

Risk Developments and Assessment of Financial Stability in 2016

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Risk Developments and Assessment of Financial Stability in 2016

OVERVIEW

Domestic financial stability remains preserved and well-supported by sound institutions and orderly financial market conditions

Domestic financial stability was sustained throughout the year amid bouts of heightened market volatility. A subdued economic recovery, geopolitical events, shifting expectations on the pace and timing of interest rate normalisation in the United States (US) and continued volatility in crude oil prices were among the major global themes that drove investor behaviour throughout 2016. In the domestic financial markets, portfolio flows largely reflected a broader retreat of funds from emerging market economies (EMEs) coupled with higher investments abroad by domestic institutions to improve diversification. Excessive volatility continued to be largely buffered by the depth of the domestic financial markets and strong local institutional investors which supported orderly market conditions. The lowering of the statutory reserve requirement (SRR) in February also preserved adequate liquidity within the banking system. Overall domestic funding conditions were stable, with improvements also observed in the distribution of liquidity across banks. Financial institutions remained well-capitalised, with sustained profitability lending firm support to domestic intermediation activities.

The Financial Stability Committee (FSC) of the Bank met three times in 2016. The FSC views that key potential sources of risks to domestic financial stability continue to stem from high levels of domestic debt, elevated property prices in some segments of residential property and an oversupply of commercial property, and heightened volatility in financial markets. The FSC

judges that risks associated with household and corporate sector debt are largely contained and current macroprudential measures are adequate. Nevertheless, increased vigilance is required over commercial property developments, loan performance in some business segments and lending activities of non-bank financial institutions.

In 2017, conditions are expected to remain challenging for some businesses and households. Some deterioration in loan performance is probable, but not expected to be broad-based owing to the generally high asset quality of banks, stable labour market conditions and continued economic growth. Financial institutions are expected to continue to intensify their risk management, and proactively identify and manage problem loans, supported by robust provisioning practices. Financial institutions are also expected to uphold the highest standards of market conduct and integrity. Risks from increased volatility in financial markets and the corresponding impact on market liquidity will also continue to be a key focus of the FSC. While stabilising factors such as the depth and diversity of domestic financial markets have so far contained broader spillovers, more pronounced disruptive influences, if left unchecked, could lead to more persistent market dislocations. The FSC will continue to monitor the potential spillovers and unintended consequences arising from the on-going global regulatory reforms. These include the growing significance and complexity in the operations of niche players such as moneylenders, leasing and money services providers, as well as new players in the financial technology (FinTech) segment. The prolonged low interest rate environment will also increase challenges for life insurers to balance the reasonable expectations of policyholders and the long-term sustainability of insurance funds. The FSC will continue to oversee the rigorous conduct of stress testing, including the use of multi-year stress tests, to adequately capture a broad range of risk factors and

their interactions. Based on the most recent stress test results (presented in this Chapter), the Malaysian financial system is expected to remain resilient against severe market, credit and liquidity shocks.

MANAGING RISKS ARISING FROM HOUSEHOLD INDEBTEDNESS

Household debt sustained its moderating growth momentum since 2010

In 2016, the annual growth in total household debt moderated further to 5.4% (2015: +7.3%; 2010: +14.2%), extending the slower pace of growth sustained since 2010 (Chart 1.1). Total outstanding household debt stood at RM1,086.2 billion as at end-2016. The bulk of household debt (62.6%) continued to be secured by properties and principal-guaranteed investments which contribute to wealth accumulation. Demand for financing of house purchases remained relatively robust with outstanding housing loans expanding further by 9.1% (2015: +11%). Other than home purchases for own occupation, households have generally scaled back other borrowings in line with loan affordability. This was observed in the markedly slower expansion in outstanding financing by households for the purchase of non-residential properties (mainly shops) (+3.5%; 2015: +8.1%). In addition, borrowings for the purchase of cars and securities both declined by 0.8% and 1.5% (2015: +3.5% and +1.7%) respectively during the year. Cost pressures, however, continued to weigh on households in urban centres, resulting in slightly higher growth in personal financing and credit card balances which increased by 4.8% (2015: +4.6%) and 3.4% (2015: +1.9%) respectively. The share of these loans to total household debt, nevertheless, remained stable at 18.4% (2015: 18.5%). As at end-2016, total household debt as a proportion of gross domestic product (GDP) was slightly lower at 88.4% (2015: 89.1%), as the growth in household debt slowed below nominal GDP growth for the first time since 2010, potentially marking a turning point for adjustments in household leverage (Chart 1.2).

The capacity of households to service debt has generally remained firm. Average income recorded a modest growth of 5.5% (2015: +5.7%). While the unemployment rate edged higher to 3.5% (2015: 3.1%), this was mainly attributed to the higher number of new entrants to the job market who are less likely to have

accumulated significant debt burdens. Redundancies have been industry-specific rather than generalised, with the oil and gas (O&G) industry being the most affected. Households also maintained strong financial buffers at the aggregate level. Both household financial assets and liquid financial assets remained high on aggregate, accounting for 2.1 and 1.4 times of debt respectively. Notably, household debt grew in line with financial assets with growth rates converging for the first time since 2012 (Chart 1.3). In value terms, household financial assets increased by RM113.4 billion, compared with an increase in debt of RM55.6 billion. High holdings of deposits and deposit-like instruments (which represent 43% of household financial assets) continue to provide households with considerable flexibility to adjust to unexpected changes in income or expenditures. This is more evident among higher-income households which also account for a larger share of household debt (refer to box article on 'Looking Beyond Headline Household Debt Statistics'). Including housing wealth which recorded a compounded annual growth rate of about 10% over the past seven years, the ratio of total household asset to debt remained high and stable at 3.5 times (Chart 1.4).

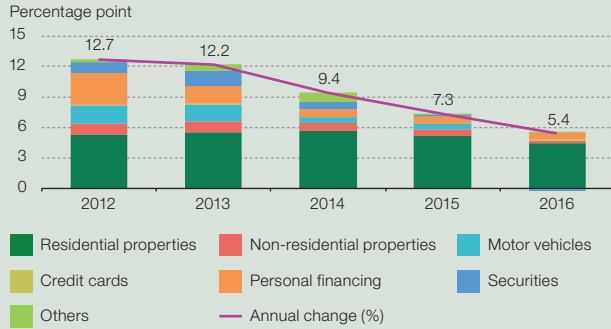
Share of borrowings by vulnerable households reduced further, improving the quality of the overall loan portfolio

As previously reported, households with monthly earnings of up to RM3,000 continue to be more vulnerable owing to low financial buffers and higher leverage. The share of borrowings by these households declined further to account for 22.2% (2015: 22.8%; 2014: 24.3%) of total household debt (Chart 1.5). Bank exposures to this group were similarly lower at 19.1% (2015: 19.6%; 2014: 20.9%) of total bank financing to households. Of this debt, about half is in the form of fixed-rate financing, which mitigates the impact of changes in borrowing costs on debt servicing capacity. In 2016, aggregate leverage (measured as a ratio of outstanding debt to annual income) of this group increased slightly to 8.1 times (2015: 7.7 times). This was largely driven by higher borrowings for house purchases, which grew by 4.2% (2015: +1.6%). It is important that measures announced by the Government to improve the eligibility of lower-income earners for house financing continue to be guided by sound affordability assessments in order to ensure further debt accumulation will remain within prudent levels.

Household debt sustained its moderating growth since 2010

Chart 1.1

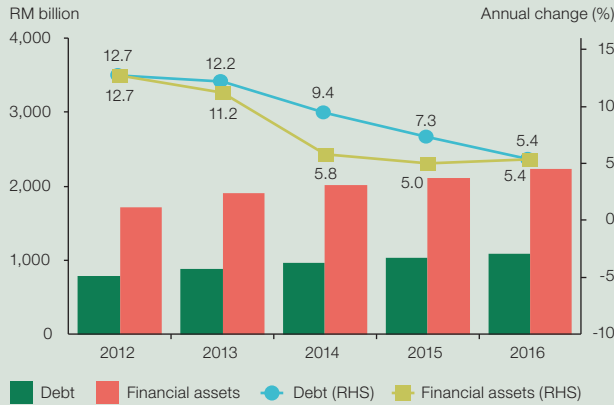
Household Sector: Contribution to Growth in Debt



Growth in household financial assets matched that of household debt

Chart 1.3

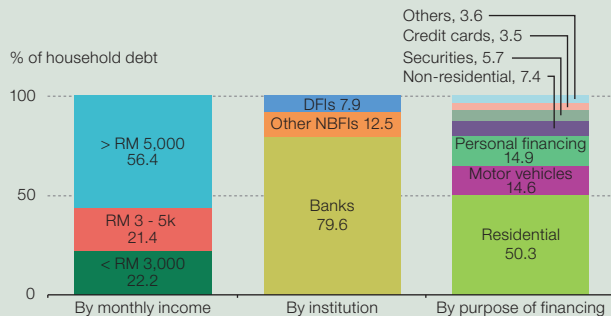
Household Sector: Debts and Financial Assets



Share of borrowings by vulnerable households reduced further

Chart 1.5

Household Sector: Profile of Borrowings

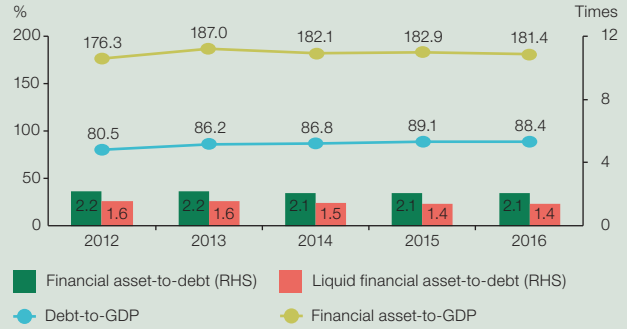


Source: Bank Negara Malaysia, Bloomberg, Department of Statistics, Malaysia, National Property Information Centre, Securities Commission Malaysia and internal computation
* Surrender value

Households maintained aggregate financial assets at two times of debt

Chart 1.2

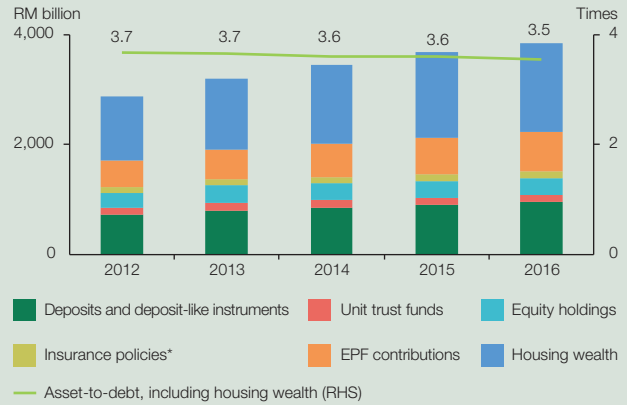
Household Sector: Key Ratios



Including housing wealth, household assets stood above three times of debt

Chart 1.4

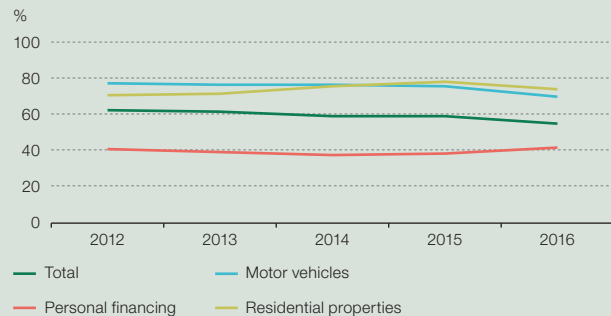
Household Sector: Composition of Assets



Sustained supply of financing to eligible households

Chart 1.6

Household Sector: Approval Rate



Risks to domestic financial stability arising from high household indebtedness continue to be largely mitigated by sound credit underwriting standards and risk management practices of financial institutions. Banks remain the largest providers of financing to households, accounting for about 80% of total household debt. Adjustments to enhance processes for loan affordability assessments, such as adopting prudent debt service ratios and definitions of debt obligations and variable income, are mostly complete. Loan approval rates were marginally lower as some financial institutions raised the minimum net disposable income threshold as a prudent measure to improve the financial buffers of borrowers (Chart 1.6). For households in the more vulnerable segment, this will be important to mitigate the risk of default in the event of an increase in the debt servicing burden or disruptions to income. Banks have also been generally prudent in the pricing of risk despite intense competition in the retail financing segment. Overall, the weighted average lending rate for new household financing was lower at 5.03% in the second half of 2016 (1H 2016: 5.16%). This follows the reduction of 25 basis points in the Overnight Policy Rate to 3.00% in July 2016. Correspondingly, the weighted average base rate also continued to trend lower to 3.61% (December 2015: 3.77%).

Lending practices among non-bank financial institutions (NBFIs) remain a key focus of the Bank's surveillance and engagements with other authorities primarily responsible for such institutions. Two of the largest NBFIs, which account for about 40% of total NBFI lending to households, are development financial institutions (DFIs) supervised by the Bank. The Bank also collaborates closely with the Malaysia Co-operative Societies Commission (SKM) to promote improvements in loan affordability assessments, particularly among the medium- and large-sized credit co-operatives. For the year, the average size of personal financing (which represents the bulk of NBFIs lending) approved by NBFIs was lower at around RM26,000. This compares with an average of RM68,000 in the period prior to the implementation of responsible financing requirements. Outstanding personal financing granted by NBFIs, including major credit co-operatives, however, grew at a faster rate of 4.8% in 2016 (2015: +3.4%; 2012: +30.6%). Concerns remain that some NBFIs may inappropriately ease lending standards, thus calling for continued vigilance and financial education of borrowers.

Since the introduction of the measures on responsible financing in 2012, more prudent debt service ratios

(DSRs) have been observed for new household borrowings granted by banks and NBFIs. In 2016, about 41% of borrowers with newly approved loans had a DSR of less than 40%. Based on a more granular analysis by the Bank, the overall median DSR for outstanding household debt was about 33% as at end-2015 (refer to box article on 'Looking Beyond Headline Household Debt Statistics'). The Credit Counselling and Debt Management Agency (AKPK) also continued to expand its outreach, providing financial counselling and advice to about 121,000 borrowers of banks and NBFIs in 2016. These include advisory and debt resolution programmes delivered for employees in the O&G industry who had been laid off, to assist them in managing their financial obligations. For the year, AKPK received a steady rate of enrolment into its debt management programme, an indication that borrowers are getting the help that they need to proactively manage debt. A significant proportion (45%) of these borrowers earn less than RM3,000 per month.

The overall quality of lending to households was sustained. Impaired and delinquent (loan-in-arrears of between one and three months) loan ratios in the banking system remained low (Table 1.1). The level of total impaired loans, however, increased by 6.3% compared to the previous year, mainly from borrowings for investment purchases of property (including non-residential properties), and personal financing. Based on the Bank's on-going engagements with banks and key NBFI lenders, delinquencies were more pronounced among borrowers who were more reliant on variable income sources, with defaults also observed following job losses in specific sectors.

Banks have sufficient excess capital to absorb potential losses from household portfolio under simulated stressed events

Potential losses to banks in the unlikely event of simultaneous household default incidents under simulated severe assumptions are estimated at RM57.6 billion (Table 1.2). Of this amount, potential losses emanating from the vulnerable household group are estimated at RM11.5 billion. These estimates are well within the excess capital buffers (above the regulatory minimum) of RM124.5 billion held by banks as at end-2016. The estimated losses have not taken into account available savings and financial buffers of individual households or early responses by the banks

Table 1.1

Household Sector, Banking System: Gross Impaired Loans and Gross Delinquent Loans

	Gross Impaired Loans						Gross Delinquent Loans					
	Ratio (%)			Annual Change (%)			Ratio (%)			Annual Change (%)		
	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Overall	1.2	1.1	1.1	-1.0	-1.6	6.3	1.8	1.5	1.4	-5.3	-10.5	1.8
Purchase of residential properties	1.3	1.1	1.1	-3.9	-1.4	6.5	1.4	1.3	1.2	-2.6	1.7	4.6
Purchase of non-residential properties	0.6	0.6	0.7	0.3	-0.1	18.4	0.7	0.7	0.9	6.9	-1.6	29.9
Motor vehicles hire purchase	1.2	1.0	0.9	1.8	-19.8	-11.1	3.9	2.9	2.8	-11.4	-25.5	-5.0
Personal financing	1.7	1.9	2.1	3.4	16.1	19.9	1.1	1.1	1.1	-0.3	2.7	7.6
Credit cards	1.2	1.3	1.4	-6.6	10.8	6.0	1.5	1.3	1.2	1.2	-13.3	-1.6

Source: Bank Negara Malaysia

Table 1.2

Household Sector, Banking System: Potential Losses Based on Severe Assumptions on Probability of Default (PD) and Loss Given Default (LGD)

		Residential properties	Motor vehicle hire purchase	Personal financing	Credit cards	Total ¹
Stressed PD (%) (Baseline PD, %)		11.4 (3.8)	13.9 (4.6)	13.0 (4.3)	14.7 (4.9)	
Stressed LGD (%) (Baseline LGD, %)		40.0 (17.9)	75.0 (51.2)	95.0 (75.3)	95.0 (67.6)	
Potential losses (RM billion)	All borrowers	20.5	15.1	8.2	5.1	57.6
	– Borrowers earning ≤ RM3,000 per month	2.5	4.7	2.3	0.8	11.5
	– Borrowers earning ≤ RM5,000 per month	6.1	8.8	4.0	2.1	23.2

¹ Includes other household loans such as financing for the purchase of non-residential properties and consumer durables

Source: Bank Negara Malaysia

to mitigate losses. Actual losses are therefore very likely to be considerably lower under the simulated scenarios. Banks have also been gradually increasing the level of provisions and regulatory reserves as part of on-going measures to strengthen buffers against potential loss events.

MANAGING CREDIT RISKS IN THE DOMESTIC PROPERTY MARKET

During the year, total exposures of Malaysian financial institutions to the domestic property market expanded by 8% (2012-2015 average: +10%) to RM793.9 billion (Chart 1.7). This amounted to 26.7% (2015: 25.5%) of

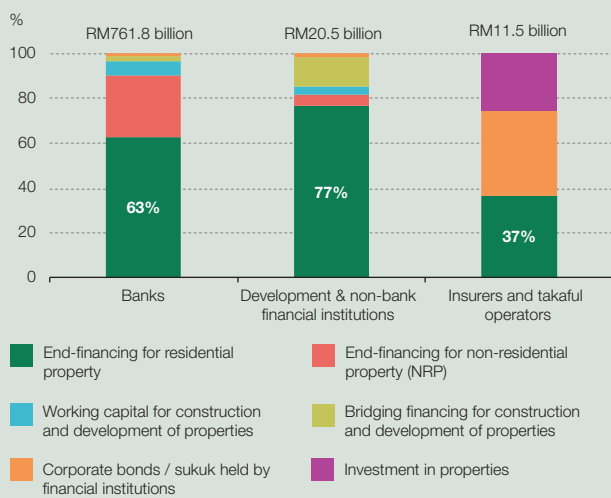
total financial system assets as at end-2016. Banks continue to account for a bulk of the exposures, with about 90% in the form of end-financing for the purchase of residential and non-residential properties. Growth in bank financing for the purchase of residential properties moderated slightly to 9.2% (2010-2015 average: +12.9%) in line with the softer housing market.

Residential property market

In the first nine months of 2016, the annual growth in average house prices – measured by the Malaysian House Price Index (MHPI) – was lower at 5.3%, compared to an average of 9.5% during 2010-2015.

