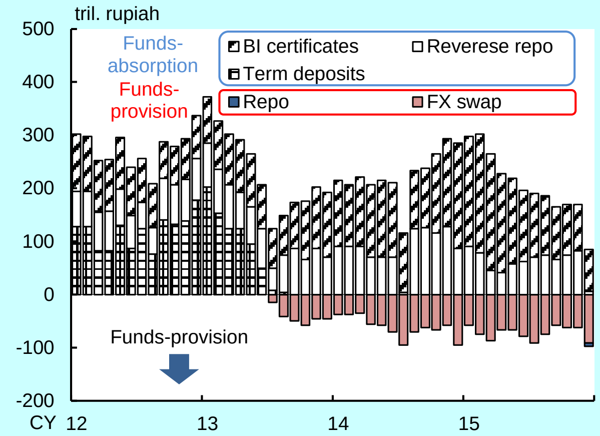
[Chart 12] Amounts of money market transactions in each country



Notes: 1. The figure for Thailand is as of end-Dec. 2014. The figures for other countries are as of end-Dec. 2016.
2. The data are based on the definitions of open market operations in each country.
3. The figure of short-term money market outstanding for U.S. is that of repo transactions, and the figures for other countries are those of interbank transactions.
Sources: Each central bank.

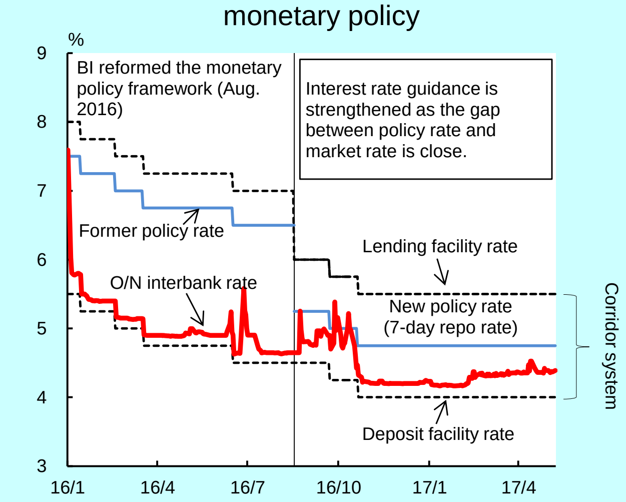
This is closely related to the fact that domestic bond markets are not necessarily well-developed. Indonesia for example has started funds-providing operations since the Taper Tantrum, but unlike in developed countries, most of these have been foreign exchange swaps rather than bond repo transactions (Chart 13). Meanwhile, in periods of capital outflow, foreign cash (particularly U.S. dollars) tends to become scarce. Thus, Bank Indonesia has been improving the validity of policy rate indicators by adopting repo rates against bonds collateral as policy rates (Chart 14).

[Chart 13] Open market operations outstanding of Bank Indonesia



Note: Latest figures are as of end-Dec. 2015.
Source: Bank Indonesia.

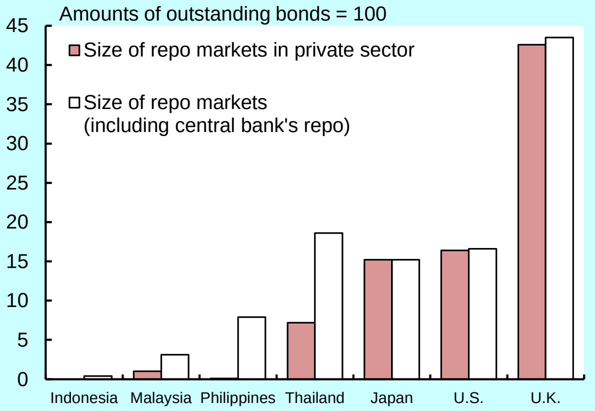
[Chart 14] Bank Indonesia's improvement of its monetary policy



Note: Latest figures are as of May 8, 2017.
Sources: Bank Indonesia; Bloomberg.

Repo markets in Asia largely consist of transactions with central banks' monetary operations, while transactions among private market participants are often limited (Chart 15). One of the reasons is that, other than the banking sector, there are few market participants such as institutional investors and non-residents. It is also argued that impediments in the tax system remain, and that global standards, in master agreement for example, have yet to be fully introduced.[5]

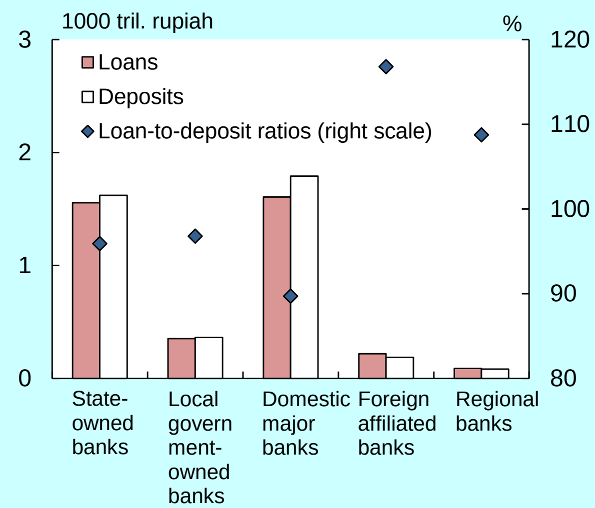
[Chart 15] Sizes of repo markets in each country



Notes: 1. The figures are as of end-Dec. 2012.
2. The data for U.S. include Treasury securities, agency securities, agency MBS, and corporate bonds.
3. The data for Japan include JGBs and T-Bills.
4. The data for Thailand include government bonds, central bank bonds, and state-owned enterprises bonds.
Sources: Each central bank.

