

Reserve management and FX intervention

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Abstract

The shift in global monetary policy from quantitative easing (QE) to the subsequent policy normalisation has led to volatile two-way capital flows for the emerging market economies (EMEs). Many EMEs' central banks have faced considerable challenges in maintaining monetary and financial stability given the limitations of traditional macroeconomic policy tools and relatively small financial markets. This necessitated a pre-emptive FX intervention policy and capital flows management to contain the risks from volatile capital flows. To shed some light on these issues from Malaysia's perspective, the paper first highlights the Bank's motivation for holding reserves, followed by an assessment of the reserve adequacy framework. The paper then expands on the principles behind the Bank's FX intervention activities as well as the reserves management strategies. Finally, the paper concludes by highlighting the importance of international cooperation among EMEs and market development initiatives in addressing the perennial challenges of large capital flows.

JEL classification: E58, E61, F31, F32.

Keywords: capital flows, reserves accumulation, reserve adequacy, FX intervention, liquidity management, volatility, market development, reserve management.

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Introduction

Global financial developments, particularly quantitative easing (QE) in the advanced economies after the Global Financial Crisis (GFC), have significant implications for the direction and pattern of capital flows in emerging market economies (EMEs) over the last decade. During the QE period, EMEs in Asia experienced capital inflows of USD 597.7 billion between 2009 and 2014² while regional currencies³ appreciated by an average of 18% against the US dollar. The subsequent normalisation of QE witnessed large capital outflows from EMEs amid strong pressure on the exchange rates and reserves.

Large two-way capital flows coupled with significant currency movements posed considerable challenges to EME central bank mandates of maintaining monetary and financial stability as well as supporting sustainable economic growth for some central banks. Given the limitation of traditional macroeconomic tools, many EMEs adopted a combination of pre-emptive foreign exchange (FX) intervention policy and capital flows management to mitigate the risks from capital flows. The trend in FX reserves is a by-product of EME central banks' policy responses to large and volatile capital flows that could not be absorbed by their relatively small domestic financial markets.

This paper discusses the trade-offs and policy options for central banks' responses to capital flows, before turning its attention to reserve management practices at the Central Bank of Malaysia.

1. Trend in reserves for EMEs over the past decade

1.1 Motivation for holding reserves during large two-way capital flows

The motivation for holding reserves has been a point of contention between theorists and central banks in the economic literature. The academics argued that reserves accumulation is a deliberate policy to support mercantilist⁴ or precautionary⁵ motives,

² Graphs from the Bank Negara Malaysia 2013 Annual Report. Regional emerging market economies include Chinese Taipei, India, Indonesia, Korea, Malaysia, the Philippines, the People's Republic of China, Singapore and Thailand.

³ Regional currencies include the South Korean won, Indonesian rupiah, Singapore dollar, Malaysian ringgit, Japanese yen, Thai baht, Taiwanese dollar, Indian rupee, Philippine peso and Chinese renminbi.

⁴ Intention to devalue currency and accumulate reserves to support export-led growth (Dooley et al (2004))

⁵ Reserve accumulation is an insurance contract, approximated by a state-contingent contract with international investors. See O Jeanne and R Rancière, "The optimal level of international reserves for emerging market countries: a new formula and some applications", *The Economic Journal*, vol 121, no 555, pp 905–30, September 2011.

with some evidence to suggest more support for the latter. Other studies have argued that the motivation for holding reserves⁶ has evolved over time.

From a Malaysian perspective, the central bank's priority is to ensure orderly adjustment in the exchange rate especially in a period of large and volatile two-way capital flows for a small open economy. At the onset of volatile capital flows, FX market disruptions will first affect domestic financial markets, before adversely affecting the real economy if heightened volatility persists. With a highly developed domestic bond market, representing 98% of GDP in Q3 2018, and significant holdings by global investors, Malaysia faces an added dimension of risks from heightened global volatility. A key consideration for the Bank⁷ therefore, is to ensure volatility is managed to preserve confidence and overall financial stability. As a result, reserve accumulation becomes a by-product from the FX policy aimed at maintaining financial stability. At the same time, it is recognised that precautionary reserves can serve as an important market signal on the strength of a country's external position,⁸ therefore deterring undesirable speculative attacks on the currency and contributing to monetary and financial stability. For resource-rich economies, precautionary buffers can also act to buffer sharp movements in commodity prices that can amplify the effect of capital flows, inducing disorderly market conditions. The optimal level of precautionary reserves is a subject of considerable academic debate, drawing a correlation between the size of precautionary reserves and the degree of economic and financial integration of a country with the global economy, among other things. This is highly dependent on a country's specific condition.