Chart 1.7

Property Market: Financial Institutions' Exposures to the Property Market

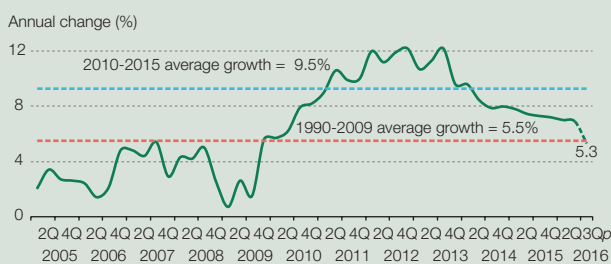


Source: Bank Negara Malaysia and financial statements of non-bank financial institutions

This reflects a broad-based moderation in aggregate house price growth to levels closer to the long-term average house price growth of 5.5% over the period 1990-2009 (Chart 1.8 and Table 1.3). Demand for affordable housing remained strong due to demographic factors such as Malaysia's relatively young labour force and continued urbanisation. The slower growth in house prices therefore was mainly associated with the scaling back of investment purchases, particularly in the higher-priced segments. In the first nine months of 2016, the year-to-date annual growth in overall housing transactions in both the primary and secondary markets

Chart 1.8

Property Market, Residential: Growth of Malaysian House Price Index (MHPI) and Long Term Average



p Preliminary

Source: National Property Information Centre

declined by 14.3% and 10.8% (2015: -4.2% and +2%) in volume and value terms respectively. The decline in the value of transactions was driven by the soft demand in the higher-priced segments. Unsold housing units increased to 14,193 units (2015: 10,163 units) as at end-September 2016, mainly in the more expensive and high-rise segments. Rather than lowering prices, some property developers opted to convert high-rise residential units to commercial accommodations (such as hotel suites) in efforts to clear unsold housing stock.

House prices continue to increase but at a more moderate pace

Despite moderating house prices, houses remain unaffordable for many households. Based on estimates by the Bank, a household with a median income of RM4,585 (without any other debt obligations or savings) can only

Table 1.3

Property Market, Residential: Growth of MHPI by Selected State and House Type

	2014	2015	1Q'16	2Q'16	3Q'16p
	Annual change (%)				
Kuala Lumpur	10.4	7.4	7.3	8.8	5.1
Selangor	9.7	8.1	8.0	8.5	7.5
Johor	13.1	5.5	9.0	7.6	5.5
Penang	13.3	7.6	6.2	5.8	3.4
Malaysia	9.4	7.4	7.0	6.9	5.3
Terraced	10.9	6.2	7.3	7.3	5.6
Semi-detached	7.5	7.8	5.4	4.1	5.0
Detached	7.5	8.8	6.5	7.2	3.7
High-rise	10.7	2.2	8.3	8.2	6.6

p Preliminary

Source: National Property Information Centre

afford to buy a house priced about RM260,000, after taking into account living expenses. This compares with the national average house price of RM334,736 as at end-September 2016, and average transacted house prices of between RM435,000 and RM1.1 million in urban centres. In 2016, the Government mandated all new houses priced up to RM300,000 to be limited to first-time house buyers. While this price level provides a reference point for the pricing of newer launches by developers, thereby facilitating a rebalancing of housing supply towards more affordable segments, the pace of adjustment continues to be slow. In the first half of 2016, only 28.6% (2015: 26.3%) of new launches comprised housing units priced below RM250,000, compared to 45.1% (2015: 32.8%) for units priced between RM250,000 and RM500,000, and 26.3% (2015: 40.9%) for units priced above RM500,000. While additional supply of affordable units is expected to enter the market from on-going initiatives by various government agencies and PR1MA to build more affordable houses, further price adjustments by private developers will be necessary to meet demand and reduce the debt burden for potential house buyers.

Access to credit remains ample for end-financing for affordable houses

Sustained demand for affordable housing supported the continued expansion in end-financing by banks for the purchase of residential properties. During the year, a total of 456,197 (2015: 474,225) housing loan applications were received by banks. The majority (61%) of applications were for the purchase of houses priced below RM500,000, of which half were for houses priced below RM250,000. The rejection rate for housing loan applications fell further to 23.6% (2012-2015 average: 26.1%), reflecting greater alignment between bank lending standards and borrowing behaviour.

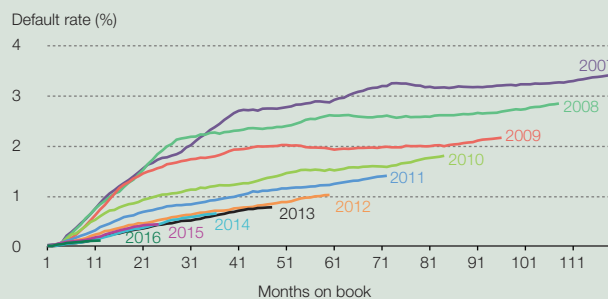
The overall quality of banks' housing loans remains sound, sustained by prudent lending and valuation practices. As at end-2016, about 65% of housing loans had an outstanding loan-to-value ratio of 80% and below, providing banks with a comfortable buffer against negative equity. The profile of banks' housing loans also remained fairly stable during the year. Financing extended for the purchase of houses priced below RM500,000, which are at lower risk of significant price corrections due to sustained strong demand, accounted for 82% of outstanding house financing.

About 72% of housing loan borrowers constituted first-time buyers of houses priced below RM500,000. Overall, about 84% of housing loan borrowers had only one outstanding housing loan. Such borrowers have strong incentives to maintain loan repayments in an event of financial stress or negative equity on their homes, compared to investment buyers. The annual growth in the number of borrowers with three or more outstanding housing loans (a proxy for speculative buyers) slowed further to 1.4% (2015: +3.1%), compared to the much higher expansion of 15.8% last observed in 2010. Such borrowers accounted for only 2.8% (2015: 3%) of total housing loan borrowers. The number of housing loans settled within three years (the typical duration required to complete construction after a property is acquired) – another indication of speculative purchases – similarly eased to 11.9% (2015: 13%) of total settled housing loans.

The vintage default rates for housing loans originated across the years since 2007 continue to show improvement (Chart 1.9). This reflects the stable and improving credit profile of housing loans in the banking system. The share of impaired and delinquent housing loans also remained stable and low at 1.1% and 1.5% respectively. Based on a single factor sensitivity analysis conducted on the housing loan portfolio of banks, excess capital buffers of the banking system would remain sufficient to cover about six times the estimated expected losses. The sensitivity analysis assumed a stressed probability of default (PD) of more than 11% (three times the baseline PD of 3.8%) and a severe correction of 40% in house prices.

Chart 1.9

Property Market, Banking System: Vintage Analysis for Housing Loans



Note: Data include impaired loans written-off by banks

Source: Bank Negara Malaysia

Non-residential property market

Financial institutions' exposures to the non-residential property market accounted for about 27% of total exposures to the overall property market. The bulk of exposures comprised end-financing by banks for the purchase of shops, which accounted for 5.3% of banks' total outstanding loans. Exposures to the office space and shopping complex segments, where oversupply is more acute, only accounted for 3.4% of banks' total outstanding loans. The annual growth in bank financing for the purchase of non-residential properties slowed to 6.1% (2015: +10.6%) (Chart 1.10), partly reflecting the moderation in business activities, particularly in the O&G sector. The construction of mixed property developments further increased linkages between conditions in the residential and non-residential property markets.

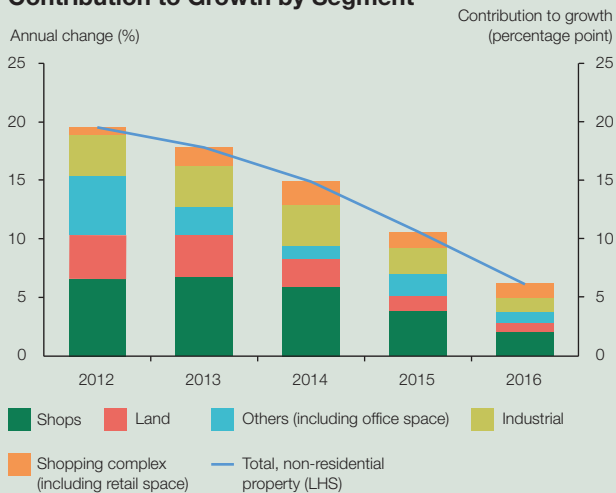
Commercial property transactions (shops, office space and shopping complexes) registered a decline of 29.1% and 15.5% (2010-2015 average: -1.5% and +12.3%) in volume and value terms respectively in the first nine months of 2016. This trend was observed across all the major cities. More modest investor demand for shops was observed, consistent with developments in the housing market given that shops are viewed as an alternative investment asset class to houses. The number of borrowers purchasing multiple shop units or combined shop and residential units grew at a slower pace of 5.8% (2015: +9.4%). Reflecting

slower business activities, overall transactions for shops declined by 28.9% to 9,687 units in the first nine months, compared to 13,630 units during the same period in 2015. The corresponding transacted value also declined by 34.7% to RM7 billion during the period. Adjustments in supply by developers, nevertheless, reduced the overhang of unsold shop units and contained risks of oversupply from rising further. In the first nine months, planned supply and units under construction contracted by 19.4% and 14.7% respectively (2010-2015 average: +4.9% and +12.1%). The adjustment helped support rental rates, particularly in the Klang Valley, at an average of RM4.4 per square foot.

Risks remained heightened in the office space and shopping complex segments, with new supply outstripping recent historical trends despite signs of softer tenant demand, notably in the O&G and financial services sectors amid announced downsizing and cost-control measures¹. In the office space segment, total stock expanded further by 1.2% (2010-2015 average: +4%) to 220.4 million square feet. As a result, the already high average vacancy rate worsened further to 17.1% (2010-2015 average: 16.3%) (Chart 1.11). Planned incoming supply of office space will continue to exert downward pressure on rental rates. The average rental rate of office space in the Klang Valley remained depressed at RM5.90 (2015: RM5.94) per square foot per month, with owners of some older buildings resorting to offering rent holidays to attract or retain tenants.

Chart 1.10

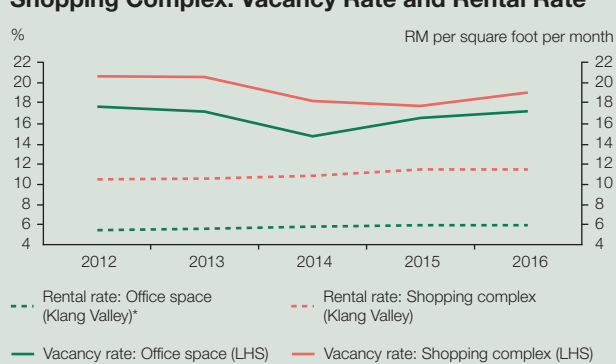
Property Market, Non-residential: Loan Growth and Contribution to Growth by Segment



Source: Bank Negara Malaysia

Chart 1.11

Property Market, Non-residential, Office Space and Shopping Complex: Vacancy Rate and Rental Rate



* As at third quarter 2016

Source: National Property Information Centre, Knight Frank, Jones Lang Wootton and internal computation

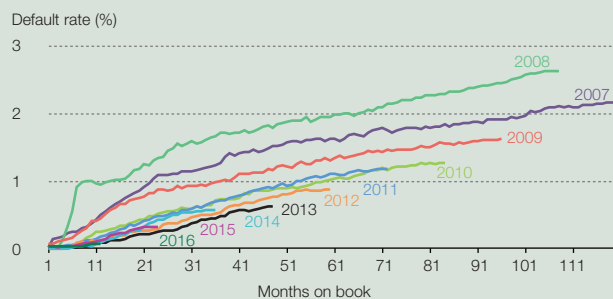
¹ Quarterly Property Market Report by Jones Lang Wootton.

About 5.5 million square feet (2010–2015: +2.8 million square feet per annum) of new office space per year is expected to be added to the Klang Valley office market over the next three years. In the shopping complex segment, total stock expanded further by 7.2% (2010–2015 average: +5.5%) to 155.9 million square feet. The average vacancy rate edged higher to 19% from 17.7% in 2015 (2010–2015 average: 19.5%), partly reflecting consolidation among some retailers. While average rental rates remained stable, an estimated 19.3 million square feet (2010–2015: +16.2 million square feet per annum) of incoming supply of retail space in the next two years is likely to affect tenancy and rental rates.

Direct risks to banks from exposures to the office space and shopping complex segments remain small, supported by sound lending and valuation practices. Similar to housing loans, vintage default rates for loans to purchase non-residential properties originated across the years since 2007 continued to improve (Chart 1.12). The overall delinquency and impairment ratios for end-financing provided by banks for the purchase of non-residential properties also remained low at 0.7% and 1% (2015: 0.4% and 0.9%) respectively. Notwithstanding this, an oversupply of commercial properties, if left unchecked, may lead to deeper imbalances in the property market with spillovers to the other parts of the economy. A comprehensive and carefully-designed national planning policy, including staggering the supply of large office space and shopping complexes, is critical to manage this risk. Measures such as that taken in April 2016 by the Ministry of Federal Territories to tighten approvals for construction of new office buildings are therefore considered prudent.

Chart 1.12

Property Market, Banking System: Vintage Analysis for Loans to Purchase Non-residential Property



Note: Data include impaired loans written-off by banks

Source: Bank Negara Malaysia

MANAGING CREDIT RISK EXPOSURES TO BUSINESSES

In 2016, total outstanding business sector debt grew more moderately by 8.6% (2015: +12.7%) to RM1,326.4 billion or 107.9% (2015: 105.5%; 1998: 131.7%) of GDP. Loans to the small- and medium-sized entities (SMEs) remained healthy, expanding by 9% (2015: +14.6%). New corporate bond and sukuk issuances expanded by 14.2% (2015: +18.8%) (Chart 1.13), mainly in the infrastructure, real estate and telecommunication sectors. Business conditions remained challenging for firms in some sectors. Firms in the O&G-related (including shipping) industries continued to adjust to structural changes following lower commodity prices. In the real estate and automotive sectors, financial performance was weighed down by slower demand, while import-oriented businesses and firms with large foreign currency (FCY) denominated borrowings were more adversely affected by the weaker ringgit.

Despite the challenging economic environment, overall, Malaysian firms continued to maintain reasonably healthy financial positions. The median debt-to-equity ratio of Malaysian non-financial corporations (based on 120 non-financial firms listed on Bursa Malaysia that account for 85% of market capitalisation) improved to 43.6% (September 2015: 46.1%) as at end-September 2016. Aggregate leverage remained below levels observed in EMEs (Chart 1.14). It was also within historical averages both prior to and after the global financial crisis, and below the levels observed just prior to the onset of the Asian financial crisis. About 74% of total outstanding debt comprised domestic borrowings, of which only 6% were denominated in FCY. Domestic business loans grew at a slower rate of 4.8% (2015: +7.7%) in line with developments in the Malaysian economy (Chart 1.15). Access to financing for most businesses remained generally favourable, with little sign of broad-based credit tightening. Overall loan rejection rates were sustained at around 16% (2015: 15%). Some banks, however, were more cautious in lending to sectors weighed down by a weaker outlook on performance, such as the O&G, automotive and real estate sectors. This saw a longer time taken by some banks to approve loans, due to additional loan documentation requirements to support banks' assessments of cash flows and financial buffers of firms in these sectors.

In addition, business exposures to refinancing risks reduced over the years with the lengthening of the average maturity of business sector debt. The average maturity of new corporate bond and sukuk issuances increased from 7.8 years in 2013 to 11.9 years in 2016 (Chart 1.16), while the average maturity of bank borrowings at origination also increased from seven years in 2013 to eight years in 2016. Overall, about 73% of business debt comprised medium- to longer-term debt, hence reducing the susceptibility of firms to significant changes in borrowing costs.

Risks to domestic financial stability from external and foreign currency corporate debt are largely mitigated

Risks to financial stability from external exposures of non-financial corporations continue to be largely mitigated. Total outstanding external debt of businesses – mainly comprising overseas borrowings – expanded at a slower pace of 17.9% (2015: +24.7%) in 2016. Total external debt represented 25.8% (2015: 23.7%) of total business debt or 27.8% (2015: 25.1%) of GDP (Chart 1.17). The higher external debt was attributed to new borrowings and exchange rate valuation effects. Borrowings from onshore financial institutions that are denominated in FCY accounted for another 4.6% of total corporate debt or 4.9% of GDP. Almost half (49%) of external business debt are inter-company obligations (mainly by local outfits of multinational corporations) which pose relatively low funding and liquidity risks. Trade credit and non-resident holdings of ringgit-denominated corporate bonds and sukuk, which accounted for about 22% of total business external debt, also limit business exposures to currency risks. In addition, the share of long-term external borrowings with maturities exceeding one year remained stable at about 70% of total corporate external debt. This further mitigates short-term rollover risk.

Most of the external borrowings of businesses are backed by FCY receipts from overseas operations or hedged with onshore financial institutions. Under the approval regime for FCY borrowings which has been in place in Malaysia for many years, non-financial corporations are required to obtain the Bank's approval for FCY borrowings exceeding RM100 million equivalent from non-resident financial institutions, special purpose vehicles and other unrelated entities. Firms seeking approval for external borrowings must be able to demonstrate adequate debt servicing capacity from

FCY revenue streams or through the use of financial derivatives to hedge against currency risks, thus containing excessive FCY leverage. Borrowings must also be for productive purposes. Financial institutions and corporations must additionally comply with reporting requirements which enable the Bank to monitor significant exposures and obtain early insights into heightened vulnerabilities. Measures announced by the Bank in December 2016 to liberalise the onshore ringgit hedging market further increased the flexibility for firms to manage foreign exchange (FX) risks. Specifically, residents can now actively hedge US dollar and Chinese renminbi exposures up to a limit of RM6 million equivalent per bank following a one-off declaration of non-participation in speculative activity.

Most businesses maintained generally healthy balance sheets and financials that lend continued support to their debt servicing capacity (Chart 1.18). On aggregate, the median interest coverage ratio (ICR) for Malaysian non-financial corporations remained reasonably high at 9.4 times (January-September 2015: 12 times) which is comfortably above the prudent standard of two times. The debt servicing capacity of businesses was further supported by sound liquidity positions, with the median ratio of cash-to-short-term debt (CASTD) at 1.2 times (January-September 2015: 1.4 times). For the 12 months ending September 2016, corporate debt-at-risk (measured as the share of debt borne by firms with an ICR of less than two times), however, increased to 7.7% (2015: 6.2%) of total corporate debt (Chart 1.19). This was mainly attributed to firms in the automotive, real estate and O&G sectors and was within the Bank's expectations given the more challenging conditions in these sectors. Despite the increase, the share of debt-at-risk for Malaysian non-financial corporations remained below that observed in other EMEs.

Major firms in sectors with a weaker credit risk outlook generally maintained satisfactory debt servicing capacity and liquidity positions (Chart 1.20). Sustained demand for affordable housing should provide some support for firms in the real estate sector, with further price adjustments and rebalancing of supply by developers to tap into this demand. The automotive sector, on the other hand, is expected to face continued headwinds with demand likely to remain soft on more cautious household spending. The automotive industry association has forecasted only a marginal growth of 1.7% in sales for 2017, from a negative growth of 13% in 2016. In the O&G-related sectors, recovery is expected to remain slow as firms continue

to adjust to new business and operating norms. While the planned global crude oil production cuts will be positive for O&G firms, the impact is likely to be limited with uncertainty remaining over global demand, the commitment of producers over the longer term to cut production, and the recovery of shale oil output.

