

2012

## RISK DEVELOPMENTS AND ASSESSMENT OF FINANCIAL STABILITY IN 2012

- 11** Overview
- 13** Managing Risks Arising from Household Indebtedness
- 19** Managing Developments in the Domestic Property Market
- 24** Managing Credit Risk Exposures to Businesses
- 27** Managing Contagion Risk from External Exposures, European  
Deleveraging and Overseas Operations
- 36** Managing Liquidity Risk
- 38** Financial Institution Soundness and Resilience
- 44** Outlook for Domestic Financial Stability and Focus of Surveillance in 2013
- 46** *Box Article: Developments in the Housing Market and Implications on  
Financial Stability*
- 53** *Box Article: Macroprudential and Microprudential Applications of  
Stress Testing in Malaysia*



## RISK DEVELOPMENTS AND ASSESSMENT OF FINANCIAL STABILITY IN 2012

### OVERVIEW

Domestic financial stability remained intact throughout 2012, providing an environment that supported the continued growth of the Malaysian economy. The Malaysian financial system continued to demonstrate a high degree of resilience amid persistent uncertainties in Europe and other major advanced economies, and an environment of weaker global growth. This ensured that financial intermediation continued to function efficiently to support domestic economic activity. Malaysian financial institutions maintained strong financial buffers with the capacity to withstand shocks and extreme market conditions. Despite increased competition prevailing in the retail lending segment and more buoyant property market, financial institutions have generally maintained sound underwriting and risk management standards. Conditions in the domestic financial markets were orderly despite continued, albeit lower, volatility following movements in short-term portfolio flows. Overall confidence in the domestic financial system also remained firmly intact.

In the 2011 Financial Stability and Payment Systems Report, it was highlighted that Malaysian banks and businesses were likely to face the spillover effects from adverse developments in global funding conditions. Financial institutions have taken early measures on exposures to foreign currency funding risk to mitigate any adverse consequences from such external developments. Credit quality has also remained sound. The financial condition of businesses has been healthy and generally improving despite risks associated with the weaker economic conditions in the advanced economies. The increasing income and stable employment prospects domestically, generally continued to support the debt servicing capacity of households. Earlier precautionary measures implemented by the Government and the Bank to promote the resilience of households and the sustainability of the property market have had a positive effect, despite other developments having exerted additional pressures on household financial positions and property prices. Risks to financial stability from these developments,

however, remain well contained mainly on account of continued discipline in the lending standards of financial institutions and further improvements in risk management practices. This was further complemented by rigorous on-site surveillance and stress tests conducted by the Bank.

---

The Malaysian financial system continued to demonstrate a high degree of resilience amid persistent uncertainties in the external environment

---

Exposures of Malaysian financial institutions to counterparties in Europe remained low and were further reduced for exposures to the European countries that were most affected by the euro area crisis. Global reinsurance conditions improved considerably, reducing the risk profile of foreign reinsurance placements, including those with European reinsurers. Malaysia remains well placed to cope with the effects of potential deleveraging activities by European financial institutions, with the domestic institutions and other foreign banks in Malaysia in a position to replace any lost capacity. The expanding operations of Malaysian banks abroad have not increased contagion risks to domestic banks in Malaysia. This development has been accompanied by close monitoring of the capacity of domestic banking groups to identify and effectively manage the risks on a group-wide basis. The Bank has substantially strengthened its cooperation with host supervisors to manage this trend.

Financial institutions continued to record strong capital positions and higher profits in 2012. For the banks, these developments improved the ability to meet new capital requirements under Basel III that are being phased in from 2013. The strong profit performance in the recent few years were driven by core lending and insurance activities, and not from higher risk-taking in trading and

treasury activities. Generally, financial institutions have maintained prudent trading and investment strategies and were more active in managing exposures to market risks. These risk exposures have either been trending downwards or sustained during the recent two years. Strategies by life insurers to better manage insurance risk in the prevailing low interest rate environment have also improved the financial resilience of these institutions. Results of stress tests conducted at the macro and micro levels continue to show that banks and insurers are resilient to the range of economic and market shocks.

During the year, the Bank's Financial Stability Committee (FSC)<sup>1</sup> and the Financial Stability Executive Committee (Executive Committee)<sup>2</sup> met three and two times respectively. The focus of deliberations has been on developments in the lending and property markets, the potential for the expanding activities of non-bank financial institutions (NBFIs) to pose risks to financial stability and policy actions (including the effects of measures already taken) to pre-empt these risks. In particular, these include issues relating to managing challenges from financial system exposures to the household sector, rising prices of residential properties and shop lots, potential oversupply of shopping complexes and offices, and contagion implications from deleveraging activities by European financial institutions and from overseas operations of the Malaysian financial institutions. The Committees also, more broadly, considered risks posed by systemically-important financial institutions, in particular those that are outside the regulatory

perimeter of the Bank. While the risks were assessed to remain low, continued vigilance remained.

Malaysia was assessed for the first time under the Financial Sector Assessment Program (FSAP) in 2012. FSAP assessments, conducted jointly by the International Monetary Fund and the World Bank, provide an in-depth review of a country's financial sector. The outcome of the assessment on Malaysia affirmed the strength and resilience of the Malaysian financial sector, the high level of compliance of the domestic regulatory and supervisory framework in the banking, insurance and securities sectors, as well as the deposit insurance system, with international standards, and robustness of the financial market infrastructure. The assessment also recognised efforts already well underway to further strengthen the regulatory and supervisory framework. This notably included the reform of the legislation for the financial sector which was passed in December 2012 and which substantially addresses many of the FSAP recommendations for enhancements. Risks identified under the assessment for close monitoring, namely high household indebtedness, rising house prices and rapid credit growth, have also been well within the Bank's surveillance radar.

---

The outcome of the Financial Sector Assessment Program on Malaysia affirmed the strength and resilience of the banking sector, the high level of compliance of the regulatory and supervisory framework and deposit insurance system with international standards, and robustness of the financial market infrastructure

---

The external environment is expected to remain challenging in 2013. The key risk to the Malaysian financial sector continues to be from a general weakness in the external economic conditions that is transmitted through the trade channel. The more favourable domestic and regional economic and financial outlook is expected to provide some support against this

<sup>1</sup> The FSC is the high level forum within the Bank that is responsible to deliberate and approve policy measures on emerging financial stability issues and areas of vulnerabilities which may pose risks to financial stability. The FSC decides on financial stability and macroprudential policies as well as supervisory actions on the Bank's regulatees, and where necessary make recommendations to the Financial Stability Executive Committee pursuant to the Central Bank of Malaysia Act 2009 (CBA).

<sup>2</sup> The Executive Committee, established under the CBA, decides on recommendations by the Bank to issue financial stability orders or extend liquidity assistance to entities not regulated by the Bank, or to provide capital support to the Bank's regulatees, for the purpose of averting or reducing risks to financial stability. The Executive Committee comprises the Governor, one Deputy Governor of the Bank, the Secretary General to the Treasury, Chief Executive Officer of the Malaysia Deposit Insurance Corporation, Chairman of the Securities Commission Malaysia (newly appointed member effective December 2012), selected independent technical experts and, where relevant, head of other supervisory authority.

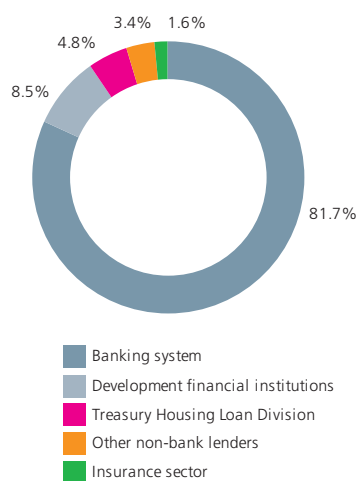
risk. The Malaysian financial sector is well placed to cope with such adverse external developments given the strong financial buffers, comprehensive institutional arrangements in place for responding to system-wide risks, and, most importantly, the sound and continuous improvements in credit, market and operational risk management practices of banks. Liquidity and funding conditions in 2013 are also expected to remain supportive of domestic intermediation by financial institutions in Malaysia. The business expansion and lending activities of the NBFIs, high leverage of the lower-income households and developments in the property market are areas that will continue to be closely monitored by the Bank. This also requires that coordination and engagement with other relevant authorities is being sustained at a high level.

### MANAGING RISKS ARISING FROM HOUSEHOLD INDEBTEDNESS

Growth in household borrowings moderated for the second consecutive year, recording an annual growth of 13% (2011: +13.4%). This largely reflected the slower growth in bank lending to the household sector which declined further to 11.6% (2011: +12.9%; 2010: +13.4%). The level of household debt however increased to 80.5% of GDP following a slower growth in nominal GDP (2012: +6.4%; 2011: +10.8%). Banks remained the most dominant credit provider to households.

Chart 1.1

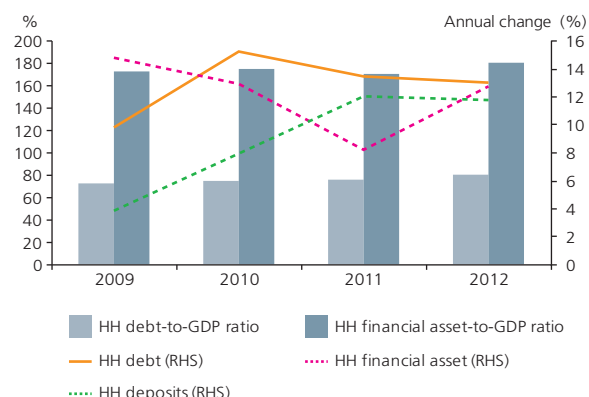
Household Sector: Composition of Credit Providers



Source: Bank Negara Malaysia, Treasury Housing Loan Division

Chart 1.2

Household Sector: Debts and Financial Assets



Source: Bank Negara Malaysia

Credit quality of household borrowings from the banking system remained sound and continued to improve during the year, underpinned by sound credit risk management and underwriting practices

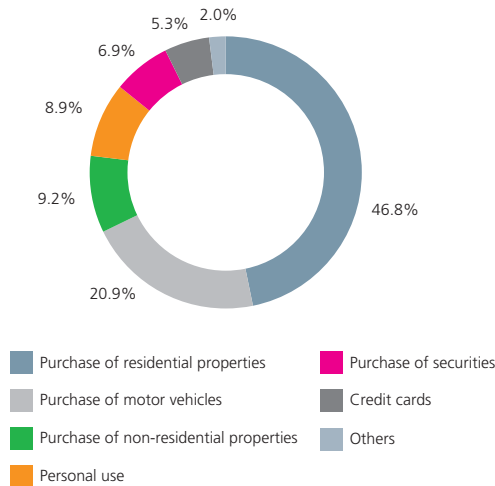
Including insurance companies and development financial institutions (DFIs) which are also regulated by the Bank, the aggregate share of total credit to households by institutions regulated by the Bank is about 92% (Chart 1.1). Household lending as a share of total bank lending has remained fairly stable at around 54% to 56% since 2006. From a financial stability perspective, risks associated with the household sector remain broadly unchanged from 2011. Indicators of aggregate household resilience are sound with total and liquid household financial buffers remaining stable (Chart 1.2). More importantly, indicators in the banking sector continue to support the sound overall credit quality of household loans from the banking system. In addition, the stable outlook on the employment and income conditions for 2013, which indicates the potential for households to cope with financial stress, is also consistent with the FSAP assessment.