When capital flows surge to a level that is likely to result in disruption to the domestic financial markets, the central bank will need to deploy capital flow management measures as an additional tool to counter the effect of volatile capital flows. During the period of large capital inflows from 2009 to 2014, like most emerging economies, Malaysia relaxed rules for domestic financial institutions, institutional investors and firms to invest abroad as part of their regionalisation strategy. The decentralisation of reserves has helped to broaden Malaysia's external position. Therefore, the assessment of the level of reserves for a particular country as a measure of external resilience must take into account the context within which reserves are held by the private sector; for example, the degree of reserves decentralisation that has taken place beforehand. During periods of large capital outflows in recent years, several emerging economies have taken capital flow management measures to smoothen the volatility of capital flows as neither exchange rate nor reserves can withstand excessive capital outflows in a short period of time. These measures tend to be temporary and specific to address a particular issue although some measures, which are prudential in nature, may be retained for an extended period to counter risks. The Bank also recognises the importance of improving the liquidity of the onshore FX market as a credible alternative to the offshore FX market as a strategy to promote trade- and investment-related flows while minimising the probability of speculative activity in the offshore market. Nevertheless, none of these are substitutes for sound macroeconomic policy

⁶ The IMF in April 2015 identified five reasons for holding reserves: (1) to engender confidence in currency, (2) to counter disorderly market conditions, (3) to support monetary policy, (4) to facilitate inter-generational transfers and (5) to influence exchange rates

⁷ The Central Bank of Malaysia Act (CBA) 2009 prescribes the duty of the Bank to hold and manage foreign reserves for the purposes of carrying out its functions and maintaining public confidence.

⁸ As well as an indicator for credit ratings

management, in which credible monetary and fiscal policy coordination should be pursued to instil foreign investors' confidence in the country's economic outlook and domestic financial markets.

Trade openness and financial market openness indices of Malaysia and regional peers

Table 1

Indices	Singapore	Malaysia	Thailand	Philippines	India	Indonesia
Trade openness*	3.2x	1.4x	1.2x	0.7x	0.4x	0.4x
Financial market openness**	1.0	0.2	0.05	0.1	0.1	0.3

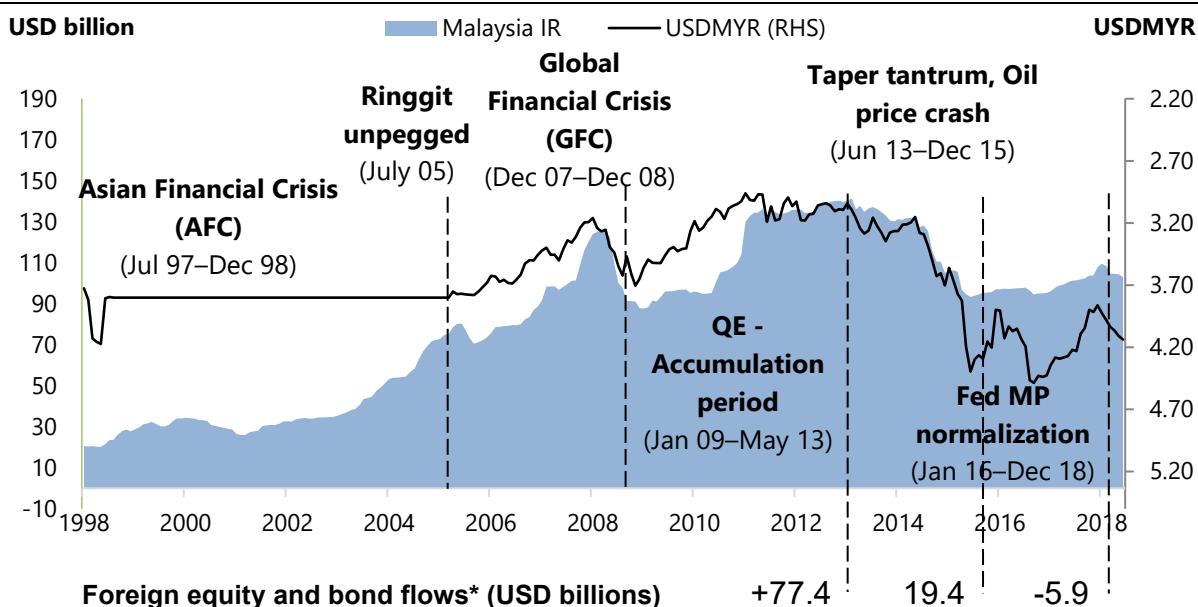
* Calculated based on sum of exports and imports of goods and services measured as share of GDP.