On aggregate, financial institutions have relatively small exposures to the O&G-related sectors. This limits the direct impact on domestic financial stability, although some banks are likely to book in higher provisions that may affect profitability. Banks' domestic exposures (including off-balance sheet exposures) to businesses in the O&G-related sectors accounted for about 5% of domestic business exposures or 14% of total capital of the banking system. Including exposures via domestic banks' overseas operations and the Labuan International Business and Financial Centre (LIBFC), exposures to these sectors represented about 6% and 20% of total business exposures and total capital respectively. Banks have progressively increased the amount of provisions against potential credit losses to 7.5% of total exposures to the O&G-related sectors, thus ensuring the ability to absorb losses without impairing bank capital positions. Outside banks, exposures of insurers and takaful operators, and NBFIs to the O&G-related sector are similarly small. Equity exposures of NBFIs to the sector were below 3% of individual NBFI's total assets, while bond and equity holdings of insurers and takaful operators represented less than 1% of total assets or 5% of total capital available. General insurers and takaful operators will likely experience lower premiums in the marine, aviation and transit segment following the deferment of projects and lower production by major O&G companies, but the impact is not expected to be significant (refer to Chapter 3 of this Report). Over the past five years, the contribution was small, averaging at only 4.9% of total gross direct premiums.

Sustained overall quality of business borrowings, although some sectors were more affected by domestic and global developments

The overall quality of business loans in the banking system remained sound. Impaired and delinquent loans have been broadly low and stable (Chart 1.21 and Table 1.4). As noted earlier, loan performance in the O&G, automotive and real estate sectors deteriorated within expectations. The proportion of rescheduled and restructured business

loans remained low at only 0.1% of total business accounts, with a higher number of restructured facilities observed in the O&G-related sectors. The overall impaired business loan ratio, including restructured loans, remained low at 2.4%. Among businesses that raised funds in the domestic capital market, six domestically-rated corporate bonds and sukuk were downgraded during the year, compared to seven downgrades in the previous year. The downgrades mainly reflected sector-specific weaknesses and represented only 1.3% (2015: 1.8%) of total outstanding corporate bonds and sukuk.

Aggregate debt servicing capacity of large borrower groups remains supported by healthy cash buffers and satisfactory financials

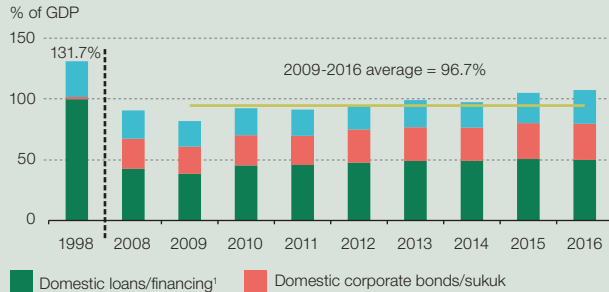
The Bank continues to monitor the financial condition of large borrower groups which could have a material bearing on the stability of financial institutions. Large borrower groups are defined as corporations with credit exposures, including direct financing and holdings of corporate bonds and sukuk, exceeding RM2 billion with the financial institutions. In 2016, exposures of Malaysian financial institutions to large borrower groups accounted for 27.9% (2015: 29.1%) of total business exposures of banks and DFIs. For insurers, such exposures accounted for 79% (2015: 82.1%) of total business exposures of insurers and takaful operators and are mostly highly-rated or Government-guaranteed exposures. Despite more challenging operating conditions, the aggregate debt servicing capacity of the large borrower groups continues to be supported by reasonably healthy cash buffers. The median ICR and CASTD of large borrower groups remained above prudent thresholds at 5.9 times and 1.2 times (January-September 2015: 6.8 times and 1.1 times) respectively. Credit exposures to large borrower groups with ICR below the median declined to 12.8% (2015: 15%) of total business exposures of banks and DFIs, and 18% (2015: 21.9%) of business exposures of insurers and takaful operators.

Aggregate exposures of Malaysian financial institutions to large borrower groups with a high FCY borrowing concentration (>30%) accounted for 9.8% of total credit exposures to businesses. These large borrower groups operate mainly in capital-intensive sectors such as the O&G, plantation and construction-related sectors. Of these, only a few borrower groups were

Higher Malaysian non-financial corporation (NFC) debt driven by new bond issuances

Chart 1.13

Business Sector: NFC Debt-to-GDP Ratio

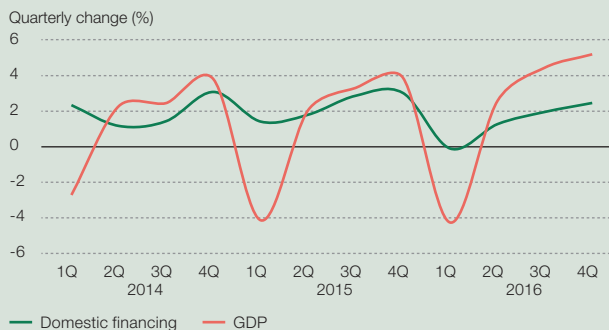


¹ Includes debt owing to locally-incorporated foreign banks

Domestic financing activities broadly in line with domestic economic activities

Chart 1.15

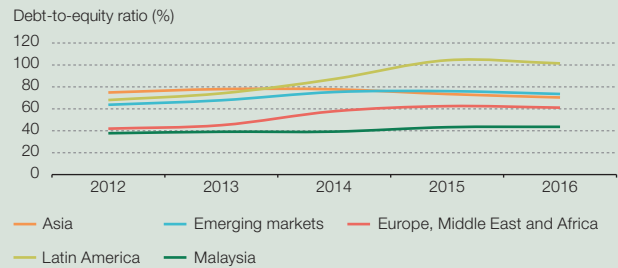
Business Sector: Domestic Financing and Gross Domestic Product



Leverage remains lower than firms in EMEs and regional countries

Chart 1.14

Business Sector: Cross-Regional Comparison of Corporate Leverage

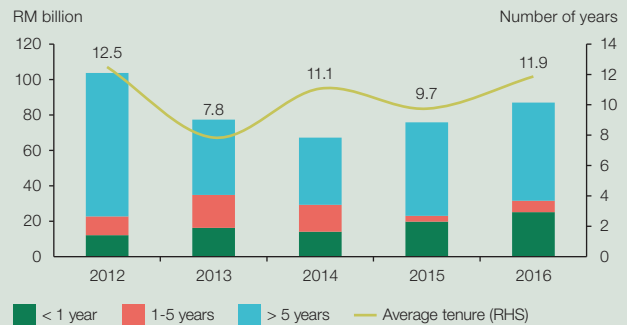


Note: Data for all regions are based on the IMF Global Financial Stability Report October 2016. For Malaysia in 2016, data as at first nine months

New bond issuances mainly have longer maturity, hence reducing rollover risks

Chart 1.16

Business Sector: Maturity of Corporate Bond Issuances

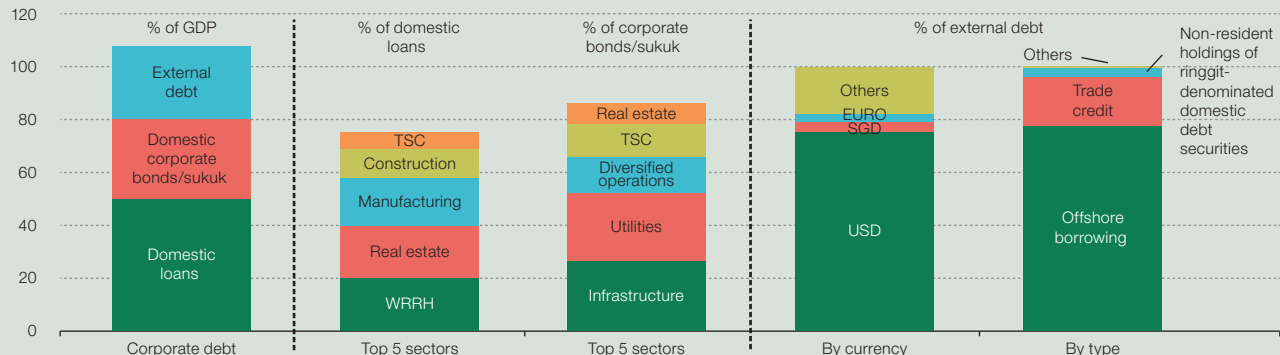


Note: Average tenure is weighted by issuance amount

External NFC debt accounted for about a quarter of total debt, of which half are inter-company borrowings

Chart 1.17

Business Sector: NFC Debt Profile



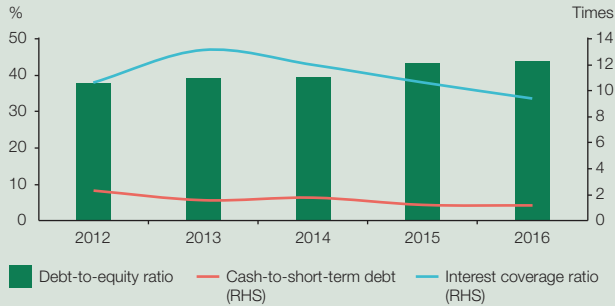
Note: WRRH - Wholesale and retail trade, restaurants and hotels; TSC - Transport, storage and communication

Source: Bank Negara Malaysia, International Monetary Fund, Bloomberg, Department of Statistics, Malaysia and internal computation

Generally healthy financials continue to support debt servicing capacity

Chart 1.18

Business Sector: Leverage, Debt Servicing Capacity and Liquidity Indicators

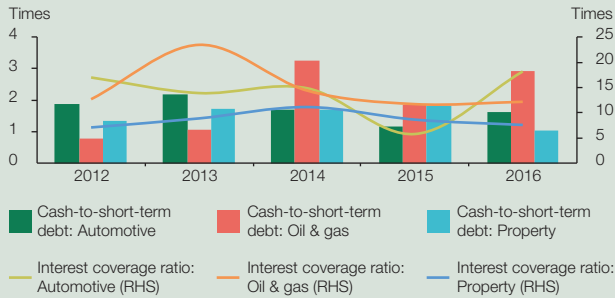


Note: For 2016, data as at first nine months

Satisfactory debt servicing capacity for sectors with weaker credit risk outlook

Chart 1.20

Business Sector: Liquidity and Debt Servicing Capacity Indicators for Selected Sectors

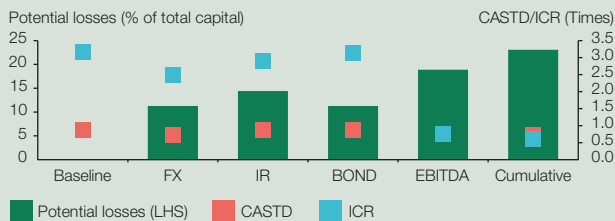


Note: For 2016, data as at first nine months

Excess capital of banks sufficient to cover more than two times the potential credit losses under simulated severe shocks

Chart 1.22

Business Sector: Potential Credit Losses for Large Borrowers Under Stress Test



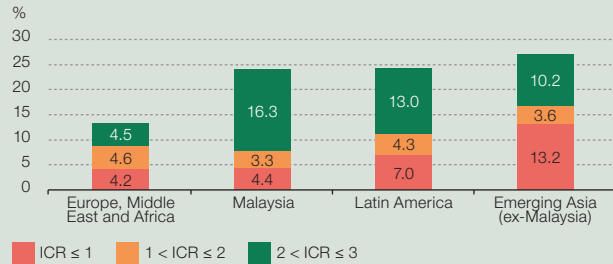
Note: **FX** Foreign currency shock
IR Increase in borrowing costs of RM-denominated loans
BOND Increase in coupon rate for new corporate bond and sukuk issuances
EBITDA Earnings shock

Source: Bank Negara Malaysia, International Monetary Fund, Bloomberg and internal computation

Debt-at-risk for Malaysian NFCs remained lower than most EMEs

Chart 1.19

Business Sector: Debt-at-risk for Malaysia and Selected Regional EMEs

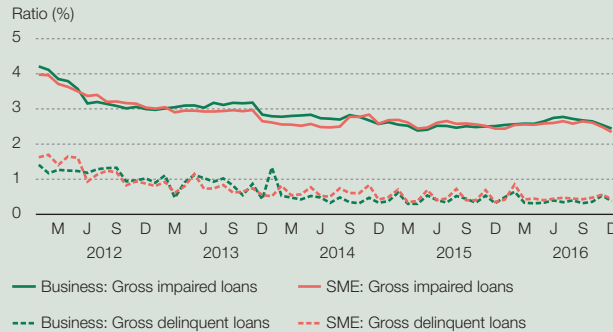


Note: Data for all regions are based on the IMF Global Financial Stability Report October 2016
 For Malaysia, data are for the twelve months ending September 2016

Overall quality of banking system business loans portfolio remains sound

Chart 1.21

Business Sector: Gross Impaired Loans and Gross Delinquent Loans



Overall debt servicing capacity of NFCs expected to remain intact, although higher credit risk is expected in a few sectors

Chart 1.23

Business Sector: Credit Risk Outlook for Selected Sectors

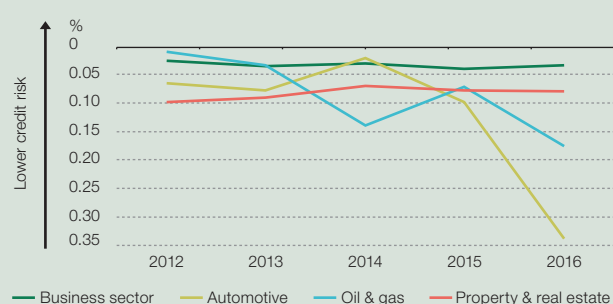


Table 1.4

Business Sector, Banking System: Gross Impaired Loans and Gross Delinquent Loans

	% of Total Domestic Debt ¹ Exposure	% of Total Business Loan	Gross Impaired Loans Ratio (%)			Gross Delinquent Loans Ratio (%)		
			2016	2014	2015	2016	2014	2015
Overall			2.6	2.5	2.4	0.3	0.3	0.4
<i>of which: SMEs</i>		50.8	2.6	2.4	2.3	0.4	0.4	0.4
Real estate activities (including REITs)	18.1	19.5	0.7	1.5	1.5	0.1	0.1	0.1
Wholesale and retail trade, restaurants and hotels	17.2	20.0	1.8	1.8	1.8	0.3	0.3	0.3
Manufacturing	15.8	18.1	5.0	3.9	3.7	0.1	0.1	0.1
<i>of which: Automotive</i>	0.8	0.7	0.5	0.4	0.4	0.01	0.01	0.01
Construction	10.6	11.5	3.0	2.8	2.4	0.2	0.3	0.2
Transport, storage & communication	7.7	6.4	6.1	6.5	6.3	0.8	0.7	1.2
Primary agriculture	5.5	6.3	0.7	1.0	0.8	0.1	0.03	0.04
<i>of which: Palm oil</i>	3.7	4.1	0.5	1.2	1.0	0.02	0.01	0.002
Mining & quarrying	2.3	2.1	0.4	0.2	3.9	0.03	0.03	0.28
<i>of which: Oil & gas²</i>	2.1	1.9	0.3	0.1	4.1	0.006	0.004	0.3

¹ Includes business loan/financing, corporate bonds and sukuk

² Includes upstream and downstream activities

Source: Bank Negara Malaysia

found to have weak ICR and CASTD that are below the prudent thresholds – accounting for 2% of total credit exposures of financial institutions to businesses. A majority of the large borrower groups is expected to be able to support debt repayments in the event of a substantial decline in profitability, further weakening of the ringgit and higher borrowing costs. Under a scenario of simulated severe shocks (up to 50% depreciation in the ringgit, a 75% decline in operating profit and 100 basis points increase in borrowing costs for loans, corporate bonds and sukuk), the cumulative potential credit losses from exposures to large borrowers are estimated to be comfortably within banks' excess capital buffers. These buffers currently stand at more than two times the estimated potential losses (Chart 1.22). The extent of the potential losses is further mitigated by improved underwriting standards and risk management (including loan loss provisioning) practices of banks in recent years. In particular, improved processes within banks for managing exposures that are connected through financial and economic interdependencies have reduced credit

concentrations to large borrowers. Arrangements that are in place, both at individual banks and for the system at large, to assist viable borrowers that are facing temporary operational challenges, also serve to mitigate the effects of any potential deterioration in asset quality. At the system level, such arrangements include the Corporate Debt Restructuring Committee for larger firms and Small Debt Resolution Scheme for SMEs.

The debt servicing capacity of Malaysian corporations is expected to remain broadly intact in 2017. The credit outlook for certain sectors such as the O&G-related, property, and automotive sectors will, however, remain challenging particularly in the first half of 2017. The overall expected default risk for Malaysian corporations based on the Bloomberg Credit Risk measure is low and stable at 0.034% (2015: 0.041%) (Chart 1.23). At this level, the expected default risk is significantly lower than the peak of 0.170% observed during the global financial crisis period. Most industries where financial institutions have the largest credit exposures also continue to record low expected default risk levels.

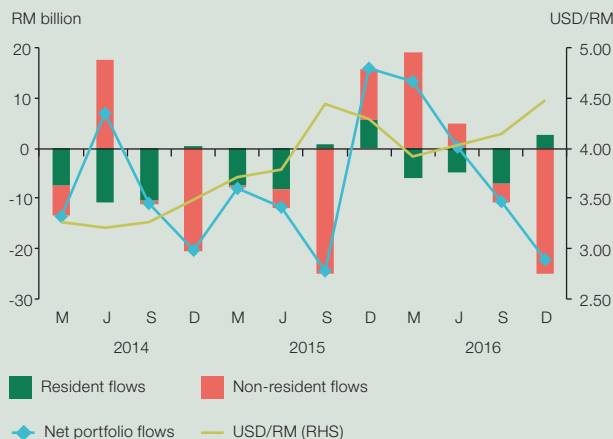
MANAGING RISKS FROM FINANCIAL MARKET VOLATILITY

The global financial markets experienced several episodes of heightened market volatility in 2016. Moderate global growth and inflation, changing expectations on the pace and timing of interest rate normalisation in the US and low global commodity prices continued to weigh heavily on investor sentiment and behaviour. These uncertainties induced bouts of volatility in global portfolio flows. In the second half, global market reactions to the outcomes of the US presidential election, UK referendum and other global political developments further exacerbated episodes of volatility. Domestic market volatility was also influenced by persistent concerns on the impact of oil price movements on the country's fiscal outlook and speculative activities in the ringgit non-deliverable forward (NDF) market.

Malaysia continued to experience two-way portfolio flows that broadly reflected movements of global funds into and out of EMEs and commodity-producing economies. In the first half of 2016, net portfolio inflows by non-residents amounted to RM23.8 billion. This was driven mainly by expectations of a delay in the US interest rate normalisation and further monetary easing in the key advanced economies in the first four months of the year. The increased interest in Malaysia's financial assets also partly reflected the recovery in global crude oil prices and more positive assessments of the domestic economy and fiscal position by global

Chart 1.24

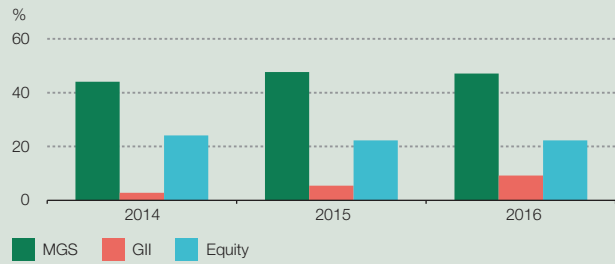
Financial Market: Net and Gross Portfolio Flows and Ringgit Exchange Rate Movement



Source: Department of Statistics, Malaysia

Chart 1.25

Financial Market: Non-resident Holdings of MGS, GII and Equity



Holdings of MGS and GI I are quoted as percentage of total outstanding while holdings of equity is quoted as percentage of total market capitalisation

Source: Bursa Malaysia, Bank Negara Malaysia and internal computation

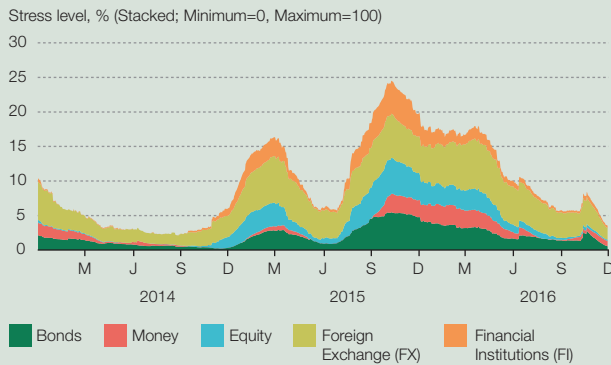
investors. From May onwards, renewed expectations of higher interest rates in the US, heightened geopolitical uncertainty and volatility in global crude oil prices reduced investor interest in emerging market assets, including Malaysia. This led to net portfolio outflows by non-residents of RM28.5 billion in the second half of the year, with heavier outflows recorded in November and early December. Overseas investment activities of domestic institutional investors also contributed to portfolio outflows during the year. Overall net portfolio outflows for the year amounted to RM19.7 billion (2015: net outflows of RM28.2 billion) (Chart 1.24). Non-resident holdings of Malaysian Government Securities (MGS) increased to 51.9% as at end-October, before declining to 47.1% (2015: 47.7%) of total outstanding MGS by end-2016. Non-resident holdings of Government Investment Issues (GI I) meanwhile increased to 9.2% (2015: 5.4%) of total outstanding GI I (Chart 1.25). In the equity market, non-residents sustained their holdings at 22.3% (2015: 22.3%) of total market capitalisation.