## Bank lending to households

New bank lending to the household sector continued to be largely driven by lending for the purchase of assets. A total of RM166.3 billion, representing more than 80% of new loans made to households in 2012 was for purchases of properties, vehicles, and investments in fixed price Amanah Saham Nasional Berhad unit trusts which added to household wealth (Chart 1.3). Unsecured credit by banks contributed less than 10% of the increase in outstanding bank lending to the household sector, and its share of total banking system loans has remained flat since 2009 (2012: 8%). Since 2011, the growth in debt repayments by households has also outpaced that of disbursements (Chart 1.4). This has contributed to the slower pace in the accumulation of

Chart 1.3

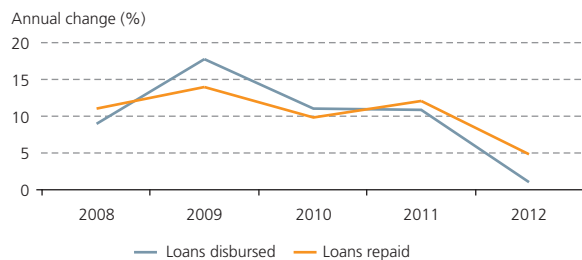
### Household Sector, Banking System: Exposure by Purpose of Financing



Source: Bank Negara Malaysia

Chart 1.4

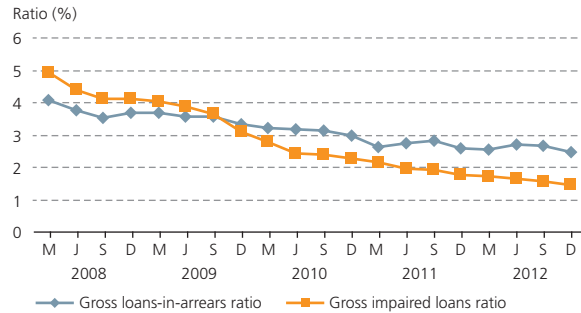
### Household Sector, Banking System: Loan Disbursement and Repayment



Source: Bank Negara Malaysia

Chart 1.5

### Household Sector, Banking System: Delinquencies



Source: Bank Negara Malaysia

aggregate household debt. The overall impaired loans ratio for the banks' household portfolio improved further during the year to 1.5% from 1.8% as at end-2011 (Chart 1.5). Expected losses from the household portfolio also remained manageable on account of a stable average loss given default and probability of default (Table 1.1, 1.2 and 1.3). Assuming a simultaneous materialisation of all these default incidences, the amount of possible losses which banks have to bear could potentially amount to RM6.1 billion. Even if the incidences of default were to double, the estimated expected loss amount of RM12.2 billion is well within the available capital buffers of banks of more than RM80 billion as at end-2012.

As a significant bulk (56%) of loans to households is for the purchase of properties, promoting sustainable property prices, especially in the housing market, has been a policy focus to alleviate the debt burden on households and to prevent the build-up of risks in this market. This included ensuring that bank lending activities were not excessively fuelling speculative investments in property. Since the implementation of the cap on loan-to-value (LTV) ratio for the

Table 1.1

### Household Sector, Banking System: Average Probability of Default (PD)

	2010	2011	2012
	%		
Purchase of residential properties	3.1	3.1	2.5
Purchase of motor vehicles	3.7	3.2	2.8
Unsecured financing	4.1	3.5	3.5

Source: Bank Negara Malaysia

**Table 1.2****Household Sector, Banking System: Average Loss Given Default (LGD)**

	2010	2011	2012
	%		
Purchase of residential properties	20	19	18
Purchase of motor vehicles	49	48	49
Unsecured financing	71	77	76

Source: Bank Negara Malaysia

third and subsequent housing loans by a single borrower in November 2010, growth in bank lending for the purchase of residential properties has stabilised at 12.8% (2011: +12.7%; 2010: +12.9%; 2009: +8.8%). During the same period, lending to households for the purchase of shop lots grew at a slower pace for the second consecutive year at 15.4% (2011: +18.5%; 2010: +20.3%; 2009: +12.8%). The number of borrowers with multiple housing loans, nonetheless, has started to rise again during the year (+3.4%), albeit by a smaller quantum, signaling a resumption in demand for housing credit for investment purposes. However, this represented less than 3% of the total number of housing loan borrowers or 13.7% of outstanding housing loans, little changed from last year. A similar trend was observed in the number of multiple loan accounts for the purchase of shop lots. The implementation of the second round of upward revision to the real property gains tax (RPGT) which took effect on 1 January 2013 will have a moderating effect on the return for such investment purchases (Table 1.4). This will be important in ensuring that small businesses continue to have access to affordable business premises. Meanwhile, lending for the purchase of motor vehicles increased at a stronger pace of 7.7% to account for 20.9% of banks' exposures

**Table 1.3****Household Sector, Banking System: Expected Loss**

	2010	2011	2012
	RM billion		
Purchase of residential properties	1.4	1.5	1.3
Purchase of motor vehicles	2.0	1.9	1.8
Unsecured financing	2.1	2.2	2.4

Source: Bank Negara Malaysia

**Table 1.4****RPGT Applicable on Disposal of Properties**

Disposal of properties	RPGT with effect from:		
	1 Jan 2010	1 Jan 2012	1 Jan 2013
Within 1st and 2nd year	5%	10%	15%
Within 3rd to 5th year	5%	5%	10%
After 5th year	0%	0%	0%

Source: Ministry of Finance, Malaysia

to households (2011: +5.9% to account for 21.6%) (Chart 1.3). More than 70% of bank loans to this segment were for the purchase of new motor vehicles following the increase in new models introduced during the year and the recovery in the supply chain after the severe disruption in supply as a result of the natural calamities in Thailand and Japan in 2011.

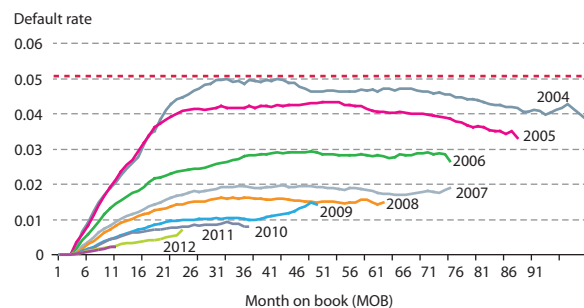
Repayment behaviour among credit card holders showed marked improvements during the year. The number of cardholders who were making prompt monthly payments on the minimum balances due on their credit cards increased by 2.3%. Cardholders were also paying down more on existing credit card debt, resulting in a decline of 5.5% in revolving balances (credit card balances that are rolled over). About a third of cardholders made full payment on total credit card usage each month. These trends contributed to a sharply slower rate of increase in outstanding credit card balances for the year of 1.5% (2011: +8.1%; 2010: +15%) even as a higher volume of card transactions was recorded for the year (2012: 309.2 million totaling RM99 billion; 2011: 302 million totaling RM93.7 billion; 2010: 284.1 million totaling RM84.9 billion). The year also saw further consolidation of credit card debts which resulted in a lower number of cards in circulation with revolving balances (from a share of 61% of the total number of cards in circulation to 51%). Banks were also more restrained in the extension of credit card facilities. Although new applications for credit cards increased to 2.3 million (2011: 2.2 million) during the year, less than half of the applications were approved, resulting in a more conservative approval-to-application ratio of 48.7% (2011: 50.1%). Following measures by the Bank to restrict the number of cards that individuals earning an annual income of less than RM36,000 can own, about 76% of principal cardholders held cards from 1 or 2 issuers only.

Bank lending practices have remained sound, and were further strengthened following the implementation of the Guidelines on Responsible Financing which came into effect on 1 January 2012. Banks have been more thorough in assessing affordability to ensure that households who borrow, particularly in the lower-income group, have the capacity to repay the debt throughout the financing tenure without substantial hardship. This was observed in the more prudent buffers provided by banks in the computation of debt service ratios, improved processes and documentation for income verification, and enhancements to customer acceptance criteria. The Bank, through its supervisory oversight, continued to maintain close monitoring on the extent to which incidences of credit exceptions (loans approved outside a bank's credit acceptance criteria) were occurring in banks. This led to actions taken by some banks to further strengthen existing policies, procedures and governance for credit exceptions. A number of banks also reviewed existing retail credit score cards to capture additional and more granular information to improve risk profiling and monitoring by borrower segments grouped by age, income, debt service ratio, location of property and employment. The low delinquency ratios for household loans have also been supported by an efficient collection process in place within the banking institutions. This enabled banks to take early debt rehabilitation and recovery measures. During the year, the Bank found that the controls within the banks for this purpose were adequate.

Reflecting these practices, the quality of household loans of the banking system remained

Chart 1.6

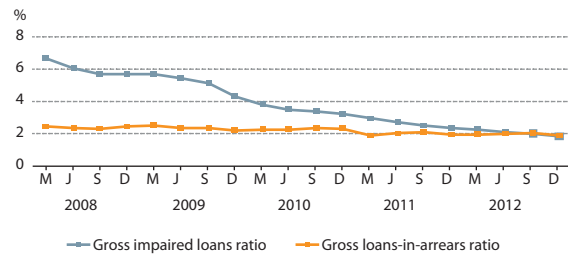
#### Household Sector, Banking System: Vintage Analysis for Housing Loans



Source: Bank Negara Malaysia

Chart 1.7

#### Household Sector, Banking System: Delinquencies - Purchase of Residential Properties



Source: Bank Negara Malaysia

Table 1.5

#### Household Sector, Banking System: Gross Loans-in-arrears Ratio

Ratio (%)	2010	2011	2012
Overall	3.0	2.6	2.5
Purchase of residential properties	2.3	2.0	1.9
Purchase of motor vehicles	6.2	5.5	5.5
Personal use	1.6	1.7	1.3
Credit cards	3.8	2.4	1.1
Purchase of securities	1.3	1.1	1.1

Source: Bank Negara Malaysia

Table 1.6

#### Household Sector, Banking System: Gross Impaired Loans Ratio

Ratio (%)	2010	2011	2012
Overall	2.3	1.8	1.5
Purchase of residential properties	3.2	2.3	1.9
Purchase of motor vehicles	1.2	1.2	1.1
Personal use	2.5	2.0	1.8
Credit cards	1.9	1.8	1.3
Purchase of securities	0.7	0.4	0.2

Source: Bank Negara Malaysia

sound and continued to improve during the year. In the largest segment of household loans, that is housing loans, the vintage analysis has continued to show a reduction in default rates over the years (Chart 1.6). The gross impairment ratio for housing loans correspondingly declined further in 2012 to 1.9% (2011: 2.3%) (Chart 1.7) led

primarily by the decline in the gross impairment amount (2012: -10.4%; 2011: -17.9%). Housing loans-in-arrears also remained low, accounting for only 1.9% of total housing loans.

Similar trends were observed in other categories of household loans in the banking system. Impairment ratios have been trending downwards across the board since 2006 (Table 1.5 and 1.6). The combined total expected losses from banks' household lending portfolio, at RM6.1 billion in 2012, has more than halved since 2006. With improved affordability assessments, bank exposures to the lower-income segment of borrowers (earning a monthly income of RM3,000 and below) were lower at 15.9% of total banking system loans (2011: 17.2%). Based on historical loss experience, potential losses from possible defaults by this group are unlikely to exceed RM1.9 billion or 1% of the banking system capital base.