** 1.0 denotes full liberalisation; latest data as at 2013

Sources: IMF, World Bank.

Official international reserves level and USDMYR movement

Graph 1



* Bond flows are calculated based on changes in foreign holdings of total Malaysian debt securities.

Sources: BNM website, Bloomberg, Monthly Statistical Bulletin.

1.2 Assessment of reserve adequacy depends on market structure and stage of development

Notwithstanding the debate on precautionary reserves, the assessment of reserves adequacy has become increasingly sophisticated⁹ in recent years. Traditional benchmarks such as import cover, ratios of reserves to short-term external debt and ratios of reserves to broad money continue to serve its analytical purpose to some extent but they need to consider country-specific considerations for a forward-looking estimation of reserve adequacy. Beyond reserve adequacy, regional

⁹ IMF, *Assessing Reserve Adequacy – Specific Proposals*, December 2014.

cooperation liquidity initiatives¹⁰ may also be considered as a source of liquidity for the Bank as and when needed during periods of uncertainty.

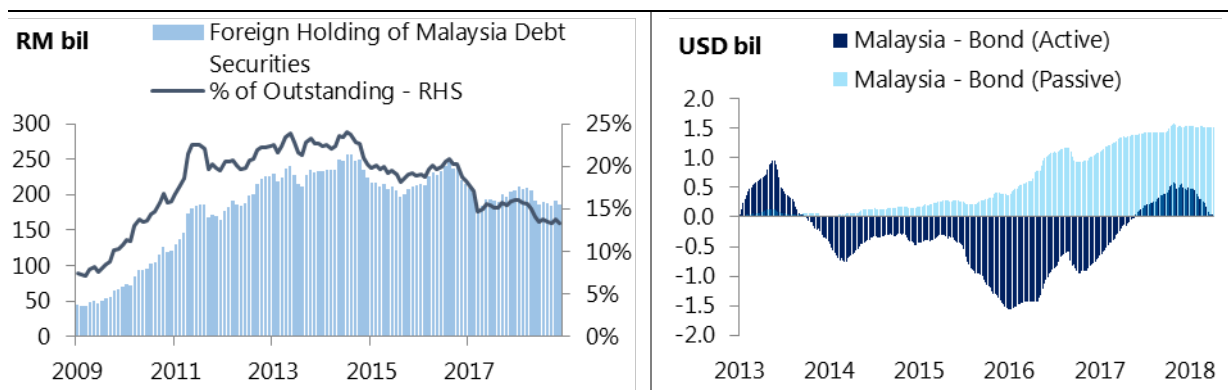
As mentioned earlier, the sizeable external assets held by domestic private sector entities¹¹ over the last decade has allowed them to manage their own external assets and liabilities, rendering traditional measures of reserve adequacy such as ratios of reserve to short-term external debt less meaningful. This can be more pronounced in economies that are host to financial institutions with a large international presence or a large presence of foreign investors in domestic financial markets. Therefore, indicators of reserve adequacy may not be comparable across countries due to the differing market structures and stages of development. Such measures of reserve adequacy therefore should not be viewed under a one-size fits all approach even for EMEs that share the same rating buckets or geographical proximity.

2. FX intervention: motivations, strategies and tactics

2.1 FX intervention undertaken to ensure orderly adjustments of the exchange rate

In the case of Malaysia, capital inflows related to the QE in advanced economies led to a growing proportion of foreign investors holding bonds in the Malaysian market (see Graph 2). This was further reinforced by positive investor sentiment associated with the inclusion of Malaysia in global major bond indices such as the World Government Bond Index (WGBI) and the JPMorgan Government Bond Index. Consequentially, the large composition of foreign holdings during the period of capital inflows heightened the potential risk associated with the (inevitable) reversal of portfolio flows with any future shift in investor sentiment.