Domestic financial markets were orderly and supportive of domestic financial intermediation despite bouts of volatility

With the exception of a surge in the final two months of the year, volatility in the domestic financial markets was generally lower throughout 2016, supported by Malaysian financial institutions and domestic institutional investors (Chart 1.26). This kept bid-ask spreads and turnover ratios largely within a tight range, although spreads widened in the last quarter of the year (Chart 1.27 and Chart 1.28). Correspondingly, MGS yields across the one- to 20-year tenures trended

Chart 1.26

Financial Market: Financial Market Stress Index (FMSI)



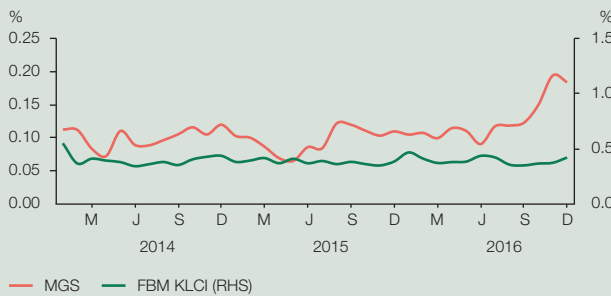
Note: 1.The FMSI is a risk monitoring tool for the financial market that is developed based on the European Central Bank's (ECB's) Composite Indicators of Stress Index (CISS). It is constructed from indicators of volatility in five components of the domestic financial markets - the foreign exchange (FX), equity, bond, money markets and financial institutions (FIs).
2.The stress level at a specific date is expressed as a value between 0 and 100, which signifies the lowest to highest stress level.

Source: Bloomberg and internal computation

lower for most of the year, before rising between 67 basis points to 108 basis points in the final two months (Chart 1.29). As in previous episodes of volatility, yield movements were tempered by higher domestic holdings of public debt securities observed among banks and provident and pension funds which hold a combined share of close to 60% of total outstanding public debt securities. Spillovers to corporate bond yields were limited given the low and stable share of holdings of 2.8% (2015: 2.7%) by foreign investors (Chart 1.30). In the equity market, the FBM KLCI ended the year weaker by 3% with a price-to-earnings ratio of 16.5 times (2015: 18 times), close to the long-term historical average of 16.7 times for the period 2000-2016 (Chart 1.31). Market perceived

Chart 1.27

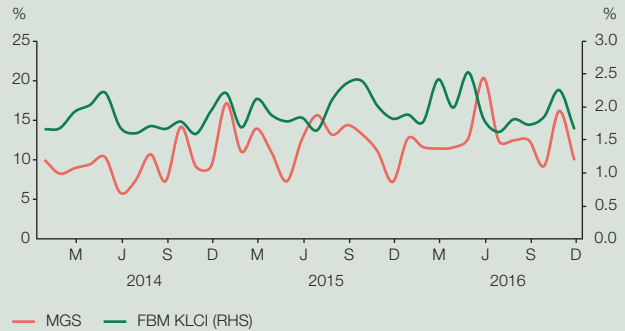
Financial Market: Average Bid-Ask Spreads of FBM KLCI and MGS (% of Mid-price)



Source: Bloomberg, Reuters and internal computation

Chart 1.28

Financial Market: FBM KLCI and MGS Monthly Turnover Ratio



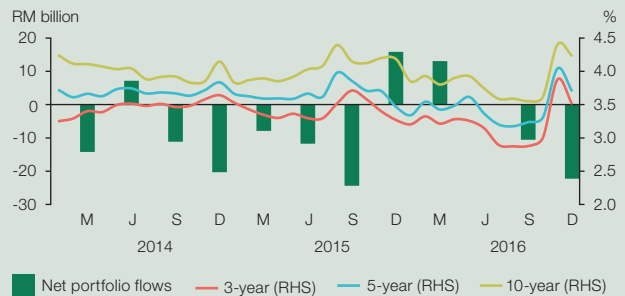
Source: Bloomberg

sovereign risk, as reflected in the credit default swap spread for Malaysia, was lower in 2016 and in line with other regional economies (Chart 1.32).

The ringgit ended the year lower by 4.3% at RM4.4860 against the US dollar. While the ringgit was affected by the same external shocks that drove regional portfolio flows and exchange rate movements, ringgit volatility was exacerbated by speculative activities in the opaque offshore NDF market. Following the US presidential election in November, sentiment in the offshore ringgit NDF market turned bearish. The significant size and non-transparent pricing mechanism in the offshore NDF market in turn spilled over to the onshore FX market and disrupted the domestic price discovery process. This contributed to the misalignment between the exchange rate and the underlying domestic economic fundamentals. Increasing supply and demand imbalances in the domestic FX market over the years further contributed to ringgit volatility. Export proceeds that were not converted into ringgit and increasing

Chart 1.29

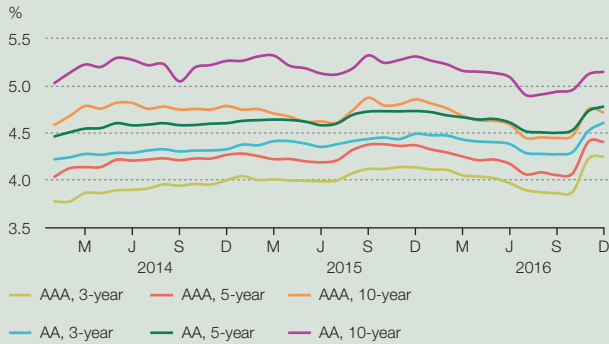
Financial Market: MGS Yields and Quarterly Net Portfolio Flows



Source: Bank Negara Malaysia and Department of Statistics, Malaysia

Chart 1.30

Financial Market: Corporate Bond Yields



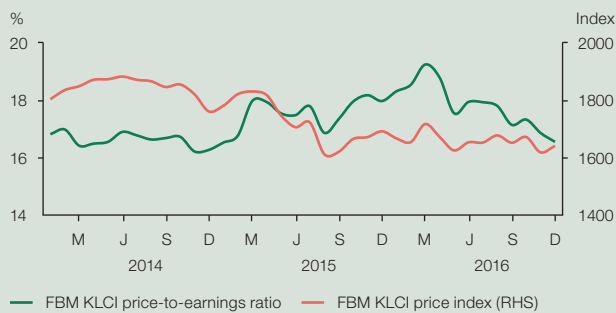
Source: Bank Negara Malaysia

demand for FCY by Malaysian companies investing abroad effectively combined to weaken structural demand for the ringgit. The Financial Markets Committee, chaired by Bank Negara Malaysia, therefore announced several measures in December to deepen and broaden the domestic FX market, including greater flexibilities for onshore FX hedging. Another measure was to require the conversion of FCY export proceeds into ringgit to improve FCY liquidity in the onshore market. These measures were part of a series of market development initiatives to develop a liquid and deep, transparent and well-functioning FX market in Malaysia. Following the measures, average volatility in the onshore ringgit market eased to 5.4% in January 2017 (November 2016: 7.5%). The desired impact of the measures will require more time to materialise.

Risk-taking by Malaysian financial institutions was broadly unchanged. Treasury assets of the banking system expanded slightly by 2.9% to RM369.3 billion

Chart 1.31

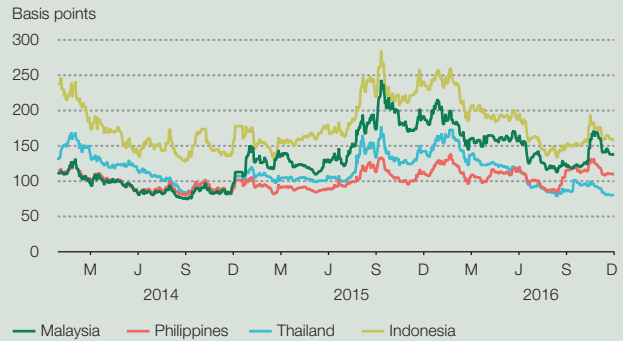
Financial Market: FBM KLCI Price Index and Price-to-Earnings Ratio



Source: Bloomberg

Chart 1.32

Financial Market: 5-year Credit Default Swap Spread

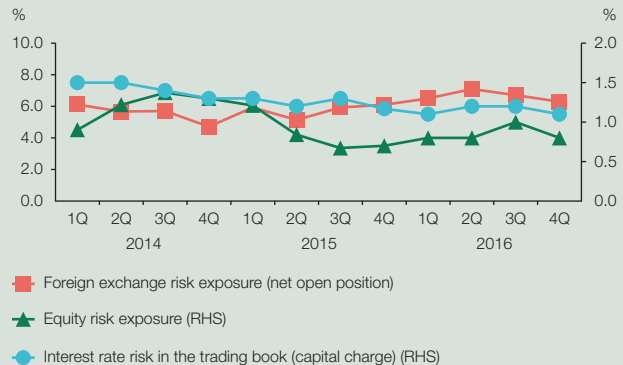


Source: Bloomberg

or 15.1% of total assets. The bulk of the increase reflected the purchase of MGS and GII in the final two months of the year. The size of the trading book remained relatively small at 11.7% (2015: 12.1%) of the treasury portfolio. Duration risk in the trading book also remained low, with changes in market valuations estimated at RM4.1 million for every one basis point change in interest rate. Active risk management and hedging by banks helped to contain market risk exposures within manageable levels (Chart 1.33). Total capital allocated by banks against interest rate risk in the trading book was stable at 1.1% of banks' total capital, while exposures to equity risk remained minimal at 0.8% of total capital (2015: 1.2% and 0.7% respectively). Overall FX risk exposures were almost unchanged at 6.3% (2015: 6.1%) of total capital, remaining at levels consistent with prudent internal value-at-risk and loss limits set by individual banks for each significant currency and all currencies combined.

Chart 1.33

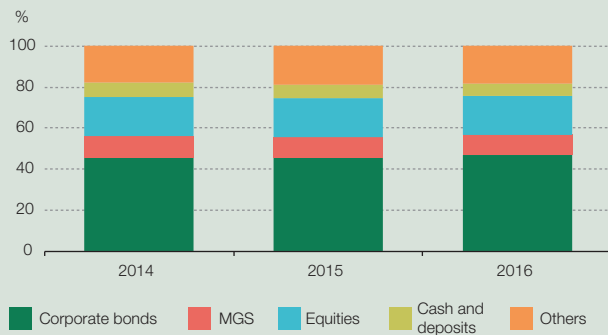
Banking System: Equity, Foreign Exchange and Interest Rate Risks (% of Total Capital)



Source: Bank Negara Malaysia

Chart 1.34

Life Insurance and Family Takaful Sector: Assets Composition



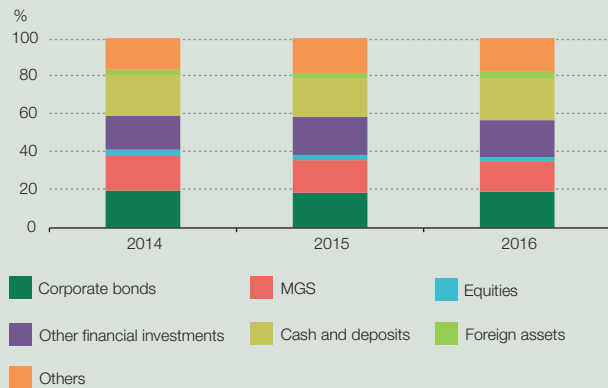
Source: Bank Negara Malaysia

In 2016, banks registered higher net gains totalling RM6.4 billion (2015: RM5.1 billion) from treasury activities – mainly due to higher net gains from disposal and revaluation of debt securities – which accounted for 20% (2015: 17.7%) of profit before tax.

Insurers and takaful operators (Chart 1.34 and Chart 1.35) also maintained prudent risk-taking behaviour. Insurers have a sizable treasury portfolio which accounts for about three quarters of total insurance assets, largely held to match the liability structures of insurance companies. Accordingly, medium- to long-term corporate bonds comprised 93% of total corporate bonds held by life insurers and family takaful operators, while equity holdings were well-diversified across economic sectors and comprised mainly blue-chip stocks. As at year-end, insurers and takaful operators allocated more

Chart 1.35

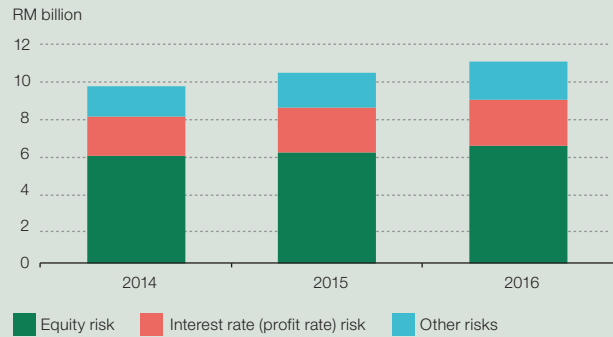
General Insurance and General Takaful Sector: Assets Composition



Source: Bank Negara Malaysia

Chart 1.36

Insurance and Takaful Sector: Market Risk Composition

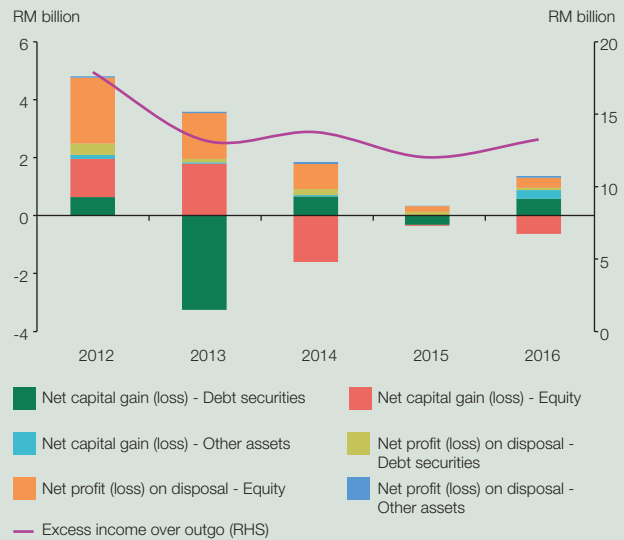


Source: Bank Negara Malaysia

capital for market risks which increased to 13.3% (2015: 12.9%) of total capital available (Chart 1.36). This was mainly attributed to an increase in capital allocated for higher equity investments by several large life insurers (2016: 7.7%; 2015: 7.5% of total capital available). Overall, the trading book delivered a better performance for the insurance industry compared to last year (Chart 1.37 and Chart 1.38). Insurers and takaful operators recorded net profits from trading activities of RM0.9 billion (2015: RM0.3 billion), mostly driven by higher valuations of long-term corporate bonds held by life insurers.

Chart 1.37

Life Insurance and Family Takaful Sector: Profitability and Investment-related Activities

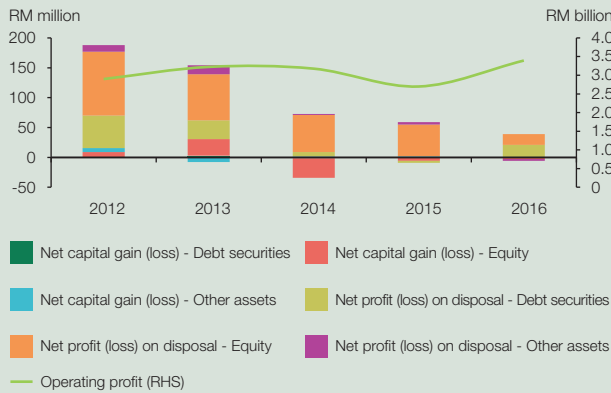


Note: Columns represent investment-related activities of life insurance only

Source: Bank Negara Malaysia

Chart 1.38

General Insurance and General Takaful Sector: Profitability and Investment-related Activities



Note: Columns represent investment-related activities of general insurance only

Source: Bank Negara Malaysia

Aggregate surplus liquidity in the domestic financial system declined to RM185 billion (2015: RM205 billion) in line with overall portfolio movements during the year. This remained supportive of intermediation activities. Of this, banking system liquidity comprising placements, reverse repos and statutory reserves with the Bank remained ample at RM167.4 billion (2015: RM170.9 billion) and could be released to meet liquidity needs. Funding liquidity remained predominantly deposit-based, thus limiting banks' exposures to wholesale funding markets. Deposits accounted for 69.4% (2015: 71%) of total bank equity and all liabilities, and were mostly in ringgit. The profile of depositors was also generally unchanged (Chart 1.39)

Chart 1.39

Banking System: Composition of Deposits by Holder



Source: Bank Negara Malaysia

for the year. Deposits by resident individuals grew at a steady rate of 5.1% (2015: +5.3%), while deposits by resident businesses contracted by 2.3% (2015: +0.9%) amid weaker corporate earnings. Deposits by non-residents only accounted for 4.3% (2015: 4.1%) of total deposits, with FCY-denominated deposits representing a lower share of 7.8% (2015: 8.4%) of total deposits. Interbank funding continued to be kept low, remaining under 6% of total bank funding.

The loan-to-fund (LTF) ratio better captures the more diversified funding structure and broader funding base of banks

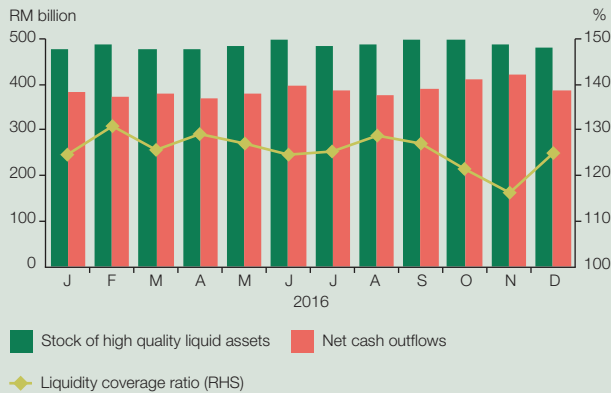
The reduction in the SRR in February helped to improve the distribution of liquidity within the banking system. Since then, competition for deposits, in particular institutional deposits, has abated. During the year, banks continued to issue medium-term instruments (both in ringgit and FCY) that better matched the asset maturity profile. This was also driven in part by the anticipation of the Net Stable Funding Ratio (NSFR) requirements under the Basel III liquidity framework (discussed further in Chapter 2). In 2016, banks' equity and debt instruments expanded by 3.9%, close to the rate of banks' asset expansion. Such instruments accounted for 12.6% of banks' total funding and contributed towards further reducing maturity and currency mismatches in banks' funding structures. The loan-to-fund (LTF)² ratio, which better reflects the broader funding base of banks, stood at 84.3% (2015: 83%) at end-2016. Including equity in the funding base, the ratio stood at 75.3% (2015: 74.6%) (refer to box article on 'Evolving Dynamics of Banks' Funding and Liquidity Management'). The banking system Basel III Liquidity Coverage Ratio (LCR) stood at 124.8% at end-2016, well above the transitional minimum regulatory requirement of 70%. About 80% of banks already record LCR levels in excess of 100% (Chart 1.40).