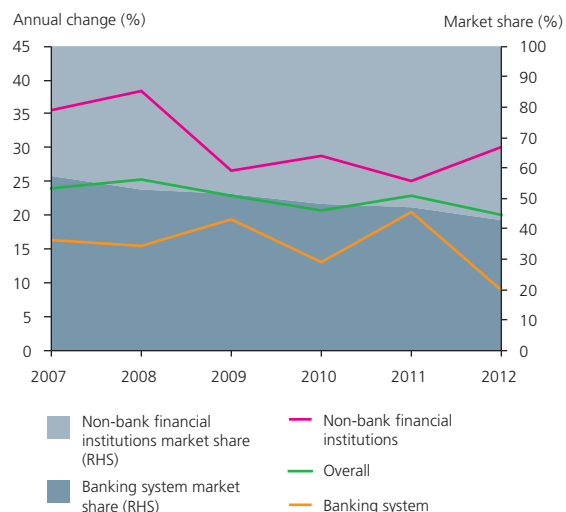
Bank lending rates held generally steady during the year across all categories of loans. Although banks continue to face some data and system limitations to varying degrees in efforts to move towards more robust risk-informed pricing practices, improvements have been observed since the 2011 Report, notably in the use of enhanced assumptions for estimating potential credit losses for specific borrower segments which drew on longer historical data and loss experience. This allowed for financing rates to be closer to levels that reflected the risk profile of loans.

### Non-bank financial institution (NBFIs) lending to households

NBFIs, including DFIs which are regulated by the Bank, accounted for about 12% of total credit to the household sector (Chart 1.1). But collectively, these institutions provide a significant share (57%) of personal financing credit to households, and such credit has been increasing significantly in the recent years. In 2012, overall credit on all facilities extended by the three largest NBFIs (encompassing a DFI, a large cooperative, and a building society) expanded at a faster rate of 23.1% (2011: +17.1%). The strong credit expansion was primarily driven by the increase in personal financing activity which rose at its fastest pace to date by 30% (2011: +25.1%; 2010: +28.7%) (Chart 1.8). For these NBFIs, more than 80% of the lending portfolio comprised personal financing, compared to only 5% in the case of banking system loans. During the year,

Chart 1.8

### Household Sector: Annual Change and Market Share of Personal Financing by Banks and Non-bank Financial Institutions



Source: Bank Negara Malaysia

NBFIs approved more than 600,000 new personal financing facilities worth RM43 billion (+63.7%). This was substantially higher than new personal financing facilities approved by banks which declined by 6.2% to RM19.4 billion. With other segments of household lending growing at a slower pace, personal financing as a proportion of total household debt rose further during the year to 17% (2011: 16%; 2010: 14.8%).

### Personal financing by non-bank financial institutions expanded at a stronger pace, and have increased in size and tenure

About 80% of the personal financing by NBFIs are granted to salaried households in the Government service based on automatic salary deduction scheme administered by the Biro Perkhidmatan Angkasa (BPA). By income categories, the majority of the borrowers of NBFIs earn a monthly income of less than RM3,000. The BPA scheme prescribes an aggregate deduction threshold of 60% of a borrower's total income net of statutory and other direct deductions from salary. These features

serve to significantly reduce credit risk and have been critical in supporting the quality of the NBFIs' financing portfolio given the credit risk management infrastructure of most NBFIs. The impairment ratio for personal financing made by NBFIs consequently has remained low at 1.6% compared with 1.8% for personal financing in the banking system.

Developments in the lending activities by NBFIs are not a significant concern from the perspective of financial stability at present in view of the low credit risk profile of the financing portfolio and the relative job security enjoyed by the vast majority of the borrowers. DFIs that are major providers of personal financing are also subject to the direct oversight of the Bank and must comply with both prudential and responsible financing requirements set by the Bank. Notwithstanding this, the Bank remains vigilant on the activities by other NBFIs and its potential wider spillovers on the household sector.

The lending practices of NBFIs to the household sector, particularly those in the lower-income segments, are being closely monitored. Under the financing packages more recently introduced by some NBFIs, the maximum financing amounts offered were observed to have doubled in the past four years. In 2012, the average financing amount for personal financing facilities extended by NBFIs (at RM68,000) was higher by 26% from the preceding year, and 30.2% higher than the average personal financing facility provided by banks. The proportion of new personal financing facilities by NBFIs which were for amounts that exceeded RM100,000 also increased significantly to 26% of total new facilities approved (2011: 15%). In order to comply with the salary deduction threshold, these packages allow for extended repayment tenures, or in some cases, bullet repayment of principal and interest upon reaching retirement. Financing rates for personal financing facilities offered by NBFIs have also declined to as low as 3.25% per annum on a flat rate basis or about 5.5% per annum on an effective rate basis. The financing operations of these large NBFIs are typically funded from fixed deposits which comprised up to 85% of total funding, with the balance partly sourced from bank borrowings. The long maturity of the financing portfolio of NBFIs (of up to 20 to 25 years for personal financing) vis-à-vis shorter-term funding sources (largely deposits with maturity of not

exceeding 12 months) gives rise to material funding mismatch and liquidity risk. As at end-2012, the loan-to-deposit ratio for these NBFIs ranged between 77% and as high as 125%. The low reliance on bank borrowings of about RM2.6 billion or 1.4% of banking system capital base, however, limits the potential spillover of risks from the NBFIs to the banking system.

The wide distribution of these financing packages by NBFIs has encouraged the build-up of leverage among households and compressed the buffers available for households to cope with income shocks. The leverage position of borrowers earning a monthly income of RM3,000 and below is considerably higher than those in other income groups. It also encourages higher spending by households beyond their means as reflected in the higher delinquencies of the lower-income group. In addition, the number of borrowers with more than two outstanding personal financing accounts from NBFIs has also increased by 27% since 2008, and the proportion of younger borrowers in the age group of 20 to 29 years has increased to account for 29.2% of total outstanding personal financing by NBFIs over the same period.

These trends have been shared with the Suruhanjaya Koperasi Malaysia, the regulator for the cooperatives sector, which has issued requirements for the cooperatives to observe responsible lending practices similar to the Guidelines on Responsible Financing issued to the banks. The Bank has also raised these views directly to the Board and senior management of the larger NBFIs that are not currently subject to any form of regulatory oversight, with recommendations for these institutions to observe responsible financing practices, which should also include a review of lending growth targets to more sustainable levels in line with responsible financing practices. The Bank has in turn increased the intensity of its supervisory reviews of NBFIs under the regulatory purview of the Bank. These NBFIs have been required to enhance the calculation of debt service ratios by including, among others, repayment obligations which are not part of the automatic salary deduction in order to sufficiently reflect prudent buffers for households to meet essential and contingent expenditures, and to review the features of the lending products, including repayment tenure, that are likely to encourage irresponsible and imprudent borrowing by

households. The recent passage of new legislation and the amendments to the Central Bank of Malaysia Act 2009 empowers the Bank to address risks from the entities outside of its regulatory perimeter.

The Government has continued to introduce targeted measures to assist individuals in the low- to middle-income groups to cope with the rising cost of living, particularly in the urban centres. These included additional financial assistance provided to targeted household segments and the work that is already in progress on improvements to the public transportation system. In addition, the construction of houses under the 1Malaysia People's Housing Scheme (PR1MA) which has commenced will increase the supply of affordable homes. The Government has also allocated a further RM1.9 billion in 2013 for the construction of an additional 123,000 affordable housing units in various strategic locations nationwide. During the year, the Bank continued to work closely with relevant government agencies to expand the outreach of the My First Home Scheme to help eligible low- to middle-income households to own homes. The eligibility requirements for the My First Home Scheme was expanded with effect from January 2013 by raising the maximum monthly income threshold and maximum limits on house prices covered under the scheme to benefit more house buyers. To ensure that this will not over-stretch the finances of eligible households, financing under the scheme continues to be subjected to underwriting and affordability assessments.

For borrowers experiencing financial difficulties, the institutional arrangements already in place for debt counselling, restructuring and consolidation continued to provide important avenues for borrowers to seek assistance to better cope with the debt obligations. In 2012, a higher number of borrowers (an increase of 13% from 2011) sought debt counselling services from the Credit Counselling and Debt Management Agency (Agensi Kaunseling dan Pengurusan Kredit, AKPK). Of the 35,825 borrowers who approached AKPK, a total of 16,137 or 45% were further assisted through AKPK's debt management programme. About 66% of individuals who enrolled in the debt management programme comprised those with a monthly income of RM3,000 and less. In view of the growth in lending by NBFIs, AKPK is in the process of extending its debt management

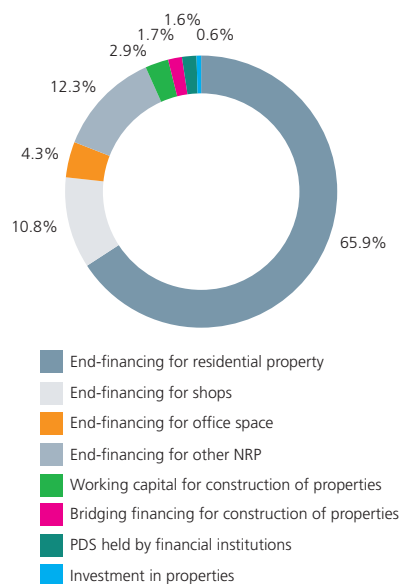
and counseling services to include borrowers from NBFIs.

## MANAGING DEVELOPMENTS IN THE DOMESTIC PROPERTY MARKET

Developments in the property market affect financial stability through the impact of potential losses from delinquent loans including those which are secured by property, default in fixed income securities held, and changes in the valuation of real estate assets which are in the balance sheets of financial institutions. In the event of weakness in the property market, default risk may increase when associated with a more generalised decline in real sector activities and conditions of high unemployment. As at end-2012, total exposures of financial institutions to the domestic property market amounted to about RM480 billion (Chart 1.9). These were primarily in the form of direct lending and to a lesser extent, holdings of debt securities. Banks' exposures to the property market amounted to RM458.9 billion, or 24% of banking system assets. The bulk (66.2%) of this was in the form of end-financing for the purchase of residential properties which also accounted for the largest share (27.4%) of outstanding loans in the banking system. End-financing for

Chart 1.9

### Property Market: Financial Institutions' Exposures to the Property Market

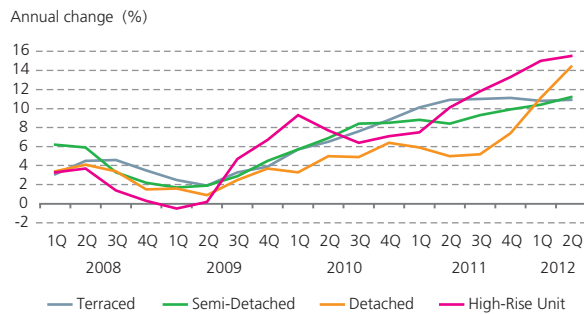


Source: Bank Negara Malaysia

the purchase of non-residential properties, working capital and bridging financing for the construction of properties accounted for another 32.8% of total bank exposures to the property market. Meanwhile, holdings of debt securities issued for property development were not significant (conventional banks are restricted by regulation from holding direct investments in properties). While exposure of the banks to the property market was sizeable, the potential credit losses from an adjustment in property prices are assessed to be within the banks' capacity to absorb. Exposure of the insurers and takaful operators to the property sector, mainly through holding of securities and investment in properties, amounted to RM8.9 billion, representing 4.1% of total assets. Some larger life insurers also extend loans for the purchase of property to match the maturity profile of life insurance liabilities, but this remains small relative to the total market for property loans.