Foreign holdings of Malaysian debt securities and cumulative foreign bond flows Graph 2



Sources: Monthly Statistical Bulletin, Emerging Market Portfolio Fund Research (EPFR).

¹⁰ This includes bilateral currency swap arrangements with China, and Korea, Chiang Mai Initiative Multilateralizations (CMIM), ASEAN Swap Arrangement and EMEAP repo lines amounting to a total of USD 59.1 billion.

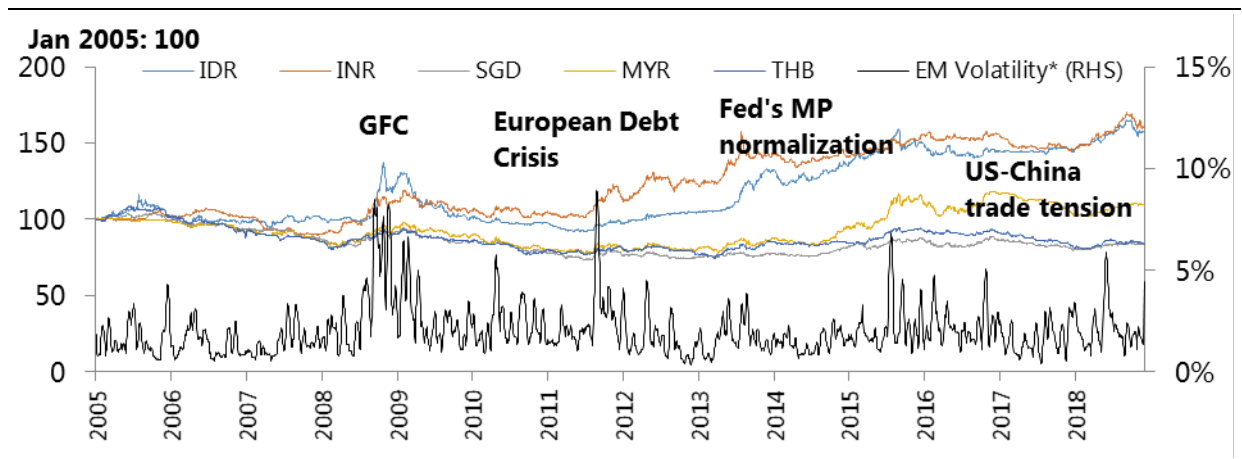
¹¹ Domestic external assets held by local banking groups and corporations currently stand at RM1.3 trillion.

Another point worth noting is the skewness of capital flows: inflows tend to extend over a sustained period, while outflows tend to be sharp and sudden. In the 2009–18 period, the average change in foreign bond holdings recorded an increase of MYR 3.0 billion/month during periods of inflows as compared with a decrease of MYR 5.4 billion/month during outflows.

In recognising the skewness of capital flows above, the Bank made FX market interventions only as necessary to ensure orderly ringgit adjustments to support price discovery (see Graph 3 below). As a result, it is observed that the changes in ringgit will be smaller than the changes in reserves during both periods of large and volatile capital inflows and outflows. For instance, reserves grew by 55%, or approximately 19% of annual GDP, from USD 91.3 billion as at January 2009 to a peak of USD 141.4 billion in May 2013.¹² During the same period, the ringgit appreciated against the US dollar by 12.0% from 3.7280 to 2.9390, a smaller appreciation than the 14.8% recorded pre-GFC (2005–07), when reserves increased by 29% or USD 22.5 billion.

Indexed regional currencies' performances and 20-day EM currencies' volatility

Graph 3



¹ 20-day EM currencies volatility derived based on the Bank's internal calculation using ADXY index.

Source: Bloomberg.

Following capital outflows from EMEs prompted by the Fed-induced taper tantrum and declining oil prices, Malaysia experienced a combination of abrupt reversals¹³ and heightened volatility in the FX market, posing a risk of market dysfunction and putting upward pressure on onshore yields. The Bank intervened judiciously to ensure market adjustments remained orderly and therefore posed no risks to financial stability. As a case in point, the Bank intervened the most when there was significant volatility (highest at 14.99¹⁴ on 24 August 2015) as the ringgit breached the USDMYR 4.00 level for the first time since the unpegging of the ringgit.