The overall cost of funds was lower, reflecting the reduction in the SRR, easing of deposit competition and reduction in the Overnight Policy Rate in July 2016. Interbank rates trended lower following these developments (Chart 1.41). The quoted short-term fixed

² Fund comprises deposits and all debt instruments (including subordinated debt, debt certificates/sukuk issued, commercial papers and structured notes).

Chart 1.40

Banking System: Basel III Liquidity Coverage Ratio



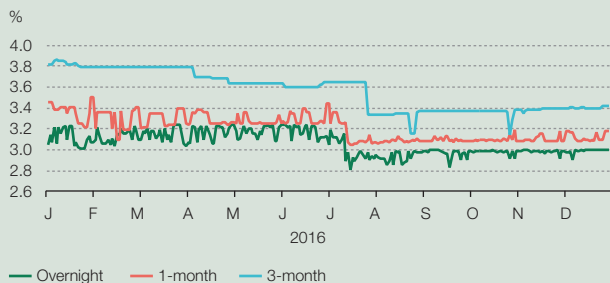
Source: Bank Negara Malaysia

deposit rates for selected large corporate depositors also eased between 35 basis points and 75 basis points during the year, to levels which were last seen in 2014 when total deposit growth was stronger at about 8%.

Onshore USD liquidity conditions were tighter during the year particularly following the US presidential election. The large portfolio outflows in the final two months of the year exerted some pressure on short-term USD funding liquidity (Chart 1.42). The spreads on short-term onshore USD liquidity as reflected by the USD implied yield spread above the London Interbank Offered Rate (LIBOR) widened to 134 basis points as at end-2016 (2015: 68 basis points). The spreads on long-term USD liquidity, as reflected by the 5-year cross-currency basis swap spreads, edged higher to 93 basis points in mid-December before easing to 68 basis points (2015: 75 basis points) by year-end. The tighter conditions in short-term onshore USD

Chart 1.41

Financial Market: Ringgit Interbank Rates



Source: Bank Negara Malaysia

liquidity did not significantly affect banks. Some banks also actively used FCY cash management strategies to capitalise on short-term rate differentials, amid increased market volatility in the final quarter of the year. On a net basis, the banking system was a net FCY borrower in the interbank market (RM9.2 billion or 2.6% of FCY liabilities). This was mostly reflective of interbank placements by the parents of locally incorporated foreign banks (LIFBs) in Malaysia as part of group-wide liquidity management strategies. In contrast, the larger domestic banking groups (DBGs) generally remained as net lenders in the FCY interbank market. The primary sources of FCY funding were from customer deposits and long-term term FCY borrowings, which accounted for 49.8% of the total FCY liabilities. This was more than sufficient to fund banks' long-term FCY-denominated loans. The FCY LTF, although on an increasing trend, remained low at 52.5% (Chart 1.43).

Chart 1.42

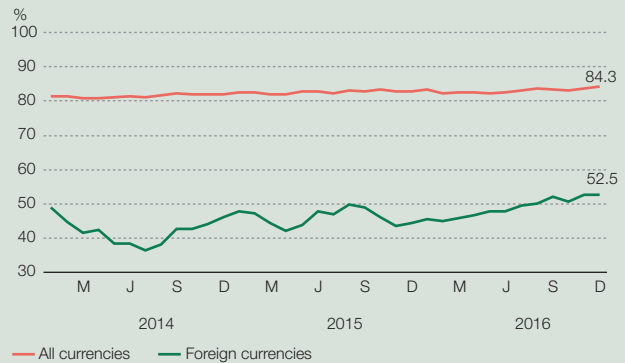
Financial Market: USD Implied Yield Spread Above Libor and 5-year USD/RM Cross-currency Basis Swap Spread (CCBS)



Source: Bank Negara Malaysia

Chart 1.43

Banking System: Loan-to-Fund Ratio by Currency



Source: Bank Negara Malaysia

MANAGING CONTAGION RISK FROM EXTERNAL EXPOSURES AND OVERSEAS OPERATIONS

Counterparty risk from financial institutions' external exposures

Changes to the external balance sheet of Malaysian banks (including entities in the LIBFC) were in line with regional economic developments in 2016. External assets declined by 3.4% to RM248.2 billion while external liabilities grew by 7.1% to RM423.8 billion (2015: +11.3% and +9.4% respectively) (Chart 1.44). External assets and external liabilities of Malaysian banks accounted for 10.2% and 17.3% of banks' balance sheets for the year (2015: 10.9% and 16.8% of total banking system assets and funding respectively). The contraction in external assets mainly reflected a reduction in intra-group placements by banks. These were partly due to on-going adjustments to limits applied on exposures with related banking counterparties under domestic standards on single counterparty exposures. Such exposures are subject to a maximum cap of 50% of a bank's total capital beginning 1 January 2017.

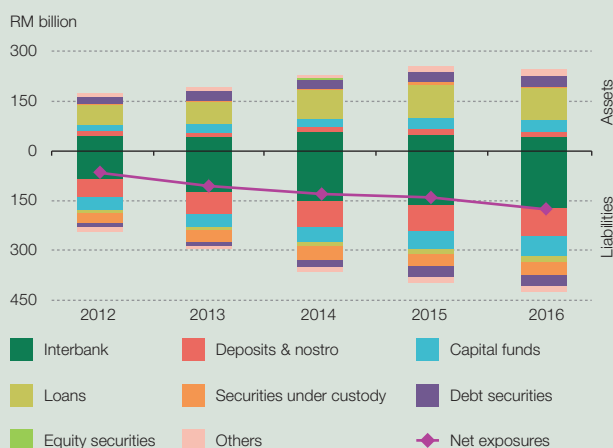
Short-term external liabilities of banks remain driven by centralised liquidity management operations and strong presence of LIFBs

On a net basis, external liabilities of Malaysian banks widened to RM175.6 billion (2015: RM138.9 billion). A large part of this consists of capital funds maintained by LIFBs in Malaysia and securities held under custody which present limited credit and liquidity risks to LIFBs (Chart 1.45). Other components include non-resident deposits and interbank funding. Thus far, there has been limited evidence of large scale withdrawals of such funds even during periods of heavy portfolio outflows. In contrast, DBGs maintained a net external assets position of RM4.1 billion (2015: RM10.5 billion) (Chart 1.46). Mirroring the position of LIFBs, the bulk of external exposures of DBGs comprise capital funds in overseas subsidiaries and branches, and intra-group placements of surplus liquidity as part of centralised liquidity management practices.

The structure and key activities associated with Malaysian banks' external exposures have remained largely unchanged. Liquidity continues to be centrally

Chart 1.44

Banking System: External Assets and Liabilities



Note: Banking system includes entities operating in LIBFC
 External liabilities = External debt (interbank + deposits & nostro + loans + debt securities) + capital funds + securities under custody + others

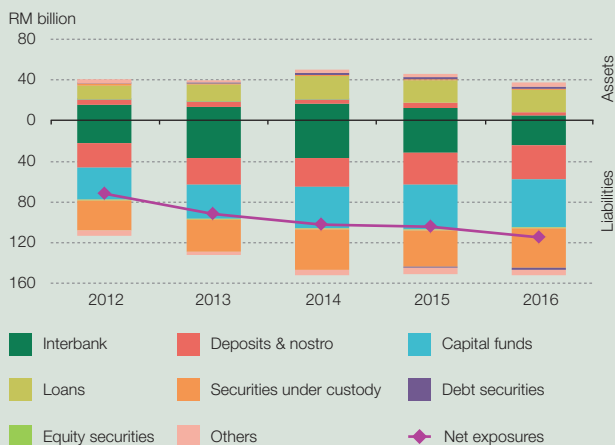
Source: Bank Negara Malaysia

managed at the head offices to optimise relative funding advantages across a group's operations. At an institutional level, banks are however expected under domestic regulations to manage liquidity gapping positions. This includes taking prudent steps to secure adequate alternative liquidity sources to reduce excessive reliance on intra-group funding. Geographically, the bulk of banks' external exposures continues to be with counterparties based in Asia, mainly Singapore and Hong Kong SAR, and are largely denominated in the US dollar (Chart 1.47 and Chart 1.48).

Despite the strong regional presence of domestic banks, the potential for spillovers from combined external credit and funding shocks to the Malaysian banking system remains low. The Bank's network contagion analysis of Malaysian banks' cross-border exposures to major banking counterparties showed that the simulated contagion impact arising from a hypothetical distress scenario in Singapore, to which Malaysian banks have the largest exposures, would not cause a system-wide distress in the sample banking systems. However, a simultaneous hypothetical distress scenario originating from the two large international financial centres in the region is more likely to have wider spillovers along with the emergence of new contagion paths (Diagram 1.1). This would indirectly impact the Malaysian banking system if other major banking systems are materially impacted. The simulations used aggregated data to treat each banking system as a single foreign

Chart 1.45

Banking System: External Assets and Liabilities of LIFBs

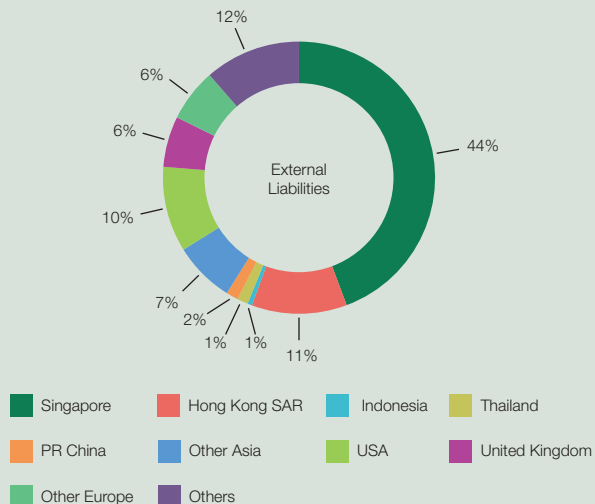


Note: Banking system includes entities operating in LIBFC
Source: Bank Negara Malaysia

counterparty and therefore, assume a widespread default on cross-border exposures by all individual banks within a country. While the likelihood of such extreme events occurring in a contemporaneous and homogenous manner is low, the stringent assumption was used to estimate the maximum potential contagion impact arising from multiple credit defaults and funding shocks materialising simultaneously, disregarding the effects of

Chart 1.47

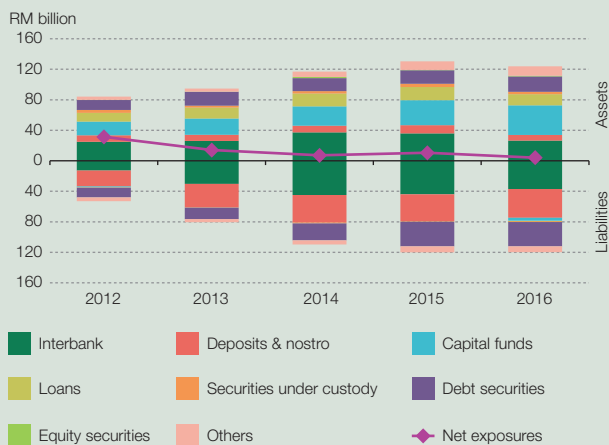
Banking System: Composition of External Liabilities by Location



Note: Banking system includes entities operating in LIBFC
Source: Bank Negara Malaysia

Chart 1.46

Banking System: External Assets and Liabilities of DBGs



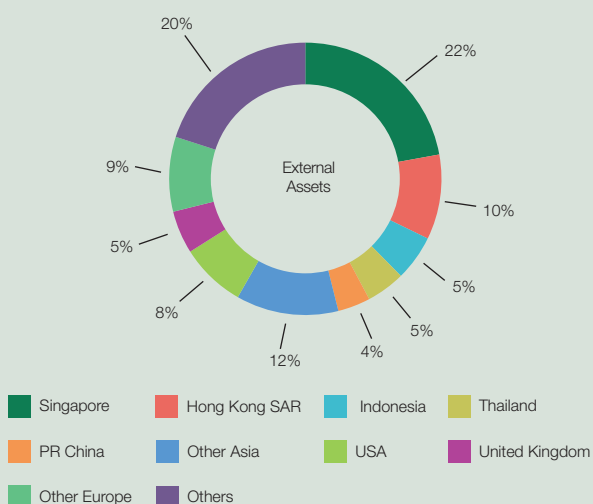
Note: Banking system includes entities operating in LIBFC
Source: Bank Negara Malaysia

credit risk transfers, loss mitigation response by banks or policy intervention by authorities. This also allows an assessment of both the direct external contagion and its amplified effects across banking systems as a result of indirect spillovers due to network externalities.

In the insurance sector, external claims are predominantly in the form of general reinsurance

Chart 1.48

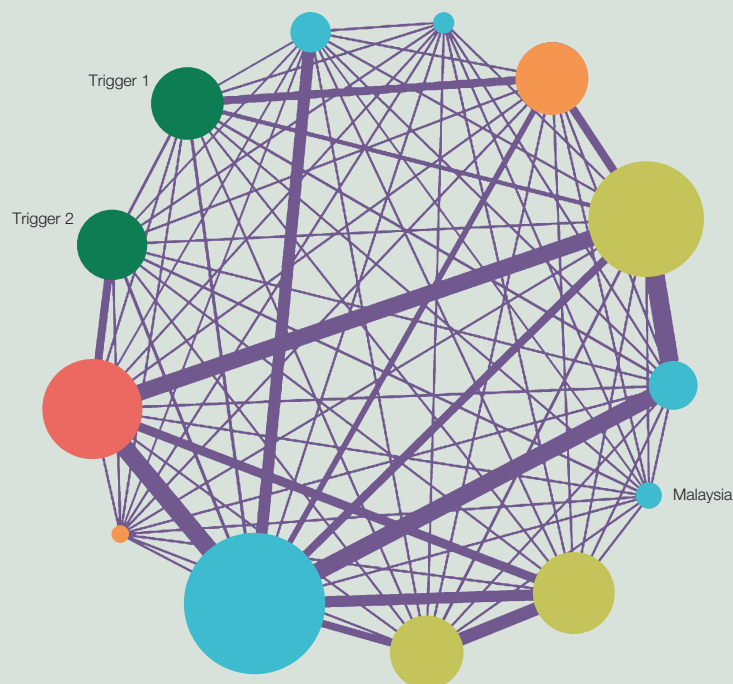
Banking System: Composition of External Assets by Location



Note: Banking system includes entities operating in LIBFC
Source: Bank Negara Malaysia

Diagram 1.1

Banking System: Effects of Simultaneous Hypothetical Distress Scenario Originating from International Financial Centres



Banking system distress occurring after nth round of contagion

1st 2nd 3rd No distress

Note: Each node represents the banking system of a country from the sample population (13 in total, including Malaysia). The size of the node represents the relative measure of cumulative capital losses arising from simulated credit and funding shocks in all contagion rounds. The width of the lines denotes the relative degree of interconnectedness between two banking systems, as measured on a net cross-border exposures basis. For further information, refer to the box article on 'External Connectivity and Risk of Contagion to the Malaysian Banking System' in the 2013 Report.

Source: Bank Negara Malaysia

exposures. As at end-2016, general insurers had ceded 15.4% of total business underwritten to (re)insurers overseas (Chart 1.49), mostly to the US and European (re)insurers headquartered in Germany, Switzerland and the UK (Chart 1.50). This represents 22.6% of total capital available. Reinsurance counterparty risks remain stable and low with major global reinsurers maintaining strong ratings and sound financial positions. Future capacity of major global reinsurers to underwrite new risks is also expected to remain broadly intact, with added support from overall improvements in performance. These have further expanded total capital of global reinsurers, estimated at USD595 billion (2015: USD565 billion) as at end-September 2016³. Apart from reinsurance exposures, external assets of Malaysian insurers and takaful operators remained small at less than 5% of the industry's total assets or 13.5% of the industry's total capital. Insurers generally remain cautious in expanding their investments abroad,

controlling such exposures within relatively low internal investment limits and focusing on the more liquid equity markets in Asia (Chart 1.51).

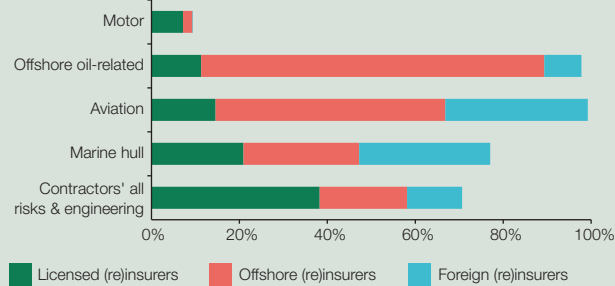
Overseas operations of domestic banking groups

The overseas operations of DBGs continue to remain generally profitable and financially sound. Despite weaker earnings in line with slower regional growth, overseas operations contributed between 4.3% and 25% (3Q 2015: between 10% and 25%) of total group profits of individual DBGs. Capitalisation levels, as at end-September 2016, remained high, ranging between 10.9% and 19.3% (3Q 2015: between 9.2% and 19.8%). This continues to be supported by strengthened

³ As estimated in the Reinsurance Market Outlook report by Aon Benfield.

Chart 1.49

Insurance and Takaful Sector: Reinsurance Ceded Ratio



Source: Bank Negara Malaysia

Chart 1.50

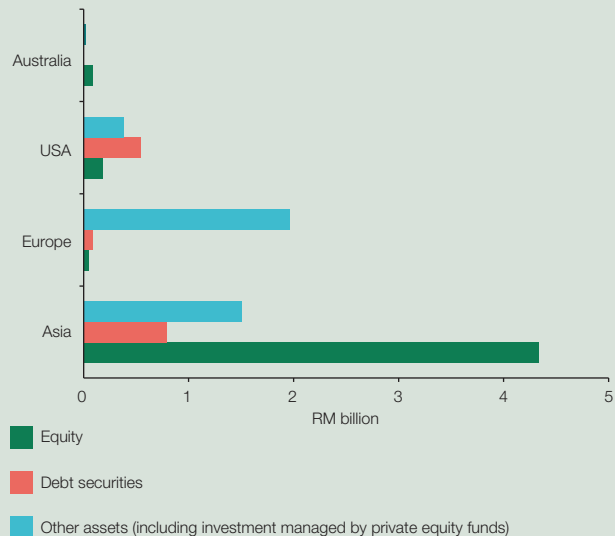
Insurance and Takaful Sector: Foreign-Based Reinsurance Exposures by Major Countries



Source: Bank Negara Malaysia

Chart 1.51

Insurance and Takaful Sector: External Investment Exposures by Region



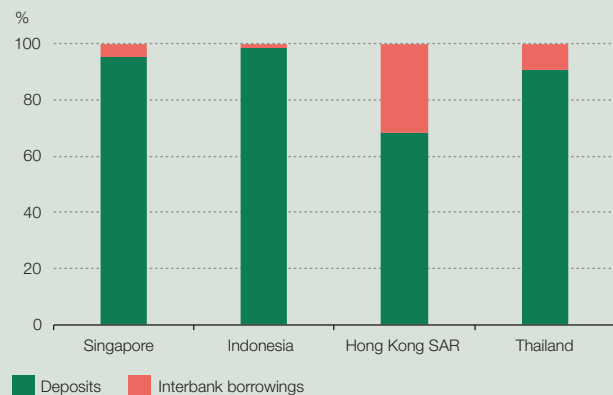
Source: Bank Negara Malaysia

oversight arrangements and group-wide risk management, including more comprehensive stress tests, which have a key role in limiting the transmission of risks to the Malaysian banking system. The overseas operations of DBGs remain largely focused on traditional lending activities and are predominantly funded by local currency deposits (Chart 1.52). This reduces potential risks associated with cross-border funding and currency mismatches. Liquidity buffers remain adequate, with the liquidity coverage ratios of major subsidiaries of large DBGs comfortably above the minimum regulatory requirement in the respective jurisdictions.