Chart 1.10

#### Property Market, Residential: Growth of House Prices by Segment



Source: National Property Information Centre

Table 1.7

#### Property Market, Residential: Growth of House Prices by State

Annual change (%)	'01-'09 Average	4Q'10	4Q'11	2Q'11	1Q'12	2Q'12
Malaysia	3.2	8.2	10.0	10.6	12.0	11.2
Kuala Lumpur	4.3	7.1	13.9	12.7	18.0	9.1
Selangor	2.3	13.0	11.9	13.9	15.2	16.5
Johor	-0.2	4.4	9.1	8.7	7.1	8.1
Penang	4.3	4.0	11.4	7.8	11.4	11.9

Source: National Property Information Centre

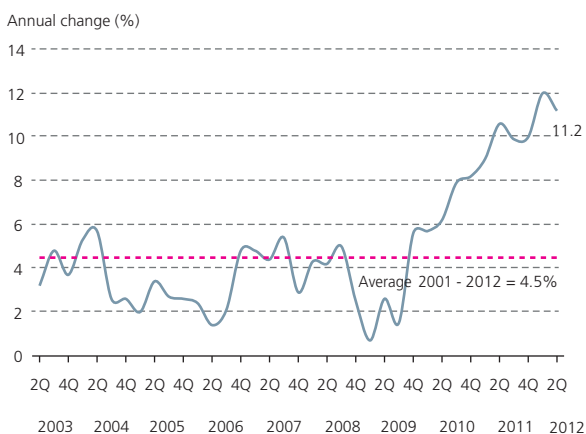
Aggregate house prices continued to trend upwards in 2012. The Malaysian House Price Index (MHPI) registered an annual increase of 11.2% in the second quarter (2011: +9.9%), driven mainly by higher prices and transactions in the detached, semi-detached and luxury high-rise property segments (Chart 1.10 and Table 1.7). Growth has diverged markedly from the long-term trend since the third quarter of 2010 (Chart 1.11). As elaborated in the box article 'Developments in Housing Market and Implications on Financial Stability', movements in house prices in Malaysia are largely explained by macroeconomic factors. The widening of the supply-demand gap in residential properties, particularly in the low- to medium-priced segment and in locations close to and in major employment centres, has contributed to the upward trend in house prices.

The upward trend in residential property prices largely reflected macroeconomic, rather than financial factors. Investment purchases, while contributing to price increases, have not been fuelled by excessive credit

The effect of medium-term factors, most importantly changes in demography and rate of urbanisation, appear to be more pronounced. Over the next few years, the increase in new

Chart 1.11

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

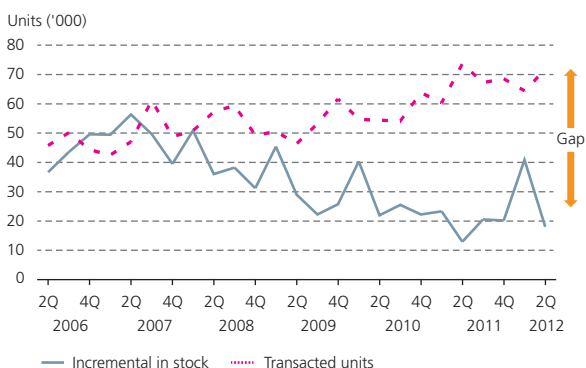


Source: National Property Information Centre

home buyers is likely to continue, exceeding the average growth in housing stock, notwithstanding measures already announced by the Government to add to new supply which are focused mainly on the low- to medium-priced segments. Since the second quarter of 2007, demand (using average transacted units as a proxy) has consistently outpaced the new supply of houses (as measured by the incremental stock of houses) by a large margin (Chart 1.12). Given the higher concentration of new developments in properties priced above RM1 million (Chart 1.13), approximately 80% of property transactions to meet demand by the general population has been taking place in the secondary market. This has partly supported house prices at higher levels,

Chart 1.12

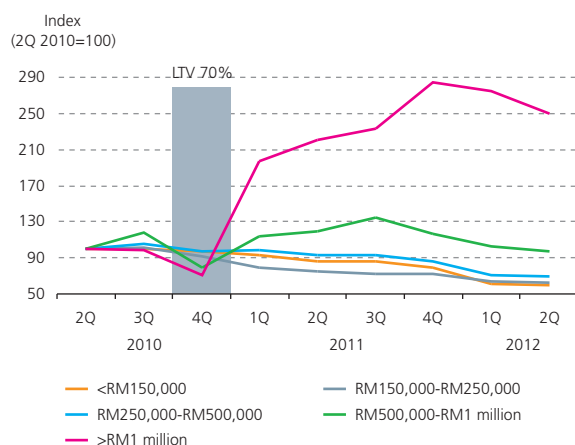
Property Market, Residential: Transaction and Incremental in Stock of Houses



Source: National Property Information Centre

Chart 1.13

Property Market, Residential: Index of Units Launched by Price



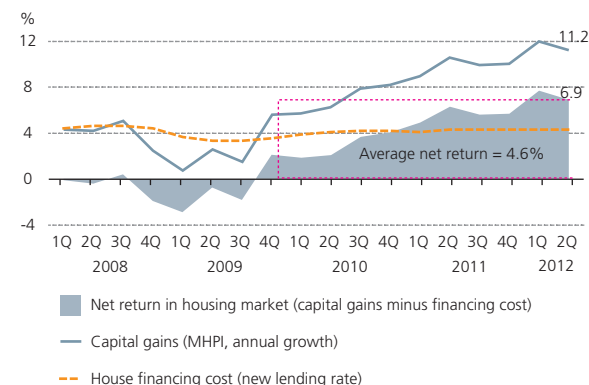
Source: National Property Information Centre and internal computation

particularly in Kuala Lumpur, Selangor and Penang. Higher prices paid by existing home owners to upgrade to new properties, as well as opportunistic sales to benefit from the higher prices of new property launches in and around prime locations, have also caused prices transacted in the secondary market to trend higher. Rising construction costs have also partly explained house price increase between the third quarter of 2009 to the third quarter of 2011, but these costs have been increasing at a slower rate in 2012.

Shorter-term demand factors – in particular lower interest rates leading to lower borrowing costs and the higher attraction of property as an asset class and a hedge against inflation – have had a

Chart 1.14

Property Market, Residential: Capital Gains from Investments in Housing Market



Source: National Property Information Centre and internal computation

smaller relative effect, compared to demographics, on recent movements in house prices. The return on investments in residential properties averaged at about 4.6% over the fourth quarter of 2009 to the second quarter of 2012 (Chart 1.14). This has attracted more investors to the property sector, which is seen as a relatively safe investment given the scarcity of land in prime locations, stable rental yields (outside the Klang Valley) and relatively low speculative elements compared with property markets in other countries. However, the stable growth in housing credit in the recent three years, and importantly, continued discipline observed in the underwriting standards of banks would suggest that investment purchases, while contributing to the price increases, are not being fuelled by excessive and unaffordable credit. This is particularly important for financial stability, but also keeping houses affordable for the average household. Investment purchases by foreigners – usually with cash and at the high-end of the property market – have had some effect in driving house prices higher in specific locations, but these transactions remained minimal, accounting for less than 2% of the total number of property market transactions.

Since introducing pre-emptive macroprudential and fiscal measures in 2010, some moderation in investment activities in the housing market have been observed. Of significance, the annual growth in the number of borrowers with multiple housing loan accounts declined sharply, while the number of transacted housing units (particularly for houses priced below RM250,000) also grew at a moderately slower rate over the recent nine quarters. These developments however, did not have a significant impact on overall house prices which has continued to increase. The number of new borrowers with multiple housing loans has started to increase again since June 2012.

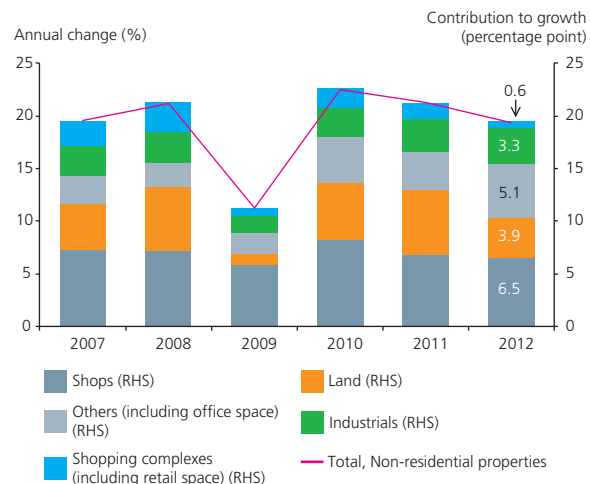
While overall housing affordability at the national level improved marginally during the year, affordability deteriorated in major cities and employment centres. Measures taken by the Government, including raising the RPGT, implementation of PR1MA and My First Home Scheme, and increasing the supply of affordable houses, will help to address affordability. As measures to increase the supply of affordable houses will take some time to take effect, it will be important for financial institutions to continue to observe prudent underwriting standards to avoid a buildup of financial imbalances in the property

market. In this regard, banks have been more vigilant in their lending standards in a number of aspects. New housing loans with a LTV ratio below 80% were higher than in the previous two years. Several banks took steps to extend the lending considerations (for both end-financing and financing for the development of housing projects) to cover a broader set of factors that bear on prices. This included the level of development in a particular location, population density, status of overhang, existing and potential demand and rate of turnover of properties within and around the area. These factors were also more regularly updated to take account of new developments and trends.

Some banks have reviewed and strengthened internal policies for financing of projects or the purchase of residential properties in locations where price increases have been stronger. For certain locations, margins of financing have been reduced. In cases where banks have entered into end-financing tie-ups with selected property developers to offer attractive financing packages together with the project's launch, assessments of a property developer's track record and background have been more rigorous than previously. Banks have also tightened internal controls over credit exceptions, with improved documentation and strengthened processes for monitoring compliance with risk limits. In addition, valuation processes have been more robust, along with improvements to banks'

Chart 1.15

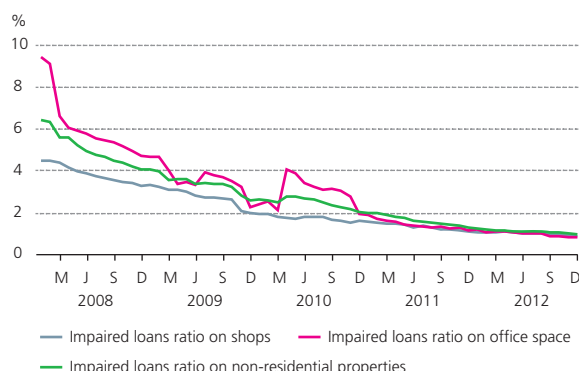
### Property Market, Non-residential: Loan Growth and Contribution to Growth by Segment



Source: Bank Negara Malaysia

Chart 1.16

Property Market, Non-residential: Impaired Loans



Source: Bank Negara Malaysia

Chart 1.17

Property Market, Non-residential: Loans-in-arrears



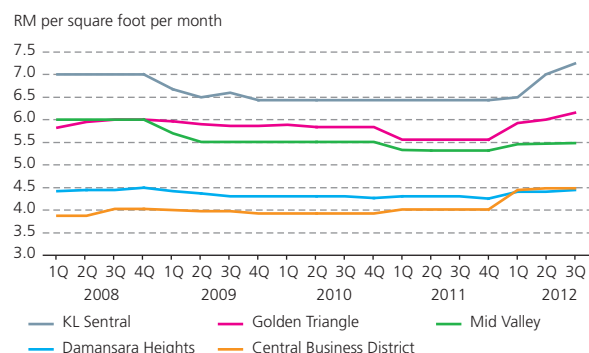
Source: Bank Negara Malaysia

collateral management systems. As higher house prices have implications for household debt, proper assessments of affordability by banks will also continue to be important to moderate expectations of borrowers who may be tempted to take on excessive debt in the desire to own a home. With the implementation of Guidelines on Responsible Financing, affordability assessments within banks have improved considerably.