¹² In addition to FX intervention, the increase in reserves also reflected investment income, which comes in the form of interest payments, dividends and capital gains.

¹³ Some of the RM 21.5 billion of Malaysian bonds sold in March 2017 by foreign asset managers was triggered by the act of portfolio rebalancing according to the index's weight for Malaysia. This represented a drop of around 3.7% in the non-resident holdings. Central Bank of Malaysia, www.bnm.gov.my/index.php?ch=en_publication&pg=en_staffinsight&ac=46&bb=file.

¹⁴ USDMYR 1M at the money implied volatility as measured by Bloomberg.

The reserves declined by over 30% or USD 44.7 billion from the high of USD 141.4 billion in May 2013 to USD 96.7 billion in July 2015. This decline far outweighed the changes in the exchange rate, reflecting the large degree of intervention during abnormal times. This also triggered the implementation of FX-related measures by the Bank in December 2016 to preserve orderly market conditions. The resumption of capital inflows in subsequent years¹⁵ accorded some temporary policy relief following an eventful 2015 and 2016. However, since 2018, a combination of external factors ranging from US-China trade tensions to the Fed's monetary policy normalisation has renewed pressure on capital flows and exchange rates for EMEs, including Malaysia.¹⁶

2.2 Mode of FX intervention remains flexible with a broad range of tools to sterilize the impact

The Bank tailors its FX intervention strategies to market conditions. The Bank intervenes using primarily the USDMYR spot due to the fact that this is the most actively traded FX pair. However, this can give rise to the perception of a USD dirty peg, especially among the academics. For central banks, a pragmatic approach is to utilise the most liquid segment of the FX market to achieve its objectives. From time to time, the Bank also deploys the use of other currency pairs [Not publicly available] and instruments such as FX swaps and forwards, depending on market requirements and relative effectiveness of these tools.

The interlinkages between the FX and ringgit markets also require the Bank to manage the corresponding fluctuations in domestic liquidity via several monetary instruments. For instance, the current net short FX swap position¹⁷ is to manage ringgit liquidity due to the current outflows, as compared with 2005–15 (during the unpegging of ringgit until QE), whereby the Bank held a mainly net long position to remove the excess ringgit liquidity.¹⁸ Utilisation of FX swaps as a sterilisation tool has the added benefit of being cost-effective for the Bank while simultaneously facilitating efficient funding operations for onshore banks.

In the light of tightening liquidity and rising interbank rates following the taper tantrum in 2013, the Bank also enhanced the reverse repo facility for better facilitation of ringgit liquidity injection. The facility's purpose was twofold: a development initiative to enhance the depth of the Malaysian repo market as well as to increase the number of effective sterilisation tools available. Usage of reverse repos increased during the 2014–15 oil price decline with liquidity imbalances due to portfolio outflows being partially addressed by injecting liquidity equivalent of USD 3.2 billion to the market to aid the normalisation of market conditions.

¹⁵ Malaysia recorded foreign equity and bond flows of –USD 429 million and +USD 570 million respectively in 2016 and 2017

¹⁶ For example, during the period of inflows of 2010–13, the spread between the Overnight Policy Rate (OPR) and the 10-year Malaysian Government Securities narrowed by 2,276 basis points (bp). The spread subsequently widened by 566 bp when the flows reversed from May 2013 till December 2015 (2013 taper tantrum and oil price decline in 2014).

¹⁷ The Bank's net forward position is disclosed on its website.

¹⁸ Net selling of foreign currency through foreign exchange swaps reached a peak of USD 16 billion during the 2010–11 period in an effort to sterilise the large inflows arising from QE.

2.3 FX intervention policy strengthened by onshore market development and better surveillance

Managing risks to financial stability has been the key priority for the Bank when undertaking its intervention operations to manage both exchange rate volatility and domestic liquidity conditions. The effectiveness of interventions can be observed in the improvement in domestic liquidity as reflected in the narrower USDMYR bid-ask spread, which has recorded a lower average of 23 points in 2018, relative to an average spread of 35 points post-taper tantrum (2016–17). In addition, the USDMYR daily volatility recorded a decline by more than half throughout the decade (see Table 2).