The limited transactions among private market participants have actualized the issue of uneven allocation of funds. This can be observed in Indonesia, where national and major banks have a surplus of funds, while regional and foreign banks face a shortage of funds (Chart 16). Uneven allocation of funds had not been obvious issue during the periods of capital inflow, when the domestic monetary environment was accommodative, but it becomes more prevalent when the monetary environment is tight during outflow periods. In fact, some spikes in short-term interest rates have been observed during the outflow periods since 2013.

[Chart 16] Loan-to-deposit ratios by type of banks in Indonesia



Note: Latest figures are as of end-Dec. 2016.
Source: Bank Indonesia.

Efforts by the Bank of Japan

EMEAP[6] Working Group on Financial Markets and technical assistance

As part of its efforts to promote international financial cooperation, the Bank of Japan is providing support for Asian central banks as they face these issues arising from capital flow dynamics. As chair of the EMEAP Working Group on Financial Markets (term: 2016-2018), the Bank of Japan is taking a leading role among the central banks of member countries in efforts to improve the functionality of money markets in the region. The Bank also provides technical assistance on central bank operations at the request of foreign central banks.

ASEAN+3 [7] and cross-border collateral arrangements

The Bank of Japan has also been actively involved in efforts to provide a financial back stop in the event of sudden capital outflows. For example, the Bank takes part in the Crisis Communication Tests, initiated by the ASEAN+3 Finance Ministers and Central Bank Governors' Meeting, in which the ASEAN10 countries, together with China, Japan, and Korea are participants as part of Chiang Mai Initiative Multilateralization (CMIM), and through which the ASEAN+3 countries provide support for each other in times of financial system stress.

The Bank of Japan has also been in establishing cross-border collateral arrangements with several Asian central banks and monetary authorities to conduct funds-providing operations denominated in local currency against Japanese government bonds and Japanese yen collateral.

Conclusion

This paper has shown that although the ASEAN-4 countries have improved their resilience against capital outflows through various policy responses, their central banks have been facing challenges in terms of improving funds-providing operations and developing money markets, against the background of changes in capital flow dynamics. It is not only the ASEAN-4 countries that face these challenges; China faces similar issues as it too has experienced a sharp decline in inward investment since 2015, when foreign banks began to reduce their domestic lending. These issues have come to the fore in recent years.

In response to the new challenges caused by capital flow dynamics in the region, the Bank of Japan has been engaged in supporting the development of Asian money markets and introducing back stop mechanisms as part of its international financial cooperation with central banks in Asia. These efforts will not only contribute to resolving the issues faced by central banks in Asia, but also promote the better functioning of financial markets in the region, which will in turn provide a basis for Japanese financial institutions to conduct stable business activities in Asia.

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*** Currently at the Financial System and Bank Examination Department

[1] A neologism created by combining tapering of quantitative easing in monetary policy and tantrum. It occurred in May 2013 when money markets were disrupted due to rapid increases in U.S. long-term interest rates stemming from the tapering of monetary easing in response to comments to the Joint Economic Committee by Ben Bernanke, Chairman of the Federal Reserve.

[2] The decrease in inward investment since around 2011 is considered to have been brought about by the withdrawal of European financial institutions from Asia due to the European sovereign debt crisis.

[3] Non Deliverable Forward. A negotiated transaction in which the exchange rate is determined by the counterparties at a prior date, and the difference is settled in a major currency such as dollars without delivering the currency when settlement actually takes place. NDF transactions are often observed in offshore when there are restrictions on forward exchange transactions by non-residents in onshore markets. NDF transactions are also used because of the complexity of onshore procedures while currency hedging of securities investments falls into real demand definition under exchange transaction regulations.

[4] The monetary policy tool where interest rates for the lending facility (upper bound) and deposit facility (lower bound) are set, and the interbank overnight call rate is encouraged to move within that range.

[5] EMEAP Repo Markets: State of Play—A Report by the EMEAP Working Group on Financial Markets (https://www.boj.or.jp/announcements/release_2015/data/rel150313c.pdf). The report investigates repo markets in countries within the EMEAP region, outlining the current state of repo markets such as their size, participants, collateral bonds, tax systems and use in monetary control by central banks, and also summarizes factors that could impede future development.

[6] Executives' Meeting of East Asia and Pacific Central Banks.

Proposed by the Bank of Japan, EMEAP was formed in 1991 to serve as a place to freely exchange information and opinions on the implementation of monetary policies and the operation of central banks of various countries and regions.

Its members are the central banks and monetary authorities of 11 countries – Australia, China, Hong Kong, Indonesia, Japan, South Korea, Malaysia, New Zealand, the Philippines, Singapore and Thailand.

At present, EMEAP holds its Governors' Meetings annually. In its Deputies' Meeting and Working Groups, members hold discussions on issues such as the regional macroeconomic conditions, financial stability, payment and settlement systems, bank supervisory systems and methods, financial and foreign exchange markets, and information technology (IT).

[7] 13 countries consist of ten countries of ASEAN (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam) and three countries (China, Japan, South Korea). When the Asian financial crisis occurred, the leaders of Japan, China and South Korea were invited to attend an ASEAN summit, and ASEAN+3 summits and foreign ministers' meetings have been held periodically since then. Governors of central banks were invited to attend ASEAN+3 finance ministers' meetings, which was the predecessor organization of the ASEAN+3 Finance Ministers and Central Bank Governors' Meeting established in 2012.

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