In the non-residential property (NRP) segment, the bulk of bank lending has been for the purchase of shop lots and land (Chart 1.15). Bank lending for these purposes grew by 16.6% during the year. About two-thirds of bank lending for the purchase of shop lots was estimated to be for investment purchases by households and retail investors. With demand outpacing the expansion in supply, compounded annual growth rate (CAGR) of prices of shop lots have risen by 7.2% between 2006 and 2012. The CAGR for land

Chart 1.18

Property Market, Non-residential: Rental Rates of Office Space in Klang Valley



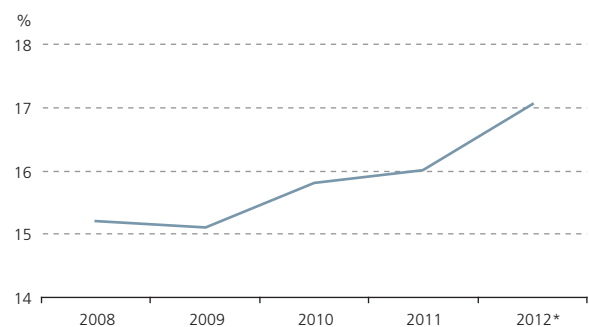
Source: Knight Frank

prices (measured as average transaction value over volume) in major employment centres increased by 8% over the same period, mostly in the recent three years (+24%), reflecting higher purchases by developers for land banking purposes, particularly in the major business centres. Bank lending for the purchase of shop lots and land was less than 8% of total bank loans, with impaired loans remaining below 1% and improving in 2012 (Chart 1.16). Overall, the asset quality of bank exposures to the NRP segment remained intact with a low and stable incidence of delinquencies (Chart 1.17).

During the year, bank lending for the purchase of office space and other buildings contributed a larger share of loan growth in the NRP segment compared to previous years. The demand for new office buildings with modern and improved facilities, security and green features helped push

Chart 1.19

Property Market, Non-residential: Vacancy Rate of Office Space in Malaysia

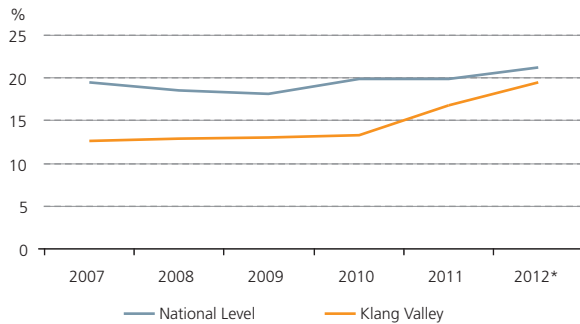


\* Based on third quarter 2012 preliminary figure

Source: National Property Information Centre

Chart 1.20

### Property Market, Non-residential: Vacancy Rate of Shopping Complex

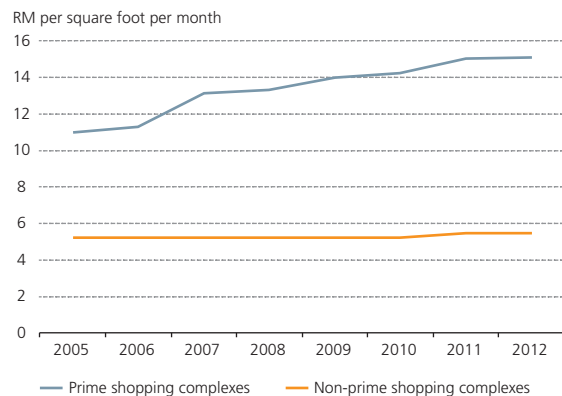


\* Based on the third quarter 2012 preliminary figure

Source: National Property Information Centre

Chart 1.21

### Property Market, Non-residential: Rental Rate Index of Shopping Complexes in Kuala Lumpur



Source: Jones Lang Wootton

rental rates up to RM5.56 per square foot after a prolonged period of stagnation (2009 to 2011: RM5.20 per square foot) (Chart 1.18). Existing and older office space, however, has been experiencing rising vacancy rates (Chart 1.19), reflecting some migration from older to newer buildings rather than new demand. Correspondingly, unplanned and uncoordinated construction and completion of new buildings could result in an oversupply of office space. The Government has stepped up monitoring of such projects to stagger the supply of new office space. As at end-2012, total end-financing exposures for office space and other buildings were only 1.9% of total bank loans. On aggregate, credit risk from exposures of the banking system to this segment remained manageable with the impaired loans

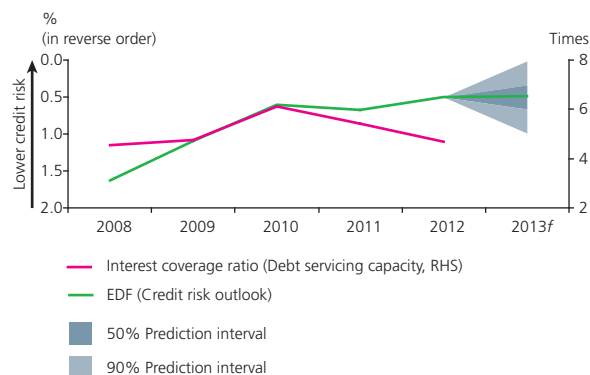
ratio remaining low at 0.8% (2011: 1.1%) of total loans to the segment and relatively small exposures to older office buildings. The vacancy rate for shopping complexes, particularly in the Klang Valley, remains significantly below the historical high of 32.6% in 1998 (Chart 1.20). Rental rates have also improved in recent periods (Chart 1.21). As with office space, banks' end-financing to the segment are similarly low at 1% of total bank loans, with the impaired loans ratio at 1.6%.

## MANAGING CREDIT RISK EXPOSURES TO BUSINESSES

Domestic businesses continued to be in a relatively good position, supported by sustained domestic and regional demand, and the financial and operational flexibility to cope with the challenges from slower external trade. The credit risk outlook for businesses, as measured by the Expected Default Frequency (EDF), improved to 0.5% (2011: 0.68%), with the overall debt servicing capacity remaining at healthy levels (Chart 1.22). Most industries with sizeable borrowings from the banking system (Chart 1.23 and 1.24) recorded an improvement in the EDF, with the exception of the building- and construction-related materials (BCM) and water industries. The EDF for the BCM industry deteriorated as domestic steel producers experienced continued compression in profit margin from lower sale prices and competition from cheaper imports (Chart 1.25). Progress in the implementation of construction projects under the

Chart 1.22

### Business Sector: Debt Servicing Capacity and Credit Risk Outlook

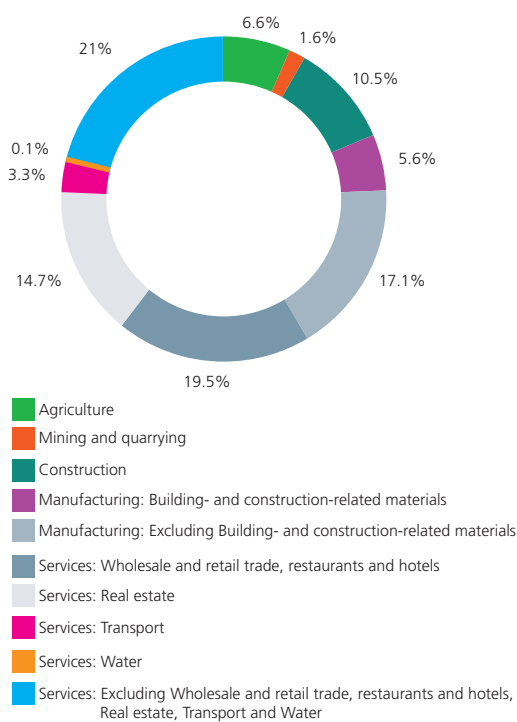


f forecast

Source: Moody's KMV Credit Edge™, Bloomberg and internal computation

Chart 1.23

**Business Sector, Banking System: Loans to Business Sector by Industry**

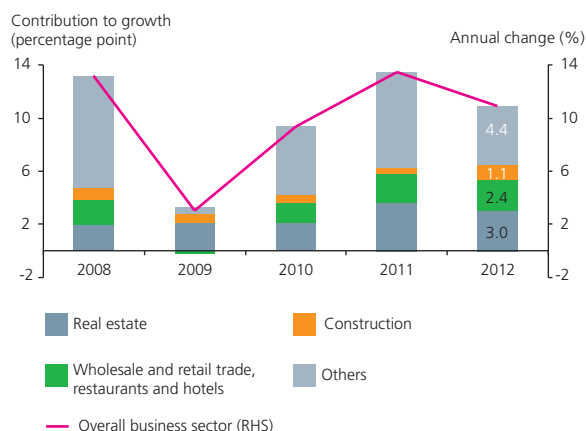


Source: Bank Negara Malaysia

Economic Transformation Programme (ETP) and 10th Malaysia Plan is expected to increase demand for domestic steel products. The higher credit risk in the water industry reflected the increasing operating costs and the prolonged uncertainties

Chart 1.24

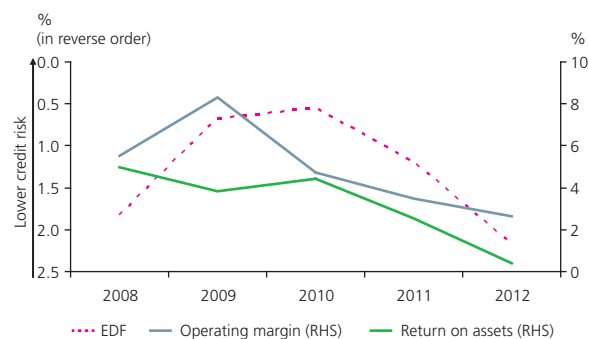
**Business Sector: Loan Growth and Contribution to Growth by Industry**



Source: Bank Negara Malaysia

Chart 1.25

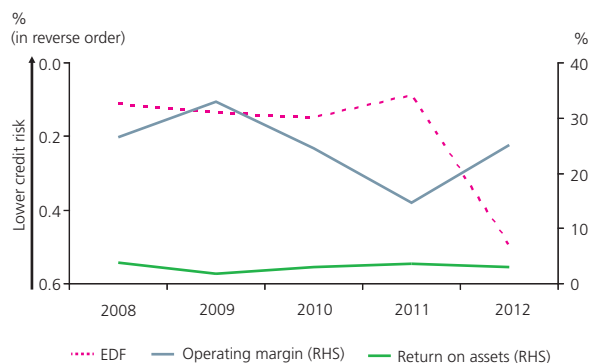
**Business Sector: Profitability and EDF for BCM Industry**



Source: Moody's KMV Credit Edge™, Bloomberg and internal computation

Chart 1.26

**Business Sector: Profitability and EDF for Water Industry**



Source: Moody's KMV Credit Edge™, Bloomberg and internal computation

around the restructuring of the industry which was expected to improve efficiency and productivity, and lower operating costs (Chart 1.26).