During the year, DBGs expanded further their overseas operations and regional footprint. Total assets of overseas subsidiaries and branches of DBGs (overseas assets) grew by 7.2% on an annual basis to RM559.3 billion at the end of the third quarter of 2016. This accounted for a higher share of total assets of DBGs (24.3%; 3Q 2015: 23.5%). At the institutional level, the share of overseas assets ranged between 0.1% and 37.8% of total assets of individual DBGs. Notwithstanding the contraction of 2.2% in loan growth during the period, loans, largely to retail and SME segments, continued to account for the bulk (60.4%) of total overseas assets. More than half of the retail loans are secured loans (for the purchase of houses and cars) (Chart 1.53 and Chart 1.54). These exposures remain largely concentrated in Singapore (47%) and Indonesia (23%), where DBGs have significant presence (Chart 1.55).

Chart 1.52

Banking System: Funding Structure of Selected Overseas Operations

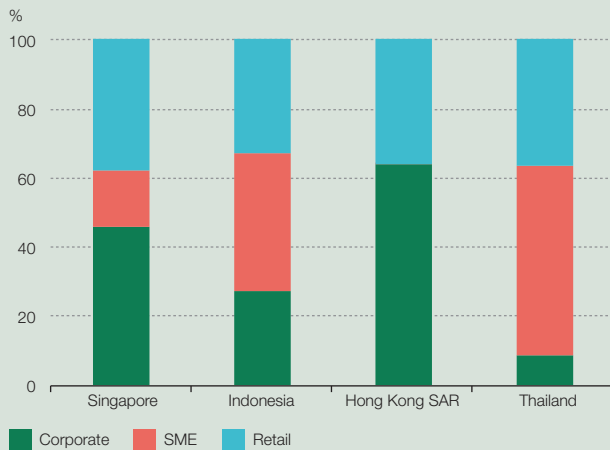


Note: Data as at end 3Q 2016

Source: Bank Negara Malaysia

Chart 1.53

Banking System: Loan Composition of Selected Overseas Operations



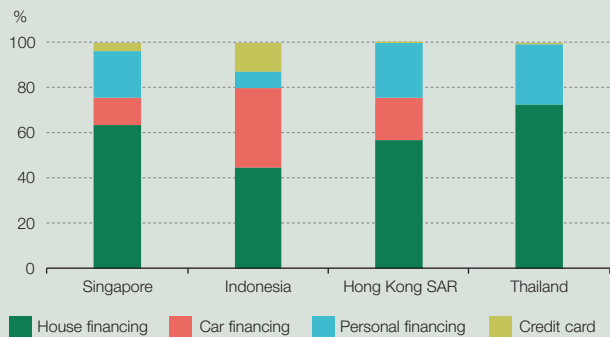
Note: Data as at end 3Q 2016

Source: Bank Negara Malaysia

The overall quality of overseas assets remained broadly intact, despite the emergence of sector-specific stresses during the year. As expected, higher levels of impairment were recorded from exposures in Indonesia and Singapore to selected borrowers and corporations that were more affected by the decline in oil prices and slower economic conditions. Consequently, the median gross impaired loans ratio increased to 3.2% (3Q 2015: 2.2%), with a wider distribution across individual entities (ranging between 0.1% and 9.2%; 3Q 2015: ranging between 0.1% and 5%) (Chart 1.56). On aggregate, exposures of overseas operations to the O&G-related (including shipping) sectors remained small at 0.8% of total overseas assets.

Chart 1.54

Banking System: Retail Loan Composition of Selected Overseas Operations

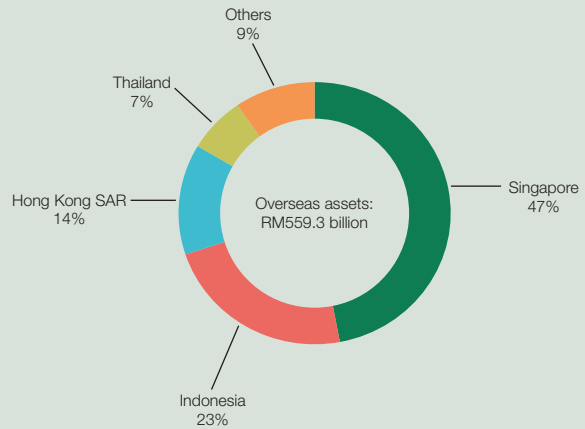


Note: Data as at end 3Q 2016

Source: Bank Negara Malaysia

Chart 1.55

Banking System: Asset Composition of Overseas Operations of DBGs



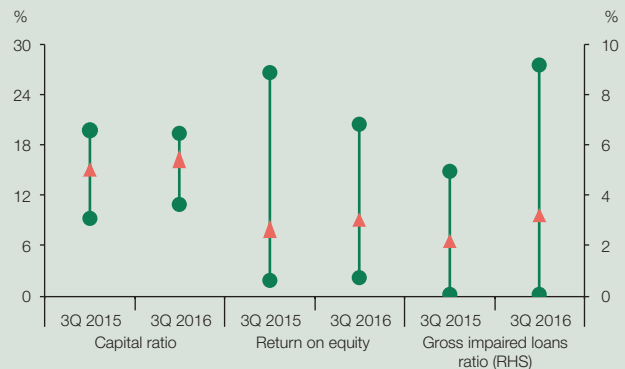
Note: Data as at end 3Q 2016

Source: Bank Negara Malaysia

DBGs have taken proactive measures to manage the quality of overseas balance sheets, including: (i) pre-emptively restructuring loans for borrowers facing temporary difficulties; (ii) increasing provisions for exposures to more affected businesses; (iii) tightening underwriting standards; (iv) enhancing monitoring of higher risk credits; and (v) regularly updating the stress tests to proactively manage capital and earnings performance. As in previous years, the Bank continued to regularly engage host regulators through established supervisory colleges and bilateral meetings. These platforms, which have been in place for many years now, allow for in-depth discussions on supervisory issues among the Bank and host

Chart 1.56

Banking System: Range of Key Financial Soundness Indicators of Selected Overseas Operations



Source: Bank Negara Malaysia

regulators. It also facilitates coordinated supervisory responses to emerging issues. Under its consolidated supervision framework, the Bank conducts on-site examination, at least annually, on significant overseas operations of DBGs. This is supported by submission of information on the financial performance and developments in the risk profile of overseas operations of DBGs at regular intervals to the Bank. At the regional level, the cross-border crisis management and resolution framework put in place by the Executives' Meeting of East Asia-Pacific (EMEAP) Central Banks further supports the identification of contagion risks arising from a distressed financial institution with significant operations in the region, and defines a protocol for coordinating responses between regional central banks and supervisory authorities to contain such risks.

INTERLINKAGES OF NON-BANK FINANCIAL INSTITUTIONS WITH THE FINANCIAL SYSTEM

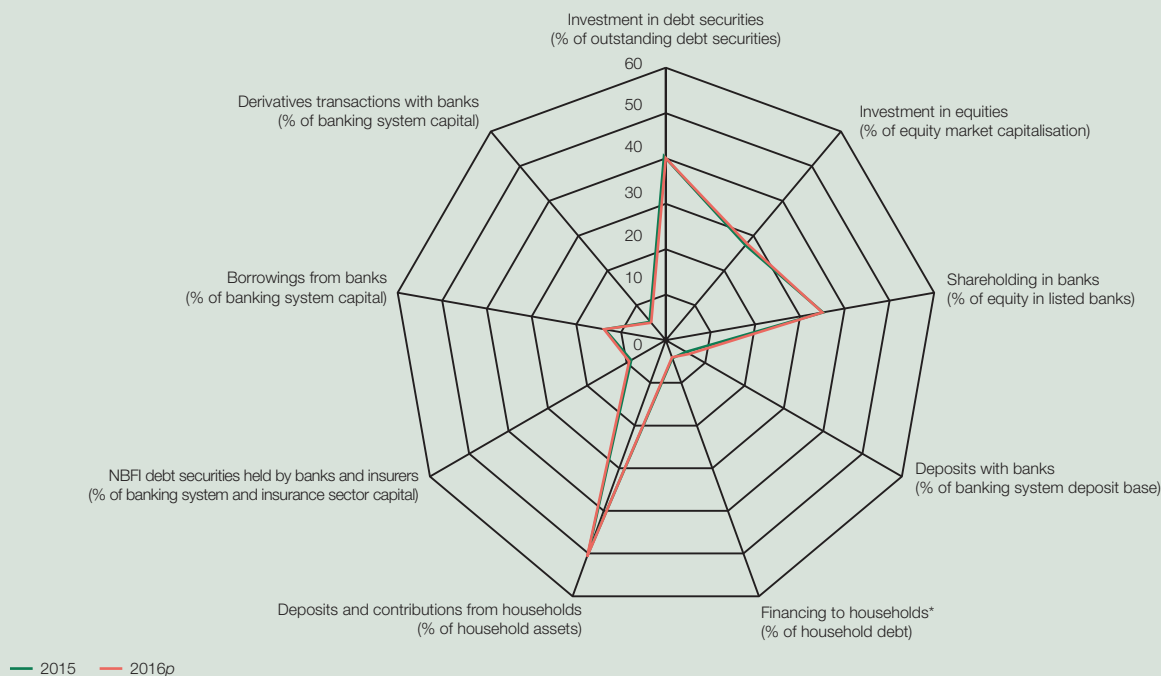
The prospect for NBFIs which are not regulated by the Bank to transmit risks and shocks to the financial

system continues to be limited. While NBFIs as a group expanded further in size (+6.3% in total assets), the risk profile and nature of the interlinkages with the domestic financial system remain broadly unchanged. The main channel for transmission of risks from NBFIs to the financial system continues to be via investments in common asset classes and equity holdings in Malaysian financial institutions (Chart 1.57).

As at end-2016, aggregate assets of NBFIs accounted for about 39.4% (2015: 38.8%) of total financial system assets (Chart 1.58). The provident and pension funds, and the fund management industry, represented the majority (83%) of total NBFIs' assets. The seven largest NBFIs make up 68% of NBFIs' assets. Financial intermediation activities of NBFIs mostly take the form of financing and investments in plain vanilla debt and equity instruments (Chart 1.59). These accounted for a lower share of 98.6% of GDP (2015: 101.9%), reflecting the slower growth in investment funds (2016: +4.3%; 2015: +6.0%) and weaker equity market performance. Across the larger NBFIs, the share of investments in equity has remained

Chart 1.57

Interlinkages of NBFIs with the Financial System

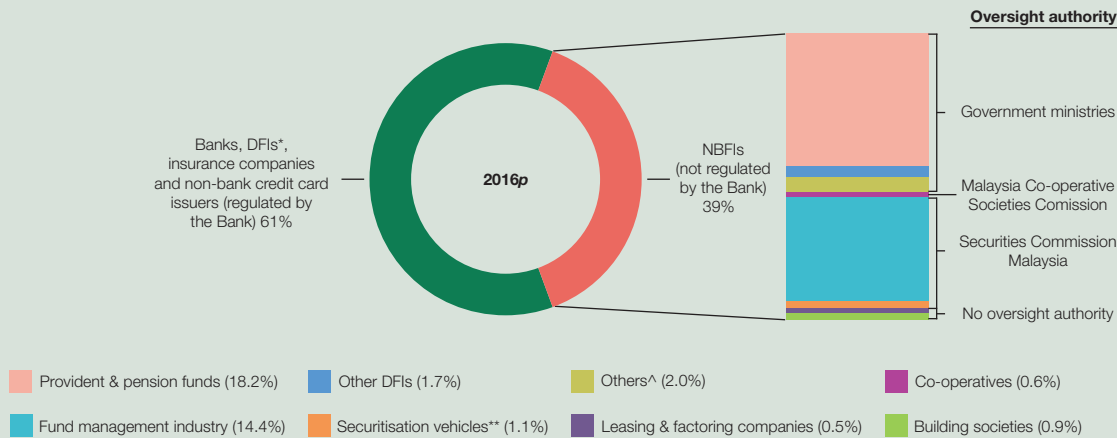


p Preliminary
 * Excludes loans granted by NBFIs regulated by Bank Negara Malaysia and Lembaga Pembiayaan Perumahan Sektor Awam

Source: Bank Negara Malaysia, Securities Commission Malaysia, Malaysia Co-operative Societies Commission, published financial statements and internal estimates

Chart 1.58

Size and Composition of Financial System Assets



p Preliminary

Numbers in brackets refer to percentage of assets to financial system assets

^ Refers to pawn brokers, money lenders, non-bank provider of education financing, non-bank providers of hire purchase financing, government-owned trustee company, and social security organisation

* Development Financial Institutions (DFIs) regulated under the Development Financial Institutions Act 2002 - Bank Pembangunan Malaysia Berhad, SME Development Bank Malaysia, Export-Import Bank of Malaysia Berhad (EXIM Bank), Bank Kerjasama Rakyat Malaysia Berhad (a co-operative), Bank Simpanan Nasional and Bank Pertanian Malaysia Berhad (Agrobank)

** Refers to outstanding asset-backed securities and asset size of national mortgage corporation

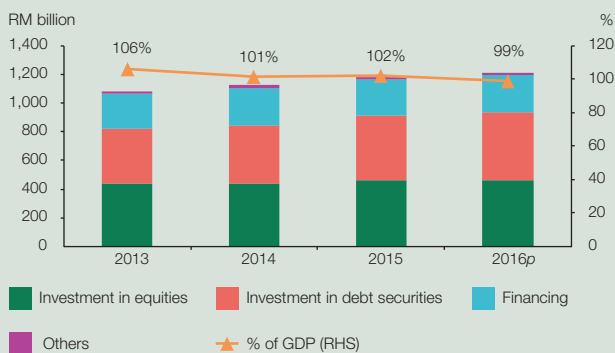
Source: Bank Negara Malaysia, Securities Commission Malaysia, Malaysia Co-operative Societies Commission, published financial statements and internal estimates

broadly stable, accounting for between 29% and 72% of their respective total assets. The share of investments in debt securities has been similarly stable, ranging between 4% and 41% of total assets. These entities continue to play an important role in supporting liquidity in the domestic financial markets, including during periods of heightened

selling pressure by non-resident investors. In more recent years, NBFIs have gradually increased their investments in real estate, infrastructure projects and private equity to improve yields and diversify investment risk. However, such investments remain relatively small at less than 10% of the total assets of individual NBFIs, although this is expected to trend higher following announced plans by a few large NBFIs to increase investments in these asset classes over the next few years. The share of overseas assets has also remained broadly unchanged, ranging between 7.3% and 28.4% of total assets of individual NBFIs.

Chart 1.59

Domestic Financial Intermediation by NBFIs



Note: Financial intermediation comprises (i) investment in equities; (ii) financing; (iii) investment in debt securities; (iv) securitisation; and (v) credit guarantee or enhancement. Credit intermediation comprises (ii) - (v).

p Preliminary

Source: Bank Negara Malaysia, Securities Commission Malaysia, Malaysia Co-operative Societies Commission, published financial statements and internal estimates

NBFIs can pose risks to financial stability through price effects in asset classes held in common with other financial institutions. This may arise as a result of large investment disposals by NBFIs under financial stress. Risks can also be transmitted to financial institutions through reputational or financial linkages where NBFIs hold substantial equity interests in financial institutions. At present, these risks are assessed to remain well-contained. NBFIs maintained overall profitability amid challenging external and domestic investment conditions. The return on assets ranged between 3.9% and 6.1% (2015: between 3.3% and 6.3%) across the larger NBFIs. With liabilities that are mostly denominated in

ringgit, the depreciation of the ringgit during the year had a positive net effect on the larger NBFIs through valuation gains on overseas assets. The potential for financial stress arising from maturity transformation activities undertaken by NBFIs also remains low. The average remaining tenure of corporate bonds issued by NBFIs is 9.9 years, closely matching the average tenure of financing granted (typically below 10 years). Short-term market funding via commercial papers accounted for 2.4% of total debt securities issued by NBFIs. This limits any potential rollover and funding risks. A few NBFIs are, however, exposed to higher liquidity risk due to the large deposit base which is used to fund longer-term assets. Measures continue to be taken by these NBFIs to progressively strengthen their risk management infrastructure and practices, thus improving their resilience to liquidity shocks. On aggregate, NBFIs maintained stable levels of liquid assets (comprising cash, deposit placements and government securities), ranging between 17% and 32% of total assets (2015: between 20% and 31%).

Aggregate holdings of equity in DBGs by the larger NBFIs remained at about the same level at 35% (2015: 35.1%) of the total market capitalisation of DBGs. Direct credit risk exposures of the financial system to NBFIs also remained broadly stable. Bank lending to NBFIs accounted for 13.8% (2015: 13.7%) of total banking system capital. Meanwhile, banks' and insurers' (including takaful operators) holdings

of NBFIs' securities were marginally higher at 9.3% (2015: 8.8%) of total capital. Banking system exposures to NBFIs in the form of interest rate and FX swaps remained limited at about 5% of total bank capital.

MULTI-YEAR SOLVENCY STRESS TEST FOR BANKS AND INSURERS

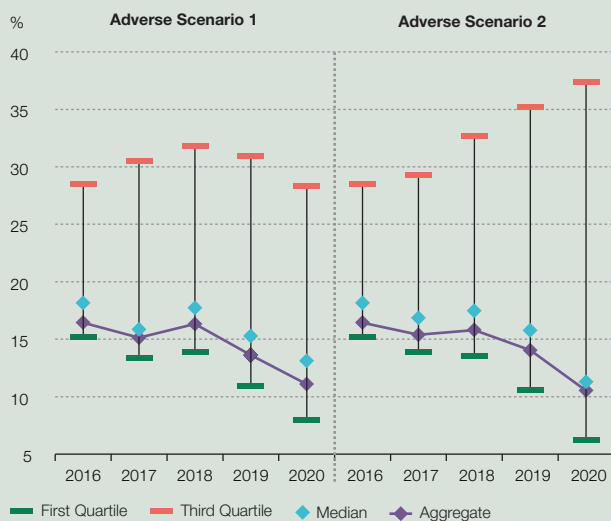
Stress tests affirmed financial institutions' shock absorbing capacity under simulated severe scenarios

Financial institutions demonstrated continued resilience to severe macroeconomic and financial strains. Based on the latest stress tests conducted by the Bank, the post-shock aggregate total capital ratio of the banking system is estimated to be above 11% under the first adverse scenario (AS1), and above 10% under the second adverse scenario (AS2) (Chart 1.60).