Malaysia's international reserves, USDMYR and regional currencies daily volatility Table 2

Events	GFC	QE	Taper tantrum, oil price crash	Oil price recovery	Fed's MP normalisation
Period	Dec 07–Dec 08	Jan 09–May 13	Jun 13–Dec 15	Jan 16–Nov 16	Dec 16–Dec 18
Reserve volatility	1.22%	0.55%	0.55%	0.50%	0.32%
USDMYR volatility	0.43%	0.43%	0.54%	0.59%	0.20%
Regional currencies volatility*	0.54%	0.39%	0.33%	0.35%	0.28%
Events	GFC	QE	Taper tantrum, oil price crash	Oil price recovery	Fed's MP normalisation
Period	Dec 07–Dec 08	Jan 09–May 13	Jun 13–Dec 15	Jan 16–Nov 16	Dec 16–Dec 18

* Basket is derived from equally-weighted currencies including THB, IDR, PHP and KRW.

Sources: Bloomberg, Central Bank of Malaysia's staff calculations.

The effectiveness of FX intervention depends on the stage of market development, which in turn requires continuous feedback from market players, counterparts and effective surveillance. For instance, the Financial Market Committee (FMC), comprising representatives of the Bank and market players, was established in 2016 as a platform to encourage sharing of information and feedback on financial market developments and policies. On the international front, continuous engagement with regional counterparts such as the Executives' Meeting of Asia-Pacific Central Banks (EMEAP)¹⁹ also provided an avenue for sharing knowledge on regional capital flows, market development initiatives and capital flow management policies.

The Bank's market development efforts²⁰ have recently been concentrated more on shifting activities from offshore NDF market to the onshore market as a way to enhance onshore market liquidity. This resulted in an increase of onshore FX volumes,

¹⁹ EMEAP comprises central banks and monetary authorities of 11 economies: the Reserve Bank of Australia, People's Bank of China, Hong Kong Monetary Authority, Bank Indonesia, Bank of Japan, The Bank of Korea, Central Bank of Malaysia, Reserve Bank of New Zealand, Bangko Sentral ng Pilipinas, Monetary Authority of Singapore and Bank of Thailand.

²⁰ Central Bank of Malaysia, *Statement by Financial Markets Committee: Initiative to Develop the Onshore Financial Market*, 2016, www.bnm.gov.my/index.php?ch=en_press&pg=en_press&ac=4316&lang=en.

which have grown by 33% from a daily average of USD 8.0 billion in January – November 2016, to USD 10.6 billion in December 2016–December 2018. To enhance the attractiveness of the onshore market, the Bank granted flexibility for market participants to manage their FX exposures²¹ such as in the dynamic hedging framework (introduced in 2016). Additional hedging flexibilities²² were eventually provided to institutional investors to allow the active hedging and unwinding of their FX positions. Since the inception of the framework in 2016, the daily average of FX forward transactions has increased by USD 0.4 billion or 70%. The Bank has also introduced a new instrument, namely USD Bank Negara Interbank Bills (BNIB)²³ as an additional tool to facilitate short-term foreign currency liquidity management. All in all, these measures have helped to increase onshore market participant capacity to effectively intermediate market flows.

The Bank has also reinforced market integrity via the adoption of an improved market code of conduct. The prudent management of financial market conditions during “risk-off” events continues to be complemented by a sustained focus on strengthening domestic fundamentals and macroprudential measures. This requires the Bank to preserve access to a broad policy toolkit necessary to address financial imbalances and strengthen Malaysia’s resilience to volatile capital flows.

3. Reserves management strategies

3.1 Stronger focus on liquidity amid volatile market landscape

Reserves management practices at the Bank are guided by the long-term investment objectives of capital preservation, ensuring sufficient liquidity to meet foreign obligations, as well as maximising risk-adjusted returns to ensure the sustainability of reserves. During periods of market stress, the value proposition of having a large stock of reserves increases. Conversely, during tranquil times, the opportunity cost of holding reserves rises. In other words, the cost-benefit of holding reserves changes over the business cycle. This in turn influences the Bank’s reserves management strategies with a tendency to err on the side of conservatism and prudence.

The strategic asset allocation process serves to ensure sufficient liquidity and capital preservation. Investments in shorter-term and high-grade assets ensure ample liquidity in meeting trade and financial flows while asset class diversification allows the Bank latitude to seek higher risk-adjusted returns. Liquidity is one of the biggest factors taken into consideration in the Bank’s strategic asset allocation process. To reflect this, the Bank is selective in its investments that exhibit characteristics that provide the Bank the greatest flexibility to enter and exit with minimal transaction costs while maintaining a reasonable risk-return profile.