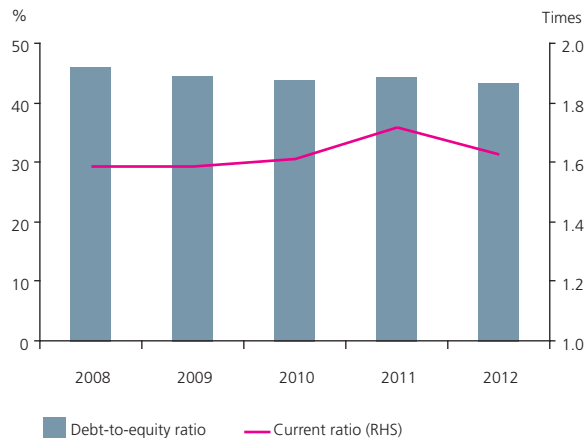
The overall financial performance of domestic businesses, including large borrowers in the banking system, was sustained during the year. Aggregate leverage of businesses improved with sustained liquidity position (Chart 1.27). Overall business sector recorded stable revenue and improved earnings before interest and tax on lower input cost, with the exception of commodities and export-oriented sectors, which were affected by lower commodity prices and weaker external demand (Chart 1.28). Cash balances of businesses remained ample and grew by 6.3% during the year. While the overall indebtedness of businesses has been gradually increasing in tandem with economic expansion, the level remained manageable and

well below the levels leading into the Asian Financial Crisis (Chart 1.29). Total outstanding debts of the business sector expanded by 12.5% (2011: +8.7%), driven mainly by debt raising in the capital market. New issuances of private debt securities (PDS) and sukuk by businesses (excluding financial institutions) during the year amounted to RM94.4 billion. Banks, insurers and takaful operators held 67.2% of total PDS and sukuk issued by domestic businesses. Bank lending to businesses grew strongly albeit at a slower pace of 10.9% (2011: +13.5%), with a divergence observed between the strength of lending to large businesses and small and medium enterprises (SMEs). The higher level of overall debt reflected the expansion of activities in the real sector, led mainly by the construction-related industries. Borrowings via both loans and PDS by the construction and infrastructure sectors increased by 27% (2011: +0.1%) on the implementation of major infrastructure projects by the Government sector, while borrowings for property-related sectors increased by 25.1% (2011: +23.6%) on continued strong demand for properties. Based on internal estimates by the Bank, banks will have sufficient capacity and liquidity buffers to meet the higher future financing needs for projects under the ETP through direct financing and investments in debt securities, even under the more stringent Basel III standards.

The overall external debt position of businesses was lower compared to 2009. External debts of Malaysian corporations accounted for about 14.6% of total corporate debt and comprised

Chart 1.27

## Business Sector: Leverage and Liquidity Indicator



Source: Bloomberg and internal computation

Chart 1.28

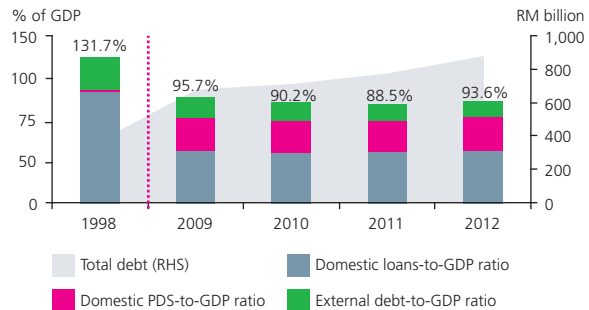
## Business Sector: Profitability Indicators



Source: Bloomberg and internal computation

Chart 1.29

## Business Sector: Debt-to-GDP Ratio



Source: Bank Negara Malaysia and Bloomberg

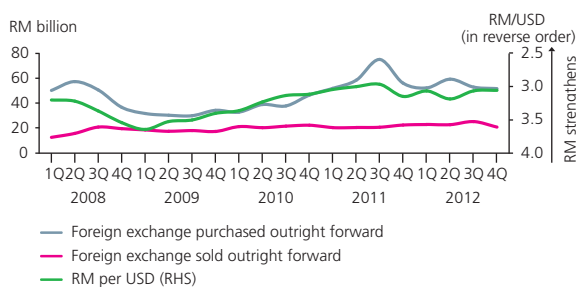
mainly loans and debt securities. External borrowings by businesses, which were mostly denominated in US dollars declined by 1.7% (2011: +2.1%). The debt servicing capacity of Malaysian corporations with substantial foreign borrowings remained satisfactory, supported by strong balance sheets and cash flows, and hedging activities against foreign exchange risk (Chart 1.30).

Exposures of banks and DFIs to large borrowers<sup>3</sup> (in the form of direct financing and holdings of PDS and sukuk) accounted for 19.9% (2011: 21.5%) of total bank financing and investments in PDS and sukuk in 2012. About 51% of this amount was extended to government-linked companies. The aggregate exposures of the insurance and takaful sector to large borrowers accounted for 19% of fund assets. The large borrowers mainly comprised diversified businesses, and companies in the infrastructure and utilities sectors. On aggregate, loans to these borrowers continued to exhibit

<sup>3</sup> Large borrowers refer to corporations with total borrowings > RM1billion (both loans and PDS)

Chart 1.30

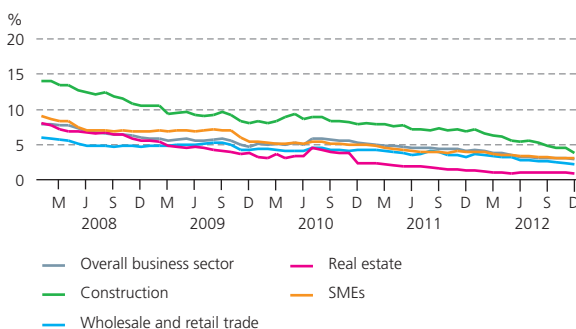
### Banking System: Hedging Activities by Domestic Non-bank Entities



Source: Bank Negara Malaysia

Chart 1.31

### Banking System: Gross Impaired Loans Ratio in Business Sector



Source: Bank Negara Malaysia

strong repayment trends. Delinquencies remained small at 0.3% of loans to the segment (2011: 0.4%). Bank financing to SMEs grew strongly by 15.5%, in tandem with the expansion in economic activity. Reflecting the generally sound financial position of businesses, the gross impaired financing for large businesses and SMEs declined to RM7 billion and RM5.3 billion respectively, with the impaired loans ratios correspondingly improving to 2.9% (2011: 4.2%) and 3% (2011: 3.9%) respectively (Chart 1.31). The ratio of repayment-to-disbursement for the business sector also improved to 94.8% (2011: 91%) demonstrating the continuing ability of businesses to prudently manage higher debt levels. Under the adverse macroeconomic stress test scenario over three years, credit risk losses from exposures to domestic businesses are estimated to remain manageable at 5.4% of banking system capital base.

The underwriting practices and risk management control functions applied by banks to business

exposures have strengthened significantly over the years. There have been marked improvements in banks' approaches to setting the risk appetite for different economic sectors and target markets. These include ensuring that credit concentration risk is managed well through limits on exposures to specific borrower groups and high-risk segments. In line with requirements for banks to have in place an Internal Capital Adequacy Assessment Process under Pillar 2 of the capital framework, banks have made considerable progress in enhancing the methodologies to measure and monitor credit and counterparty concentration risks. Risk acceptance criteria for business exposures are also substantially more robust. The Bank, based on its supervisory assessments, is satisfied that overall credit assessment standards are adequate and supported by a robust and comprehensive credit risk management infrastructure, conservative loan loss provisioning practices and strong oversight functions.

## MANAGING CONTAGION RISK FROM EXTERNAL EXPOSURES, EUROPEAN DELEVERAGING AND OVERSEAS OPERATIONS

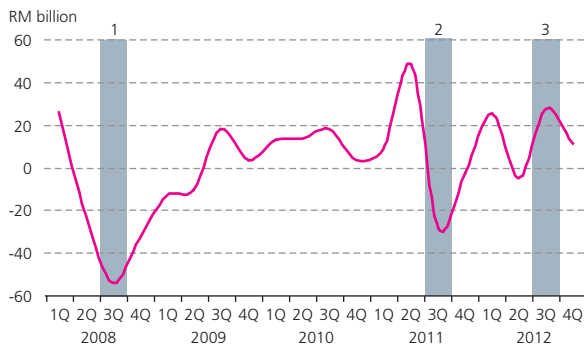
The domestic financial system continued to be resilient despite being confronted with heightened risks emanating from developments on the external front, mainly associated with developments in Europe, fiscal concerns in the United States (US), debt levels in Japan, and moderating growth in emerging market economies. These developments have contributed to the continued volatility in the domestic financial markets during the year. Contagion risks to domestic financial stability mainly arise from four channels: (i) the impact of market volatility on the market risk exposures of financial institutions; (ii) the external claims of financial institutions on overseas counterparties; (iii) deleveraging activities by foreign financial institutions; and (iv) spillovers from the expanding overseas operations of Malaysian banks. These risks were well-contained, supported by the orderly intermediation of short-term portfolio flows by the domestic financial markets; limited credit exposures of Malaysian financial institutions to counterparties in Europe; low impact from deleveraging activities by European banks; and the sound capital and funding positions supporting the overseas operations of Malaysian banks.

## Intermediation of short-term portfolio flows by financial markets

Short-term portfolio flows remained volatile during the year, reflecting the dynamic external environment and persistent uncertainties in the advanced economies. Following large and volatile two-way capital flows, particularly in the first half of the year, an amount of RM59.2 billion in total net portfolio inflows was recorded for the year as a whole. A lower Government budget deficit and the positive outlook for domestic and global growth, particularly after the implementation of quantitative easing in the US (Chart 1.32), attracted strong inflows to Malaysia. This contributed to a corresponding increase in the holdings of public debt securities – mostly in Bank Negara Monetary Notes (BNMN) and Malaysian

Chart 1.32

### Financial Market: Quarterly Net Portfolio Flows



<sup>1</sup>Lehman bankruptcy

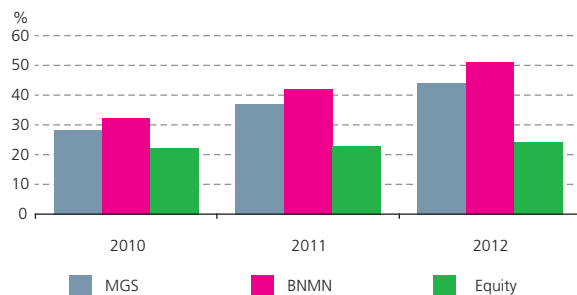
<sup>2</sup>US debt downgrade

<sup>3</sup>Federal Reserve third quantitative easing and European Central Bank rate cut

Source: Department of Statistics, Malaysia

Chart 1.33

### Financial Market: Non-resident Holdings of MGS, BNMN and Equities

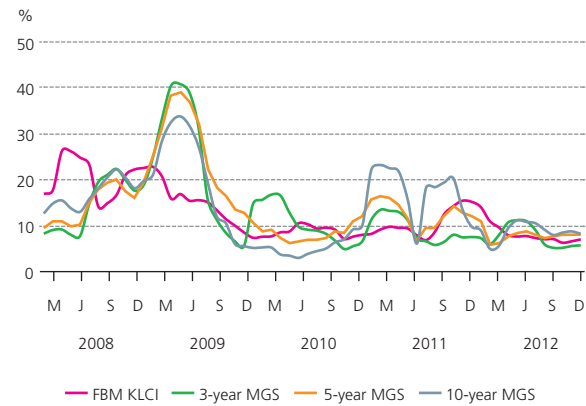


Holdings of MGS and BNMN quoted as percentage of total outstanding while holdings of equity quoted as percentage of total market capitalisation

Source: Bursa Malaysia, Bank Negara Malaysia and internal computation

Chart 1.34

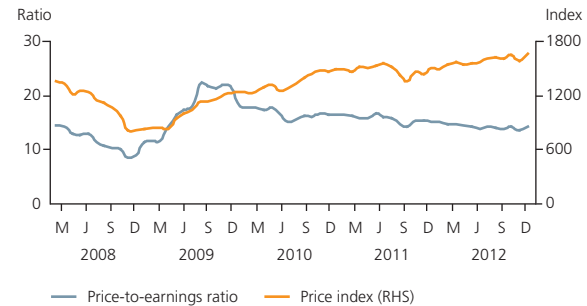
### Financial Market: 90-Day FBM KLCI and MGS Yields Volatility