More than 95% of the losses are attributed to credit events, driven largely by the household loan portfolio. The simulated default of selected corporate borrowers with large exposures to the banking system comprised 6% and 11% of total credit losses in AS1 and AS2 respectively. Cumulative net losses across the four-year stress test horizon amounted to 51% and 85% of excess capital under AS1 and AS2

Chart 1.60

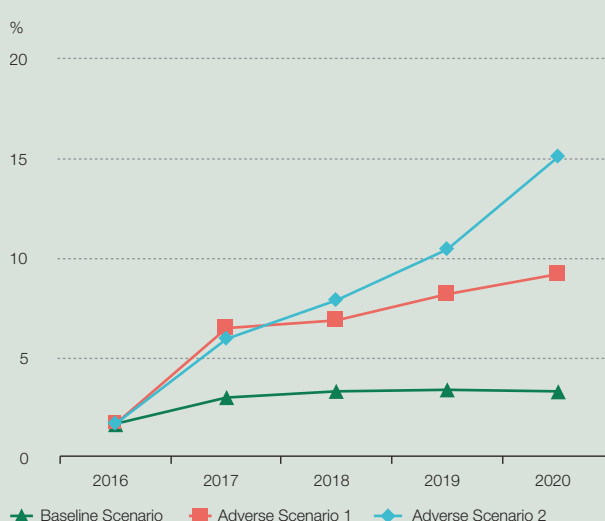
Banking System: Post-shock Total Capital Ratio in Adverse Scenarios



Source: Bank Negara Malaysia

Chart 1.61

Banking System: Post-shock Gross Impaired Loans Ratio in Adverse Scenarios



Source: Bank Negara Malaysia

respectively. Gross impaired loan ratios of the banking system are estimated to increase to 9% under AS1 and 15% under AS2 (Chart 1.61). Even under such severe macroeconomic and financial strains, banks remain well-positioned to absorb the estimated losses with available capital buffers, without raising additional capital.

Results for the insurance industry were similar. The aggregate capital adequacy ratios (CAR) of life and general insurers are estimated to remain above the regulatory minimum across the stress test horizon

under both scenarios. With most assets being held in the trading portfolio, life insurers remain most affected by the simulated market risk events of sharp declines in asset prices, particularly under AS1. Under this scenario, the CAR for life insurers is estimated to decline from 243% to 190%. The simulated quick economic recovery in the following years would result in a recovery of the CAR to 248% by end-2020. The aggregate capitalisation of general insurers is estimated to be sustained at above 200% under both adverse scenarios, with the main impact arising from shocks related to higher motor claims.

An Overview of the Solvency Stress Test Scenarios for Banks and Insurers

The multi-year solvency-based stress test exercise models a series of tail-risk events based on three hypothetical domestic GDP growth paths (one baseline and two adverse scenarios) over a four-year horizon from 2017 to 2020. Simultaneous shocks on revenue, credit and market risks are applied to financial institutions' income and operating expenses, balance sheet growth and capital levels. The stress test exercise disregards any loss mitigation responses by financial institutions or policy interventions by domestic authorities. The adverse scenarios are designed to be sufficiently severe for stress test purposes and, based on counterfactual analysis, have a low likelihood of occurring. The first adverse scenario (AS1) involves a V-shaped recession in 2017, followed by a rebound in growth before normalising

Table 1.5

Solvency Stress Test: Key Assumptions and Shock Parameters Applied under Assumed Adverse Scenarios

Key Assumptions	Adverse Scenario 1 (AS1)	Adverse Scenario 2 (AS2)
Balance sheet and income projections <ul style="list-style-type: none"> Annual decline in banks' income growth, differentiated across segments (interest income, fee-based and other income) Cumulative decline in asset growth (across 4 years) Annual decline in insurers' premium income 	<ul style="list-style-type: none"> Up to 33% 9% Up to 67% 	<ul style="list-style-type: none"> Up to 25% 20% Up to 31%
Credit risk shocks <ul style="list-style-type: none"> Probability of default (PD) shocks <ul style="list-style-type: none"> Business loans Household loans Loss given default (LGD) shocks <ul style="list-style-type: none"> Business loans Household loans Default of selected corporations with large exposures to the banking system 	<ul style="list-style-type: none"> 6% to 12% 1% to 17% 43% to 55% 23% to 100% Corporations under watchlist and are more susceptible to the stressed macroeconomic and financial conditions 	<ul style="list-style-type: none"> 6% to 14% 2% to 25% 42% to 59% 22% to 100%
Market risk shocks <ul style="list-style-type: none"> Annual increase in MGS yields Annual increase in corporate bond yields Annual decline in FBM KLCI Annual depreciation against major currencies 	<ul style="list-style-type: none"> Up to 51 bps Up to 26 bps Up to 51% Up to 17% - 30% 	<ul style="list-style-type: none"> Up to 80 bps Up to 40 bps Up to 30% Up to 9% - 15%
External funding risk shocks <ul style="list-style-type: none"> Reversal of claims by non-residents 	<ul style="list-style-type: none"> Up to 30% of interbank borrowing and deposits 	<ul style="list-style-type: none"> Up to 15% of interbank borrowing and deposits
General insurance risk shocks <ul style="list-style-type: none"> Increase in claims ratio Increase in premium liabilities (motor classes) 	<ul style="list-style-type: none"> Up to 28% Up to 1.5 times additional provision for adverse deviation 	<ul style="list-style-type: none"> Up to 15% Up to 1 time additional provision for adverse deviation

towards long-term potential growth. The magnitude of recession is derived based on a 2.5 standard deviation of the long-term growth rate from the baseline. This scenario assumes a synchronised sharp slowdown in the US, PR China, European Union (EU) and EMEs following disorderly monetary policy normalisation in the US, a sharp equity market correction in PR China, political fragmentation in the EU and heightened geopolitical tensions in several EMEs. Global economic recovery is assumed to rebound from 2018 onwards, supported by monetary and fiscal stimuli in the US and PR China.

The second adverse scenario (AS2) simulates an L-shaped growth path with an initial mild decline. This is followed by a subsequent prolonged weakness in growth, represented by a cumulative negative deviation of about six standard deviations of the long-term growth rate from the baseline. This is triggered by: (i) restrictive policies by the new US administration; (ii) prolonged weakness in PR China following the correction in domestic imbalances and ineffective policy responses; and (iii) political disputes in EU. Domestic vulnerabilities, characterised by high household leverage and a tight fiscal position, further limit the ability of the domestic economy to absorb external and financial shocks, thus contributing to protracted economic weakness.

Looking Beyond Headline Household Debt Statistics

By Siti Hanifah Borhan Nordin, Lim Sheng Ling and Muhammad Khairul Muizz Abd Aziz

The ratio of household debt to gross domestic product is a common measure of household indebtedness, often used to indicate risks of over-indebtedness above certain thresholds. Yet, this headline statistic provides very little insight on the quality of debt due to several key information gaps. One cannot directly infer the debt repayment capacity of households from the ratio as it does not take into account the available savings and wealth of the borrowers. Neither does the ratio provide any information on the distribution of debt or pockets of weaknesses across borrowers with different income levels. The ratio is therefore insufficient for policy analysis and design. Furthermore, analysis using this ratio could lead to wrong and erroneous conclusions. For these reasons, other metrics such as the debt service ratio (DSR)¹ and financial margin should also be used for more granular assessments of potential household vulnerabilities and the implications for financial stability.

For several years now, the Bank has published more detailed analyses in the Financial Stability and Payment Systems Report on the distribution of household debt and repayment capacity. This article extends these assessments, using the indicators of DSR and financial margin derived based on data from a recently established Integrated Income Indebtedness Database (IIID) by the Bank to match borrowings of individuals captured in the Central Credit Reference Information System (CCRIS) with their income information reported to the Inland Revenue Board of Malaysia. The analysis covers close to two million individual records, representing about 5% and 10% of the Malaysian population² and labour force respectively, and total debt of approximately RM200 billion or 20% of total household debt.

The analysis further improves on previous macro-level assessments in three ways. First, it provides a more granular assessment of trends and correlations within and across borrower groups based on an extensive micro-level dataset. Second, it applies the concept of financial margin to more precisely gauge the debt repayment capacity of individual borrowers at different income thresholds. Third, it facilitates identification of correlations between the level of DSR and household financial stress. These insights in turn allow for a more accurate assessment of potential credit losses to lenders from exposures to the household sector. The main conclusions from the analysis, presented below, are broadly consistent with the Bank's earlier assessments of household vulnerabilities.

Distribution of Household Debt

The analysis focuses on borrowings made by individuals. As at end-2015, the largest share of debt (about 40%) is owed by individuals in the top 20 income group³ (Chart 1). The average debt level for borrowers in this group is more than twice of that observed for other borrower groups (Chart 2). The debt servicing capacity of this group is reasonably healthy as indicated by more prudent debt service ratios (Chart 3). Relative to other income segments, a large share of this debt is secured, with about 77% of debt taken out for the purchase of properties and principal-guaranteed investments⁴ which contribute towards individuals' wealth accumulation (Chart 4).

Consistent with data published in previous Reports, borrowers in the more vulnerable income segments, represented in the analysis by individuals in the bottom 40 income group, accounted for only 11.4% of total debt. Borrowers in this group

¹ Bañbula et al (2015) and Faruqui (2008).

² In comparison, the Household, Income and Labour Dynamics Survey used for a similar study in Australia represents about 0.1% of the population.

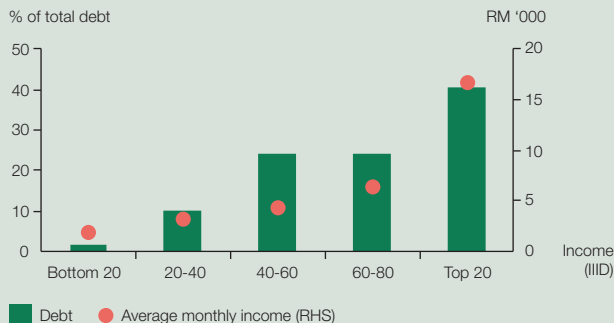
³ Individuals are clustered based on monthly income (Source: IIID)

Bottom 20 income group	: Individuals earning ≤RM2,500 per month
20-40 income group	: Individuals earning RM2,501-3,500 per month
40-60 income group	: Individuals earning RM3,501-5,000 per month
60-80 income group	: Individuals earning RM5,001-8,000 per month
Top 20 income group	: Individuals earning ≥RM8,000 per month

⁴ Mainly comprising funds managed by Amanah Saham Nasional Berhad.

Chart 1

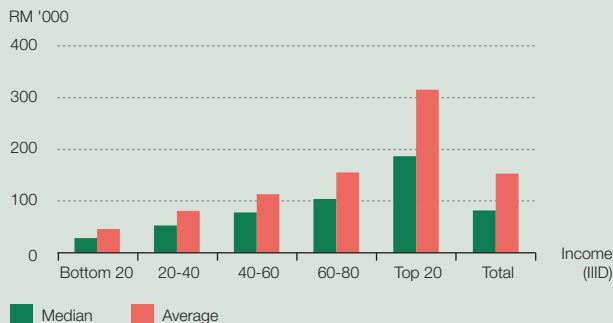
Household Income and Distribution of Debt by Income



Source: Bank Negara Malaysia

Chart 2

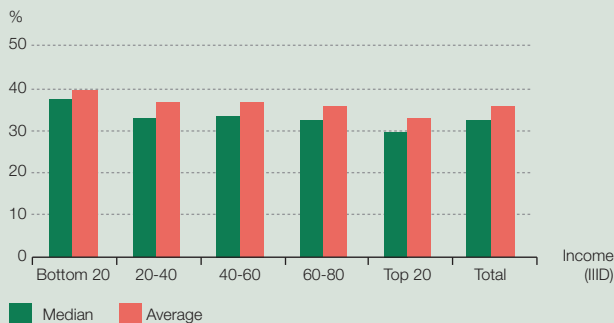
Debt per Borrower by Income Group



Source: Bank Negara Malaysia

Chart 3

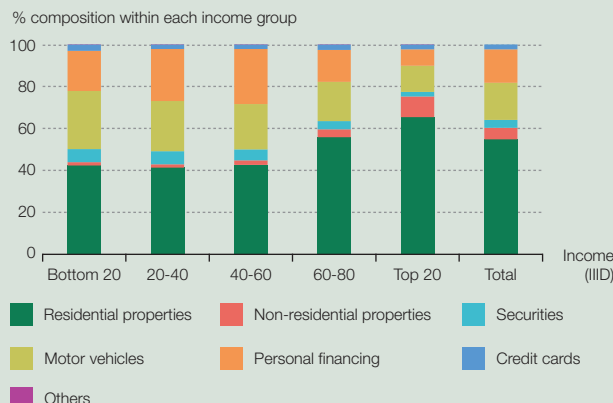
Debt Service Ratio by Income Group



Source: Bank Negara Malaysia

Chart 4

Debt by Loan Purpose by Income Group



Source: Bank Negara Malaysia

are more likely to face difficulty servicing their debt in the event of a payment shock, given thinner buffers. This is somewhat mitigated by the lower proportion of debt financed under floating or variable rate schemes compared to other income groups (Chart 5). More than half (53%) of borrowings by this group, however, remain sensitive to changes in interest rates which can have a disproportionate impact on debt repayment capacity given the low absolute income levels.

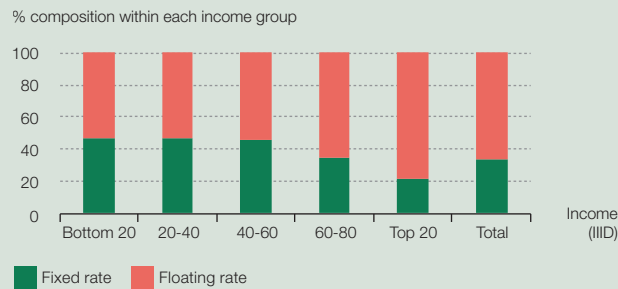
About two-thirds of total debt is acquired by those living in major employment centres⁵. Most of these borrowers are of the age between 30 and 40 years old in the 40-60 income group. As expected, a significant portion of debt is for the purchase of residential property. This is followed by debt for vehicle purchases and personal use, corresponding to the need for greater mobility and higher expenditures associated with raising young families and urban lifestyle choices.

Following the implementation of responsible financing measures by the Bank in 2012, the share of financing represented by individual borrowers in the 40-60 income group has shown some pick-up as credit providers tightened lending standards for the lowest income groups. This has also been an area of greater supervisory focus by the Bank in recent years. Given the profile of debt taken out by borrowers in this group as noted above, close attention by lending institutions to ensure robust affordability assessments continues to be warranted.

⁵ Selangor, Johor, Kuala Lumpur and Penang.

Chart 5

Debt by Type of Interest Rate by Income Group



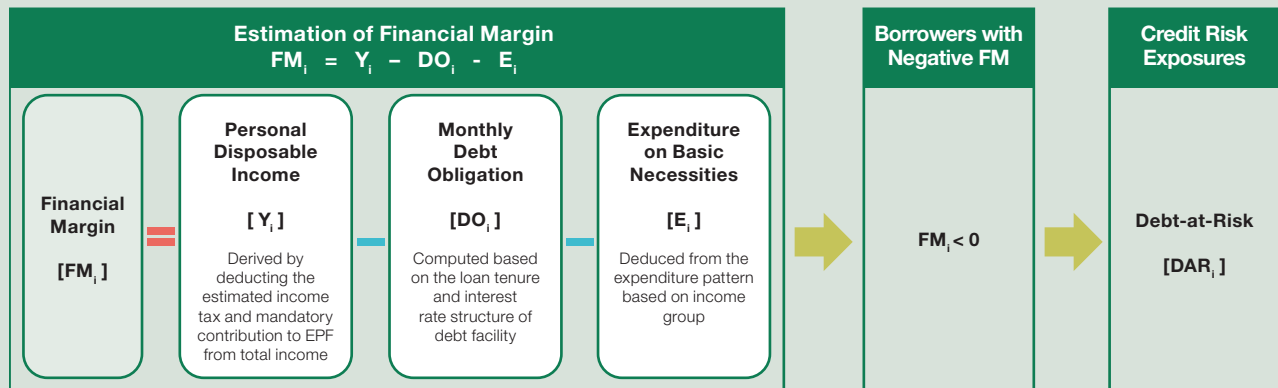
Source: Bank Negara Malaysia

Assessment of Debt Repayment Capacity Using Financial Margin and the Correlations with DSR⁶

An analysis of individual borrowers with negative financial margins provides further insights⁷. A borrower's financial margin is defined as his income net of statutory obligations, debt repayments and expenditures on basic necessities⁸ (Diagram 1). Borrowers are more likely to face financial difficulties – particularly in the event of unexpected income and expenditure shocks – if they have a negative financial margin. Therefore these borrowers should receive the most scrutiny. A debt-at-risk (DAR) metric is used to capture this potential source of risk, defined as the sum of credit risk exposures to borrowers with negative financial margins, after taking into account the collateral values. In this analysis, a 40% haircut is applied on the underlying collateral value for housing loans while other loans are assumed to have a loss given default of 100%. It should be noted that the estimated DAR in this analysis is likely overstated as the methodology used to compute a borrower's financial margin excludes savings and liquid financial assets that can act to smoothen income and expenditures. This methodology is consistent with that adopted for sensitivity analyses and stress tests conducted by the Bank, which typically assumes no available buffers or policy intervention.

Diagram 1

Measuring Credit Risk Using Financial Margin Approach



i individual borrower

Source: Bank Negara Malaysia and Department of Statistics, Malaysia

⁶ Ratio of total monthly bank and non-bank debt repayment obligations to monthly income (net of statutory deductions).

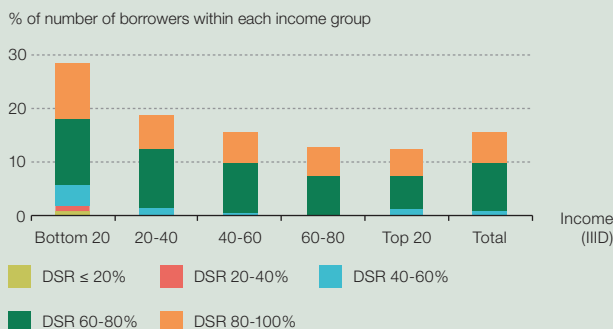
⁷ Bilston et al (2015) and Albacete and Fessler (2010).

⁸ For this study, basic necessities are defined as: (i) food and non-alcoholic beverages; (ii) housing rental and maintenance; (iii) water, electricity, gas and other fuels; (iv) transportation; (v) education; and (vi) healthcare.

At the aggregate level, 15.4% of total borrowers covered in the analysis had negative financial margins (Chart 6). As expected, the highest share of borrowers with negative financial margins was found in the bottom 40 income group (21% of borrowers within the income group), with an estimated amount of DAR of about 3% of total debt. Including borrowers in the 40-60 income group, the DAR increases to about 8% of total debt.

Chart 6

Borrowers with Negative Financial Margin by Income Group

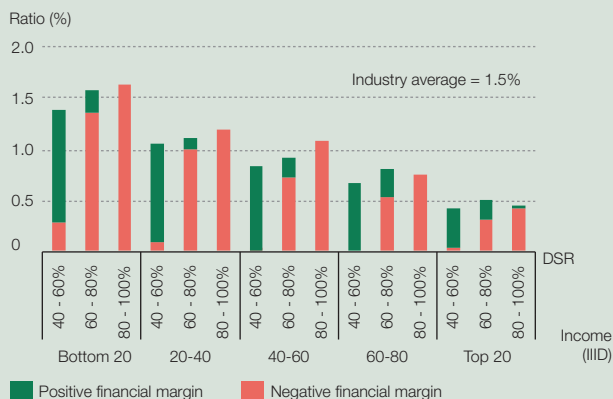


Source: Bank Negara Malaysia

The share of borrowers with negative financial margins decreases substantially to about 13% for borrowers within the 60-80 and top 20 income groups (Chart 6). As noted earlier, a larger portion of debt taken by such borrowers is secured debt, thus substantially mitigating the impact of negative financial margins on bank asset quality. Findings from the Financial Inclusion and Capability Survey conducted by the Bank in 2015 also suggest that borrowers in the higher income groups are much more likely to have higher levels of savings and other forms of household wealth that can be drawn on to service debt. This is corroborated by the delinquency and impairment ratios observed for borrowers in this group which were substantially lower than the industry average (Chart 7 and Chart 8).