²¹ Prior to the introduction of dynamic hedging framework, all hedging transactions had to be backed by an underlying asset to prevent unfunded FX trading activities of the ringgit. The liberalisation was the Bank’s gradual approach in further developing the domestic market.

²² Ibid.

²³ This instrument has also the added benefit of High-Quality Liquid Asset (HQLA) classification for the Basel capital ratio computation

The strategic asset allocation process also determines the currency composition of the reserve portfolio. In determining the appropriate level of currency composition, the Bank takes into consideration opportunities to enhance the overall reserve yield against a backdrop of Malaysia's trade patterns. For example, as the size of Malaysia's trade profile with other Asian countries increased, the conviction to hold Asian currencies as part of the reserves universe grew.

3.2 Greater asset diversification to reduce cost of holding reserves and enhance return

The cost of holding reserves is reflected in the differential between interest-bearing foreign currency assets and local currency liabilities, which is closely related to the OPR. Since 2010, the cost of holding reserves has increased, given widening differentials between the relatively low-yield foreign assets (predominantly in USD) and the relatively higher yields of local currency liabilities.

In line with many reserve and sovereign wealth fund asset managers,²⁴ the Bank has gradually expanded its investment universe to encompass assets other than developed market sovereign bonds.

The steady growth of reserves since the Asian Financial Crisis amid a secular decline in global interest rates prompted the diversification of assets. The low yield environment following unconventional monetary policies in the advanced economies added further impetus to the trend in search for better returns. While the majority of reserves exposure remains liquid with a strong overall credit profile, the investment universe includes a small exposure to assets that have higher relative credit, market and liquidity risks for yield enhancement purposes. Furthermore, the increase in credit risk appetite was also reflective of the Bank's strengthened relationship with other central banks through regional cooperation, which helped improved the Bank's confidence in investing in these countries. Going forward, changes in the operating environment, especially following the normalisation of monetary policy in the advanced economies, will require a reassessment of the portfolio allocation to ensure it remains optimal in terms of balancing risk-return and liquidity.

3.3 Outsourcing as means of diversification and knowledge transfer

An element of the Bank's diversification strategy is the outsourcing of a portion of the managed reserves to external fund managers. The External Fund Management (EFM) programme, which started in 1995, was aimed at enhancing returns and providing a benchmark for the Bank's internal investments. In 2005, the EFM programme was enhanced to achieve further diversification benefits and build internal capacity in new asset classes and instruments, through knowledge transfer and enhanced infrastructure and processes in new areas of investment. The programme also served a developmental role in supporting market and industry development. Over time, the EFM Programme has expanded its investments into more sophisticated asset classes and markets such as ABS/MBS, commodities and equities. As internal capacity grows, overlapping mandates were terminated,

²⁴ For example, see the 2018 UBS Annual Reserve Manager Survey.

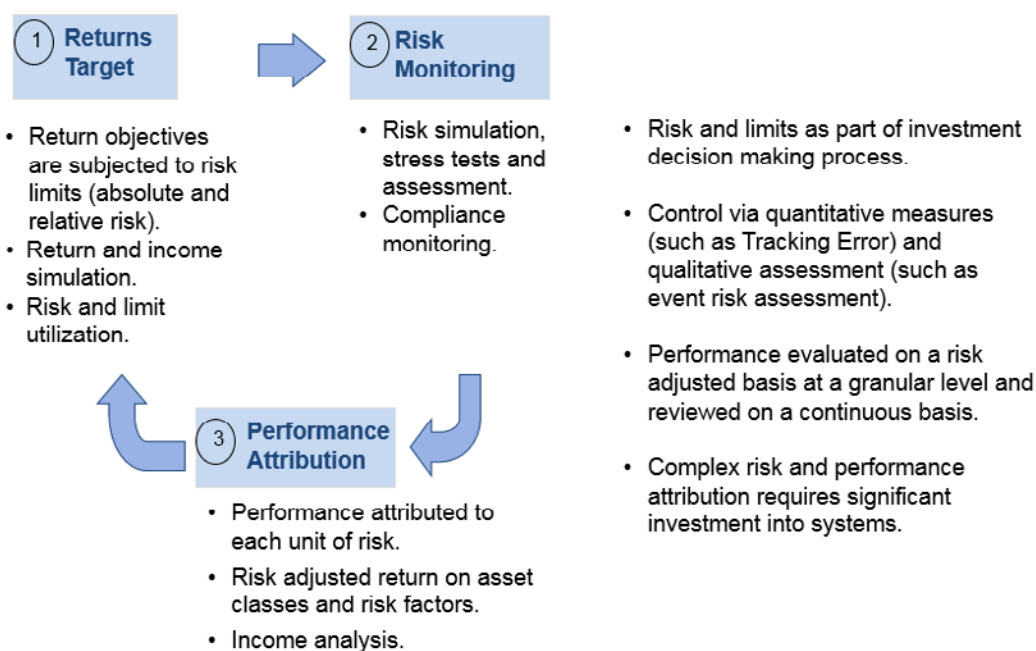
reflecting effective knowledge transfer from the EFMs to the Bank’s internal investment team.