Source: Bloomberg

Chart 1.35

### Financial Market: FBM KLCI Price Index and Price-to-earnings Ratio

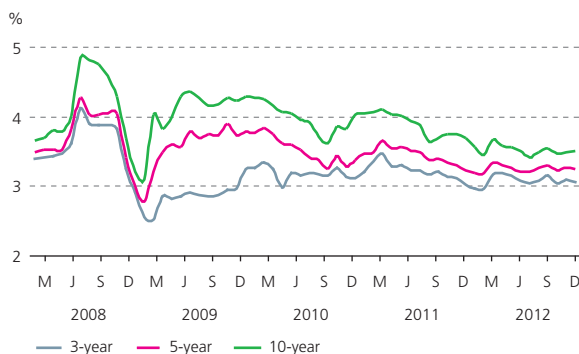


Source: Bloomberg

Government Securities (MGS) – by non-residents to account for 35.3% (2011: 29.9%) of outstanding public debt securities. Investments by non-residents in equities also increased slightly to 24.5% (2011: 23.1%) of total market capitalisation (Chart 1.33). In general, the inflows were well intermediated. While the FBM KLCI trended upward and reached multiple highs during the year, volatility in the equity market improved to 7% (end-2011: 15.3%) (Chart 1.34) and remained significantly lower than the level of volatility observed regionally and at the height of the Global Financial Crisis (GFC). Overall equity prices continued to be supported by sustained earnings, with the price-to-earnings (PE) ratio remaining stable but lower compared with the previous year (Chart 1.35). The strong domestic and external demand for MGS led to declining yields, particularly in the longer end of the maturity

Chart 1.36

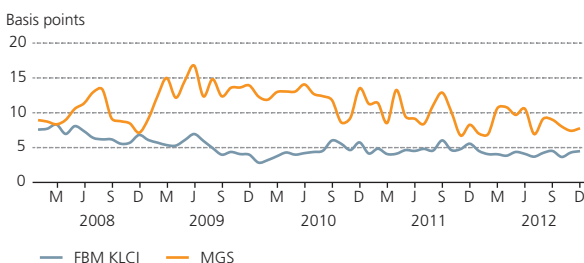
Financial Market: MGS Yields



Source: Bank Negara Malaysia

Chart 1.37

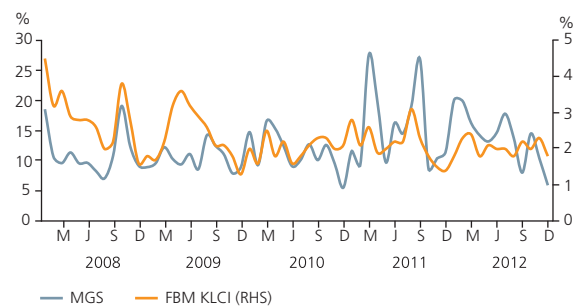
Financial Market: Average Bid-ask Spreads of FBM KLCI and MGS



Source: Bloomberg, Reuters and internal computation

Chart 1.38

Financial Market: FBM KLCI and MGS Monthly Turnover Ratio

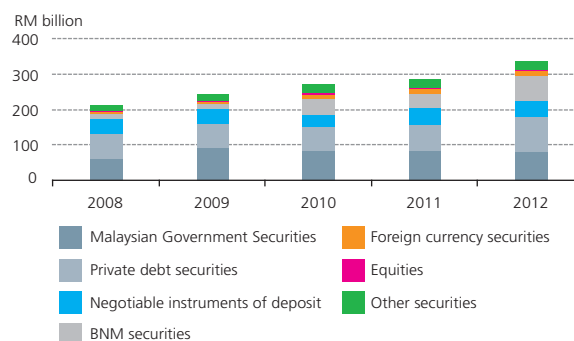


Source: Bloomberg, Bank Negara Malaysia and internal computation

spectrum (Chart 1.36). Market liquidity in the domestic equity and bond markets remained intact with stable turnover ratios and bid-ask spreads observed (Chart 1.37 and 1.38). In the event of a sudden reversal of the non-resident investments, domestic institutional investors such as insurance companies, and pension and provident funds have

Chart 1.39

Banking System: Composition of Securities Portfolio



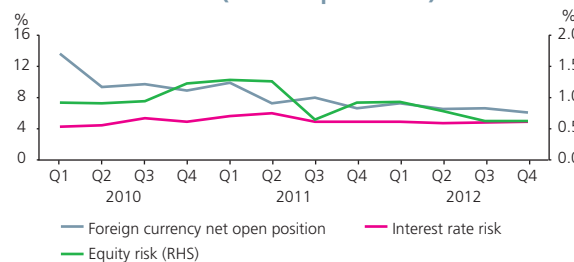
Source: Bank Negara Malaysia

sufficient capacity to step in to absorb the debt instruments that are being sold by the non-residents. On average, pension and provident funds account for over 20% of total outstanding public debt securities over the recent three years.

Activities of financial institutions showed no evidence of significant shifts in risk-taking behaviours. The structural composition of treasury assets held by banks remained broadly unchanged, although strong demand for high quality assets has led to a doubling of the holdings of BNMN (Chart 1.39). The investments in equities by banks remained minimal at less than 1% of capital base (Chart 1.40). The active management of market risk exposures enabled banks to record continued net gains from trading activities and investment portfolios which accounted for 14.6% of total net income (2011: 15.7%). The banks continued to actively hedge interest rate and foreign exchange exposures, resulting in a higher outstanding notional amount of interest rate

Chart 1.40

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



Note: The computation of net open position to capital base is based on Basel II Standardised Market Risk Approach for foreign exchange risk.

Source: Bank Negara Malaysia

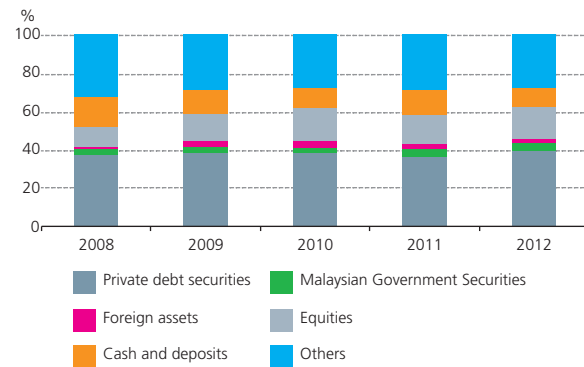
and foreign exchange related derivative contracts which expanded by 2.7% to RM726 billion and 8.9% to RM523 billion respectively. The interest rate exposures remained manageable with the aggregate duration-weighted interest rate risk position stabilising at 4.9% of capital base (Chart 1.40). Basis risk trended upwards in the second half of the year as spreads between MGS and interest rate swap (IRS) rates widened across all maturities driven by expectations of higher inflation and interest rate levels. However, spread movements remained within the historical range and were less volatile compared to the previous year and at the height of the GFC. The potential loss from basis risk arising from an increase of 30 basis points in the differential between changes in MGS yields and IRS rates, as seen during the GFC, remained small at 1% of banking system capital base.

The aggregate foreign currency net open position of the banking system was lower at 6.1% of capital base (2011: 6.7%) (Chart 1.40). Banks continued to actively manage their foreign currency exposures, supported by internal value-at-risk limits. At the aggregate level, the banking system recorded a small short US dollar open position of 0.2% of capital base, while the net short positions in other major currencies such as the euro, Singapore dollar, pound sterling and Australian dollar were less than 0.3% of the capital base for each respective currency. Generally, market risk shocks have had a much smaller impact on banking institutions than credit risk shocks. Most commercial and Islamic banks have small net open foreign exchange positions, such that a substantial exchange rate shock (about 20% depreciation in the ringgit) would have a limited adverse impact on capital. While most banks hold Government securities mainly for liquidity purposes, for the system as a whole, an increase in the risk weight of Government securities from 0% to 20% would only result in a 25 basis point decline in capital ratios. Investment banks and some commercial banks may be more severely impacted, but these institutions have high levels of capitalisation to absorb the potential losses.

Investments of insurers and takaful operators continued to be concentrated in high-grade PDS rated 'AA' and above. Such papers accounted for 37.9% of total assets of insurance and takaful funds (Chart 1.41 and 1.42). Total investments in equities by the industry expanded by 16.1% to RM31.8 billion to account for a slightly

Chart 1.41

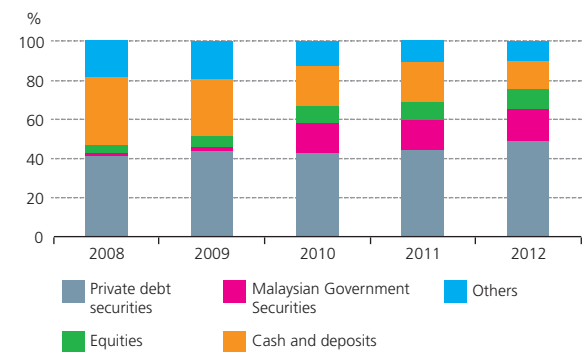
## Insurance Sector: Asset Composition



Source: Bank Negara Malaysia

Chart 1.42

## Takaful Sector: Asset Composition



Source: Bank Negara Malaysia

Chart 1.43

## Insurance Sector: Market Risk Composition



Source: Bank Negara Malaysia

higher share of 19% of total assets (2011: 18%). Overall, market risk exposures of insurers remained relatively stable at 12.2% of capital base (2011: 12.6%). Collectively, equity and interest rate risks formed 83.3% of insurers' total market

risk exposures (Chart 1.43). Foreign currency denominated assets of the insurance sector were at 8% of capital base, as foreign investments of insurance funds (excluding funds supporting businesses outside Malaysia) are subject to a prudential limit of 10% of total assets for each individual fund.

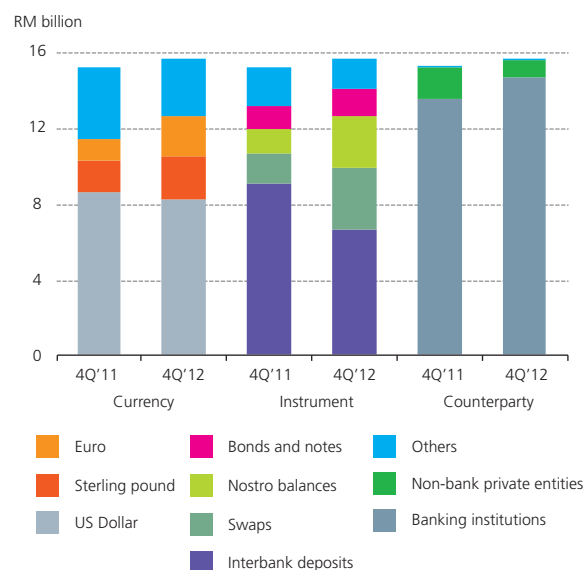
### Counterparty risk from financial institutions' external exposures

Claims by Malaysian onshore banks on entities in Labuan International Business and Financial Centre (IBFC), Europe and the rest of the world grew by 12% in 2012 to RM129.6 billion or 6.8% of total assets. This was attributed mainly to claims on regional economies, in line with the continued expansion in intra-regional trade and overseas expansion of Malaysian banks (Chart 1.44). While Malaysia's exports to the European Union currently account for approximately 8.8% of Malaysia's gross exports, exposures of financial institutions via loans and PDS holdings to businesses that have trade relations with European countries accounted for only 0.7% of total outstanding loans and PDS holdings of all financial institutions.