Chart 7

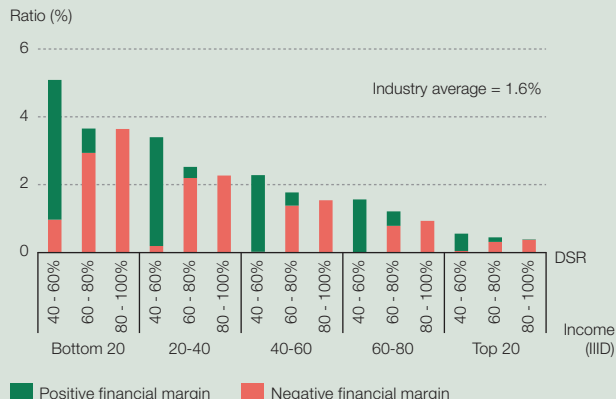
Gross Delinquent Loans



Source: Bank Negara Malaysia

Chart 8

Gross Impaired Loans

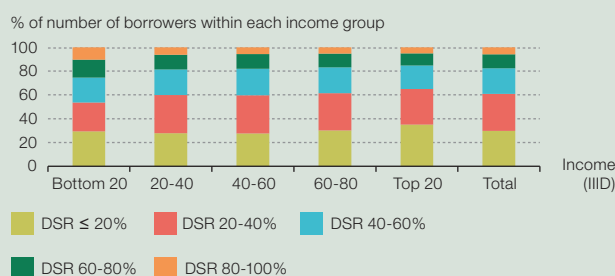


Source: Bank Negara Malaysia

The analysis further shows that across all income groups, borrowers are much more likely to be in a negative financial margin position if their DSR exceeds 60%. For more vulnerable borrowers in the bottom 40 income group, negative financial margins were observed even at lower DSR levels. Borrowers with DSRs exceeding 60% accounted for about 18% of total borrowers across all income groups (Chart 9). Of this number, 40% are in the 60-80 and top 20 income groups. This suggests limited potential, based on the current profile of household debt, for losses from individual debt exposures to increase significantly beyond current levels as represented by DAR for the bottom 40 income group.

Chart 9

Debt Service Ratio for Borrowers by Income Group



Source: Bank Negara Malaysia

Policy Implications

In general, lending policies of both banks and non-banks typically require a borrower's total debt servicing obligations to be below 60% of income at the point of debt origination. The analysis presented here affirms that this has had a key role in mitigating risks in the household sector. A material change in the profile of household debt – particularly in terms of the distribution of household debt across income groups and DSR levels – could, however, alter this and weaken household resilience, with broader implications for financial and macroeconomic stability. This underscores the need to maintain continued vigilance in lending practices, as well as support for households to effectively manage debt through sustained education and debt assistance programmes. This analysis also shows that households at greater risk include those in the 40-60 income group of a younger demographic and living in major employment centres, based on the profile of their debt. Measures such as improvements to public transportation that will reduce the need for borrowings to purchase vehicles and increase income earning opportunities will be important to complement continued vigilance in ensuring responsible financing practices by lending institutions.

Further studies on the relationship between DSR and default probabilities may provide guidance on indicative levels of prudent threshold of DSR level for different income groups. This could contribute towards financial institutions' credit underwriting, risk management and loan loss provisioning practices. It could also contribute towards greater differentiation of borrowers' credit risk profile based on the DSR level across age and income groups, geographical location and type of financing facility. For the Bank, through the application of proportionality of regulations, this can reduce potential unintended consequences (such as reduced access to financing for eligible borrowers) of broad macroprudential policies. In addition, further studies can better inform the design and calibration of stress test scenarios and parameters to assess the shock absorption capacity across borrowers and lenders.

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Evolving Dynamics of Banks' Funding and Liquidity Management

By Fann Shar Linn and Vincent Ang

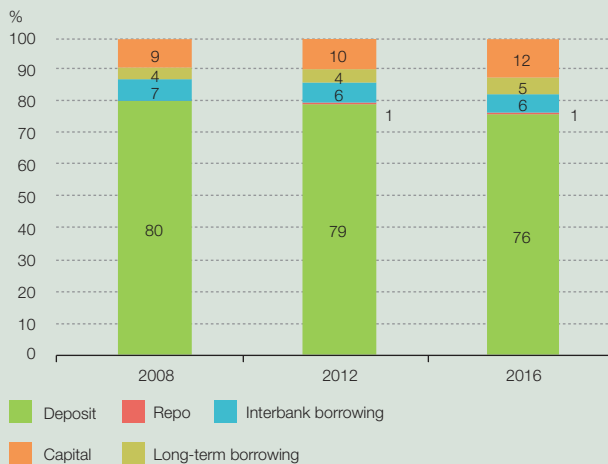
The transformation of the Malaysian financial landscape over the last few decades has been one marked by deeper and more active markets, greater economic openness and increasingly sophisticated participants. Collectively, these changes have had a significant impact on bank funding structures, the nature of market liquidity and the manner in which banks manage associated risks. The present dynamism of liquidity risk management warrants a re-thinking of the traditional indicators used to determine funding stability in relation to asset growth. This article explores this issue, along with how banks have progressively adapted their liquidity risk management practices to a changing market environment.

Up until the early 2000s, banks relied primarily on customer deposits (from both the wholesale and retail segments) for funding. By the turn of the millennium, customer deposits accounted for 82% of total funding liabilities within the banking system. This in part reflected the high savings rate at the time, which had averaged at 36.6% of total gross national income (GNI) throughout the 90s (2016: 28.8% of GNI). Investment options, particularly those for retail depositors, had also been relatively scarce in the previous decade. From 2000 to 2005, the average outstanding size of the unit trust/asset management market was 13.8% of total liquid financial assets, compared to 23.5% as at end-2016. Additionally, banking assets were chunkier, with a significant proportion (34% of total assets) comprising corporate loans with long gestation periods.

This stands in stark contrast to bank balance sheets today, which have been radically transformed by three key developments in the financial system. Firstly, Malaysia's capital markets have grown significantly in size and depth. This development has enabled financial institutions and investors to diversify funding and investment strategies through expanded funding sources from the bond and equity markets (Chart 1 and Chart 2). From 2010 to 2016, the Malaysian corporate bond market expanded at an annual rate of 9%. In the same period, the equity market grew by 11% annually in terms of market capitalisation. Second, greater economic and financial integration has seen Malaysian banks expanding their regional footprint in line with growing trade linkages within Asia. Between 2012 and 2016, the overseas assets of Malaysian banks grew at a compounded annual growth rate of 16%. Continued flows of foreign direct investment and financial integration have also broadened the role and functions of banks, both

Chart 1

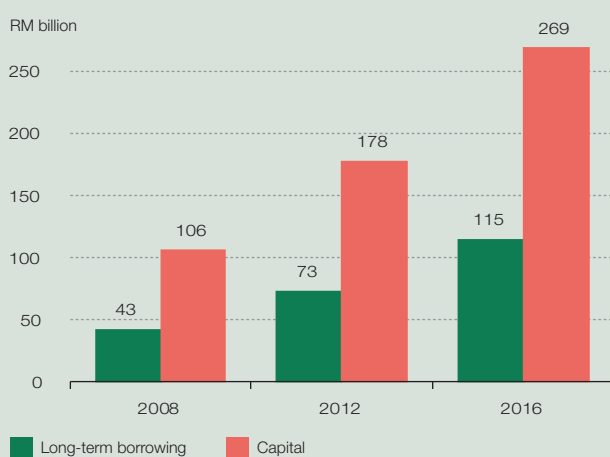
Banking System: Composition of Funding Sources



Source: Bank Negara Malaysia

Chart 2

Banking System: Capital and Long-term Borrowing



Source: Bank Negara Malaysia

at home and abroad. These developments have afforded banks greater flexibility in managing liquidity risk, supported by innovations in products and risk management. Finally, these changes are set against a backdrop of wealthier and more sophisticated financial consumers who are better enabled to make optimal financial choices through an expanded offering of financial products and an increasingly digitised economy. This, along with lower savings and higher consumer activism, has reduced the relative stability of customer deposits and contributed to a gradual shift to a broader funding base for banks.

Indicators of Liquidity Risk

The relevance of the **loan-to-deposit ratio (LDR)** as an indicator of liquidity risk depended on an environment where (i) deposits were significantly more stable; and (ii) chunky and illiquid loans constituted the main bulk of a bank's assets. A high LDR implied that the bank may be taking on higher liquidity risk by growing loans faster than it can fund them through deposits. Today, however, the LDR presents liquidity risk in a severely limited context. In particular, the LDR does not reflect the increasing diversification of funding sources and tenors in tandem with loan growth. This in turn results in an overestimation of liquidity risk.

It is important to note that the LDR's fundamental assumption that deposits are a stable form of funding no longer holds for all types of depositors, taking into account factors such as level of sophistication, yield-sensitivity and available investment alternatives that have developed over time. Technological progress has also played a key role in accelerating the mobility of deposit funds, chiefly through reducing the cost of funds transfers and providing financial consumers with greater, immediate access to product-related information that influences their savings and investment decisions. More recent liquidity risk frameworks and ratios enable a more granular assessment of highly varied behavioural patterns among depositors, as discussed later in this article.

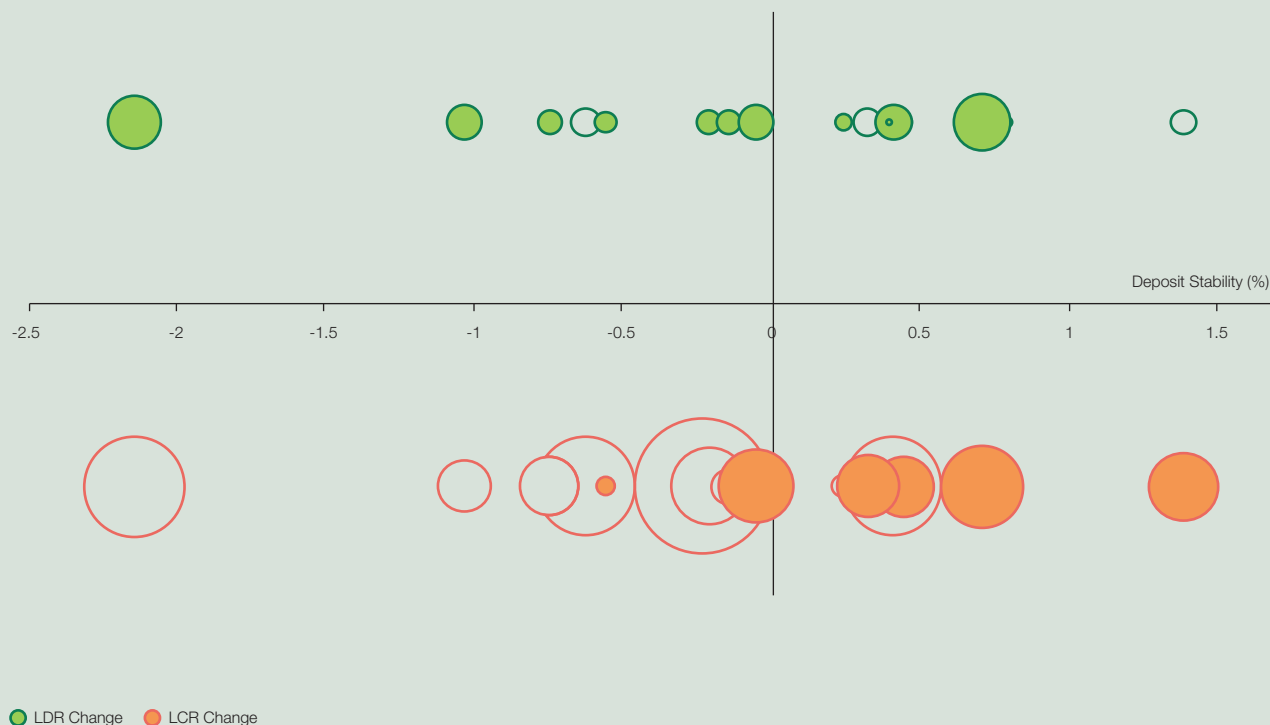
On the asset side, the LDR does not consider the greater mix between various loan types, securities and other investments that is characteristic of most bank balance sheets today. While loans continue to be a dominant component, it is important to account for, and measure, the liquidity value of these and other assets. The availability of secondary markets, supported by market developments in securitisation, allow banks to bolster their liquidity positions through asset-side adjustments, as opposed to the liability-side dependence assumed under the LDR. Reliance on loans as the sole proxy for funding needs could result in a significantly inaccurate measure of liquidity risk, including the underestimation of risk arising from off-balance sheet obligations.

Recognising the need for a more encompassing and granular approach towards measuring liquidity risk, the Bank introduced the **Liquidity Framework (LF)** in 1998. The LF requires banks to project potential cash flows for up to a year by determining the contractual and behavioural maturity of assets, liabilities and off-balance sheet items. This captures the maturity transformation undertaken by a bank more comprehensively, and flags any significant maturity gaps. To ensure that there are sufficient funding buffers within the short timeframe in which liquidity pressures can develop, the framework enforces a minimum net liquidity surplus of 3% for maturities up to 1 week, and 5% for the one-week to one-month maturity bucket. Additionally, the LF defines a set of 'liquefiable assets' – assets that are deemed to be of sufficient quality to be liquidated without a significant loss in value, even under stressed conditions.

The **Liquidity Coverage Ratio (LCR)**, a component of the Basel III regulatory reforms, builds on the conceptual foundations of the LF. The LCR standard, which has been in force in Malaysia since June 2015, ensures that banks have sufficient high-quality liquid assets (HQLA) that can be used to satisfy liquidity needs in a 30-day severe stress environment. The assumptions used for this scenario are modelled on observations from the 2008 global financial crisis. The LCR considers a broader range of factors that can affect funding stability compared to the LF. These include the type of counterparty, transaction tenor and redemption features of a specific product. As shown in Chart 3, increasing deposit stability is more closely correlated to an improvement in the LCR compared to that in the LDR. On the other hand, HQLA – similar to liquefiable assets under the LF – are broken down into three categories ranked according to quality and potential liquidity value under stressed conditions. Assets are classified based on features such as credit rating, ease and certainty of valuation, and the size and volume of a particular asset market.

Chart 3

LDR versus LCR: Sensitivity to Deposit Stability



Notes: The sample used for the chart above is the largest 20 banks in Malaysia by deposit size, each of which is represented by a bubble. Shaded bubbles represent an increasing LDR or LCR, while empty bubbles represent a decreasing LDR or LCR. The size of each bubble represents the size of change of these ratios between December 2015 and December 2016. "Deposit Stability (%)" is the difference in the average monthly movements of total deposits between 2015 and 2016. Moving along the x-axis from left to right represents increasing deposit stability. The chart shows that deposit stability is more closely correlated with the LCR compared to the LDR. This is demonstrated by the difference between the concentration of green and orange bubbles: Green (shaded) bubbles are more dispersed across the spectrum, indicating that there is a weak relationship between the LDR and deposit stability. Orange (shaded) bubbles are concentrated to the right of the x-axis, which indicates that an increase in deposit stability tends to correlate with an improvement in the LCR.

Source: Bank Negara Malaysia

As markets become more familiar with its underpinning concepts, the LCR will eventually become an important liquidity indicator. In the meantime, however, inconsistent disclosure practices across jurisdictions affect comparability, thus constraining wider use of the LCR by market participants and rating agencies. While this is expected to be resolved over time, the need for a simple and reliable ratio was recognised by the Bank, and met with the publication of the **loan-to-fund (LTF)** and **loan-to-fund-and-equity (LTFE)** ratios in 2015 to better reflect material changes in bank funding structures over time that had rendered the LDR inaccurate. The ratios, which are disclosed in the Bank's monthly publication of Monetary and Financial Developments, improve on the LDR as a measurement of liquidity by reflecting the broader funding base of banks, and can be easily determined from available financial information on individual banks. The LTF includes debt issuances in addition to deposits, while the LTFE expands on this with the inclusion of equity.

Going forward, the Bank plans to introduce the **Net Stable Funding Ratio (NSFR)**, a complement to the LCR under the Basel III liquidity reforms. Similar to the LF, the NSFR provides a one-year projection of maturity profiles for both assets and liabilities under business-as-usual conditions. In particular, the NSFR improves on the LF by estimating the amount of stable funding that a bank requires to fund various assets and off-balance sheet items, depending on factors such as asset quality, transaction tenor, counterparty type, encumbrance period and the likelihood of honouring non-contractual obligations.

As understanding and familiarity with improved liquidity risk indicators such as the LCR and NSFR increases, these should provide a richer framework for conveying information on liquidity risks. The Bank will continuously enhance the data that it publishes on a regular basis to take these developments into account, with the aim to better inform markets.

Liquidity Risk Management Practices

It is important that the use of liquidity risk indicators also be approached within the context of liquidity risk management practices of individual banks. This is the principal objective of enhanced liquidity risk management disclosures required as part of key information to be included in banks' financial statements.

Observations from a closer examination of the practices of Malaysian banks point to sustained improvements in their internal procedures, practices and systems over time as part of a broader effort to enhance their resilience against liquidity risk. These include refinements in the areas of governance, stress-testing, contingency funding plans and funds transfer pricing (FTP).

On governance, the board of directors and senior management of banks have taken an increasingly forward-looking and comprehensive approach towards managing liquidity risk. This includes establishing risk appetites and liquidity strategies that consider emerging liquidity concerns, inter-linkages of liquidity risk with other areas of risk (e.g. credit, market and reputational) and the potential impact of the bank's actions on broader systemic risk. This has improved the calibration and sensitivity of internal risk appetites, thus enhancing the agility of banks in responding to adverse market developments.

Compared to the previous decade, FTP is now common practice across the industry; contributing significantly to the integration of liquidity risk management within day-to-day banking operations. Based on supervisory observations, larger banks in particular have made substantial progress in improving the granularity and sensitivity of pricing methodologies. Best practices include highly differentiated pricing of liquidity according to various measures of funding stability and asset quality. On a whole, these practices have enabled banks to implement better incentive systems that reward business units which attract stable funding, and adequately charge those that generate illiquid assets.

Internal liquidity stress tests have also advanced considerably beyond the more rudimentary sensitivity analyses of the past. Banks have been moving towards an increasingly sophisticated approach in identifying potential liquidity risk events, particularly those that are unique to specific banking operations. These are typically events of low frequency, but high severity. Stress-testing by banks are also now modelled on a range of assumptions that incorporates idiosyncratic events, severe disruptions to markets that the bank is active in and other inter-linked markets, and the second-round effects of shocks. Banks have also improved their utilisation of stress test outcomes, particularly in formulating mitigating measures such as contingency funding plans, risk policies and quantitative limits to address identified vulnerabilities.

Beyond Ratios and Minimum Requirements

An over-reliance on simplified indicators such as the LDR is likely to induce market reactions or behaviours that are disruptive, particularly where they fail to provide an accurate representation of evolving bank balance sheets and funding strategies. This was observed towards the end of 2015, where a year-end fixation on LDR was a significant contributory factor to deposit competition which ultimately saw the spread between the overnight policy rate (OPR) and KLIBOR rates diverge materially from historical averages. In a highly dynamic market environment, managing liquidity risk requires clear internal risk policies, a close and functioning relationship between various business and control functions and adequate investments in data systems and technical competencies. It is through these broader accomplishments, supported by effective regulatory compliance, that banks will ensure their resilience through the challenges posed by different business cycles over the years to come.