3.4 Risk management framework evolved with asset class expansion

The Bank’s risk management framework has also evolved in tandem with the expansion of asset classes and the associated risks. Improvements were made in the governance structure, systems and staffing. First, in terms of governance, the Board of Directors determines the investment benchmark, which clearly defines the risk-return appetite of the Bank and serves as a yardstick for performance measurement.²⁵ Subsequently, investment decisions within the allowable risk parameters are made to achieve better risk-adjusted returns versus the investment benchmark. Investments are subjected to further stringent risk controls and limits to ensure no excessive risk-taking. A treasury risk section which reports independently to a Deputy Governor on risks and performance of the reserves provides an additional layer of internal control. Periodic reporting of risk indicators, investment exposures, portfolio return and performance as well as compliance with respective limits, are submitted to the management and the Board to ensure that any emerging risks are highlighted and sufficiently mitigated.

Risk Management Framework

Graph 1



Source: Central Bank of Malaysia.

Second, risk measurement and monitoring continue to be enhanced with the implementation of new Treasury systems and the increased technical rigour of risk

²⁵ Under the CBA, guidelines in managing reserves, including the types of assets, must be approved by the Board, which comprises a majority of independent non-executive directors. The Board also provides ongoing oversight on the Bank’s reserve management practices and performance.

assessments. For example, in managing market risk, the use of tracking error (TE) is complemented with other risk measures such as value-at-risk (VaR), portfolio return volatility and information ratio. In managing credit risks within the Bank, greater focus has been given to strengthening the Bank's internal analysis to complement external rating agencies' assessments. This also acts to counter procyclical investment behaviour. There is also more extensive use of stress testing and scenario analysis for a more forward-looking and comprehensive assessment of all emerging risks. This is to address the increased complexity of new asset classes and the potential for risk correlation within the reserves.

Third, the expansion of the investment universe and increased risk profile have been accompanied by strengthening the technical capabilities of staff to manage more complex asset classes. This has been supported by increased investments in staff training and development.

These enhancements and controls have ensured that, despite the foray into higher-yielding asset classes, the overall risk profile of the investment portfolio has remained appropriately conservative. Graph (1) shows the Bank's risk management process.

4. Conclusion

EMEs have continued to deal with the large and volatile two-way capital flows arising from the QE measures in the advanced economies. As the financial markets in EMEs do not have sufficient breadth and depth to absorb the volatility in capital flows, EME central banks have to use a combination of FX tools and capital flow management measures to mitigate risks to its overarching mandates of monetary and financial stability in ensuring a conducive environment for sustainable growth. As a result, the changes in reserves have become a by-product of these measures, although there is some element of precautionary reserves that serve to shore up external resilience during periods of uncertainty.

The Bank recognises the importance of greater international cooperation among EMEs to deal with volatile capital flows. Access to regional financing arrangements has broadened the Bank's range of toolkits to manage these flows. At the same time, initiatives were undertaken to further deepen and broaden the onshore financial market, which will allow for more effective policy transmission to better serve the Bank's goal of promoting financial stability. The Bank also undertook efforts to diversify the composition of international reserves to achieve a better balance between liquidity and risk-adjusted return. This saw the expansion of asset classes with higher relative risks, accompanied by the strengthening of regional cooperation as well as the Bank's investment capabilities and risk management framework.