External claims by Malaysian banks on all European counterparties increased by 2.8% to RM15.5 billion or 8.5% of capital base, due mainly to higher claims on Germany, France and the United Kingdom (UK). The bulk of these claims are in the form of interbank deposits, swaps and nostro balances (Chart 1.45). European

Chart 1.45

### Banking System: Exposures to Europe by Currency, Instrument and Counterparty

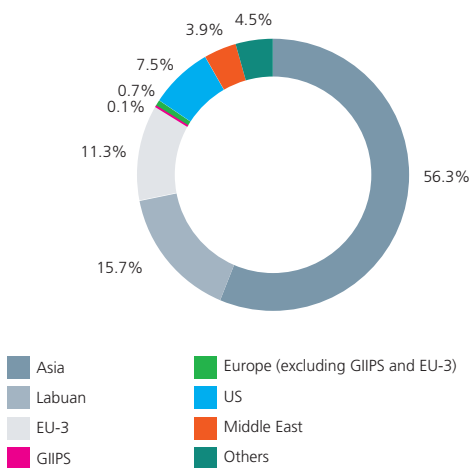


Source: Bank Negara Malaysia

counterparties of Malaysian banks were largely unaffected by rating downgrades and maintained strong international ratings. Other claims in the form of derivative transactions, and holdings of money market instruments, debt and equity securities issued by European counterparties remained very small at less than 0.3% of total assets or 3% of the capital base of the banking system, substantially limiting any impact from potential trading and valuation losses on the banking system in the event of heightened market volatility. Malaysian banks' exposures to valuation losses arising from euro currency movements were also limited, as external claims denominated in the euro remained low at 2.3% of capital base (2011: 1.5%). In addition, credit risk exposures of banks from term loans provided to non-bank private corporations in the euro area, which could be affected by weaker growth prospects for the European region, amounted to only 0.5% of capital base.

Chart 1.44

### Banking System: Composition of External Claims by Location

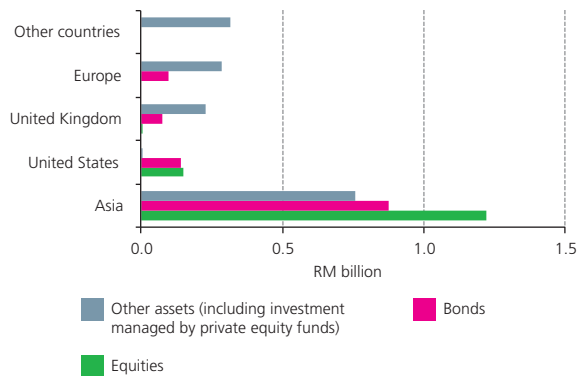


Source: Bank Negara Malaysia

External claims on all counterparties domiciled in Greece, Ireland, Italy, Portugal and Spain (GIIPS) were less than 0.1% of banks' capital base. The composition of these claims was largely unchanged, mainly comprising long-term loans to non-bank private entities, with the remainder in the form of interbank deposits and nostro account balances with correspondent banks to facilitate

Chart 1.46

### Insurance Sector: External Investment Exposures by Region



Source: Bank Negara Malaysia

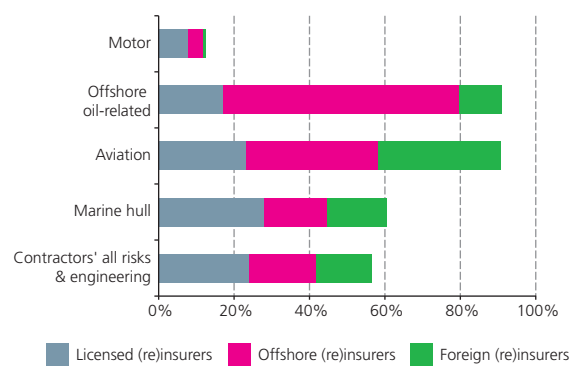
currency settlements. As reported in 2011, the simulated impact of a 100% loss given default for all asset exposures to GIPS countries is small, both at the system and institutional levels. Updated simulations show this impact to have reduced further at the individual bank level, with the largest impact amounting to only 0.4% of capital base.

External claims by Malaysian insurers were mainly in the form of reinsurance exposures and overseas investments. Overseas investments remained small at 2.5% of total assets or 8% of total capital base. Approximately 56% of overseas investments are in Asia, particularly in Indonesia and Singapore, and mainly in equities. Malaysian insurers' investment exposure to Europe was low, at RM0.4 billion or 0.6% of total capital base, mainly invested in private equity funds (74.4%) and bonds (25.6%) in the EU-3 countries (Chart 1.46).

During the year, Malaysian insurers ceded a total of RM3 billion in premiums, representing 16.5% of total premiums written, to (re)insurers abroad (including (re)insurers operating in Labuan IBFC). These were mainly on large and specialised risks in the aviation, oil and gas, engineering and marine hull classes of business (Chart 1.47). Counterparty risks from Malaysian insurers' exposures to global (re)insurers were low as general conditions in the global reinsurance market improved significantly during the year. Global reinsurers posted stronger profit to register a return on equity of 10.7% (2011: 5%). This was primarily attributed to the lower catastrophe losses in 2012. Following the record high catastrophe losses in the previous year,

Chart 1.47

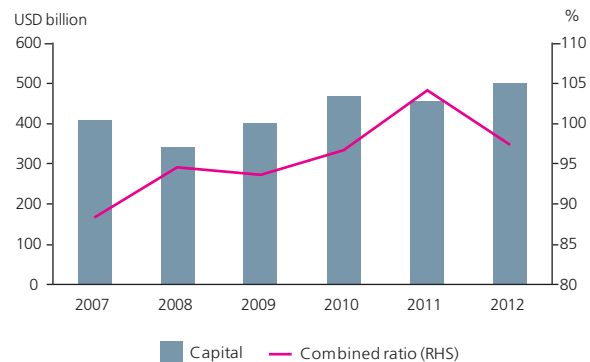
### Insurance Sector: Reinsurance Ceded Ratio by Selected Business Classes



Source: Bank Negara Malaysia

Chart 1.48

### Insurance Sector: Global Reinsurers Capital and Combined Ratio



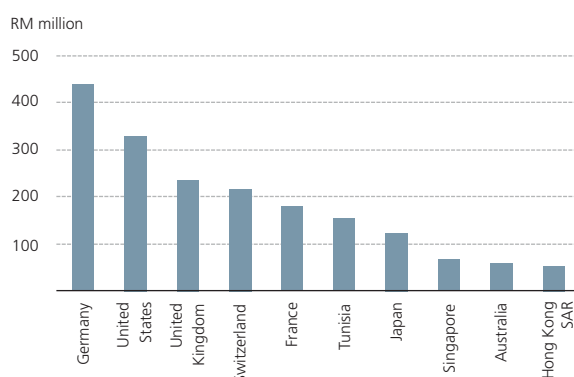
Source: Aon Benfield

credit default swap spreads of global reinsurers widened but remained relatively low. The combined capitalisation of global reinsurers reached a record level of USD480 billion in 2012, providing additional surplus reinsurance capacity (Chart 1.48).

Reinsurance exposures to European-based (re)insurers accounted for 52% of total outstanding claims against foreign (re)insurers. These exposures were lower in 2012 at RM0.8 billion (2011: RM0.9 billion) or 9.4% of total capital base. The majority of the exposures were to (re)insurers headquartered in Germany, Switzerland and the UK which have continued to record strong capital positions and financial results (Chart 1.49). About half of the exposures were from reinsurance placements with the Malaysian branch of three

Chart 1.49

### Insurance Sector: Foreign-based Reinsurance Exposure by Claims Outstanding



Source: Bank Negara Malaysia

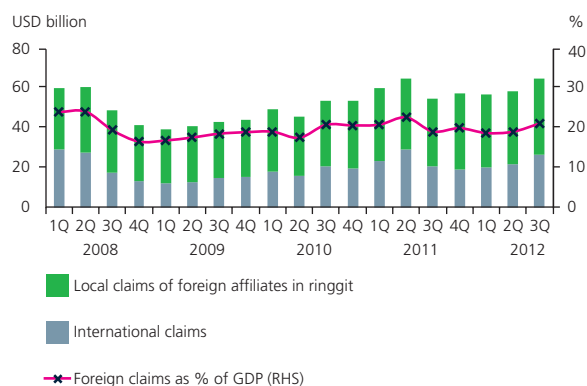
European-based (re)insurers. These branches are required to set aside dedicated capital earmarked for the Malaysian operations. As at end-2012, the branches had a combined capital adequacy ratio of 216% (2011: 277%), well above the domestic supervisory capital requirement. Reinsurance claims exposures to Labuan IBFC entities, comprising mainly branches or subsidiaries of well-established companies with strong credit ratings and financial standing, amounted to RM1.5 billion or 17.6% of total capital base for the general insurance industry.

### Implications from deleveraging and scaling back of operations by European financial institutions

Deleveraging activities by the European financial institutions have had a negligible impact on the Malaysian financial system and domestic financial intermediation. This has been notwithstanding an increase in European banks' claims on Malaysia (including Labuan entities) during the year according to the Consolidated Banking Statistics published by the Bank for International Settlements (BIS statistics). Claims on Malaysia rose to USD63.8 billion (2011: USD56.6 billion) or 20.9% of GDP as at the end of the third quarter of 2012. The profile of these claims remains unchanged, with the bulk (58.6%) of claims amounting to USD37.4 billion or 12.2% of GDP arising from ringgit-denominated claims by the European banks' subsidiaries in Malaysia (Chart 1.50 and Table 1.8). Such claims represent equity investments by the parents and assets of the Malaysian subsidiaries. The local operations of these subsidiaries largely comprised lending

Chart 1.50

### European Banks' Foreign Claims on Malaysia



Source: Bank for International Settlements, Bank Negara Malaysia and internal computation

to Malaysian borrowers, holdings of securities issued by Malaysian entities, deposits placed with financial institutions in Malaysia, and transactions involving financial contracts with Malaysian counterparts. Excluding UK-based banks, total foreign claims by European banks on Malaysia as reported in the BIS statistics accounted for only USD18.5 billion or 6% of GDP, comparable to most regional peers.

The Bank's assessment remains that the potential impact on Malaysia from deleveraging activities by the European banks is low. As noted earlier, the bulk of BIS reported foreign bank claims on Malaysia arose mainly from the operations of Malaysian subsidiaries of the European banks (locally-incorporated European banks or LIEBs) where the assets and deposits are predominantly denominated in ringgit. Malaysia has seven LIEBs based in the EU-3 countries, of which three banking groups are from the UK. The LIEBs continued to exhibit strong and consistent operating performance and returns while maintaining stable market shares (8.2% of total banking system assets, 7.4% of total banking system loans and 8.2% of total deposits). Although outstanding trade finance moderated slightly, this was reflective of the slower trade performance for Malaysia and for the overall global economy. Domestic banks also remained well-positioned with the capacity and capability to fulfill the trade financing requirements of local businesses. This is further supported by the fact that there appears at present to be no material differences or specialisation between trade

Table 1.8

European Banks' Claims on Malaysia<sup>1</sup>

		As % of Malaysia GDP	(A)	(B)		(C)	
			Cross-border claims <sup>2</sup> of European banks on Malaysia	Local claims <sup>3</sup> of foreign affiliates <sup>4</sup> of European banks in foreign currency	Other foreign affiliates	Local claims of foreign affiliates of European banks in ringgit	Other foreign affiliates
				Locally-incorporated European banks in Malaysia		Locally-incorporated European banks in Malaysia	
(i)	Foreign claims (A + B + C)	20.9 <sup>5</sup>					
(ii)	International claims (A + B)	8.6					
(iii)	Local claims of foreign affiliates in ringgit (C)	12.2					
(iv)	Claims of seven locally-incorporated European banks	16.7					

Note: <sup>1</sup> Each claim in row (i) to (iv) refers to the sum of corresponding shaded columns. Claims in row (i) to (iii) are based on BIS Consolidated Banking Statistics. Claims in row (iv) are estimated from the ringgit and foreign currency denominated total outstanding loans, net interbank placement with Bank Negara Malaysia, securities held and capital base of the seven locally-incorporated European banks

<sup>2</sup> Claims that are granted or extended to non-residents

<sup>3</sup> Claims of reporting banks' foreign affiliates (branches and subsidiaries) on the residents of the host country (country of residence of affiliates)

<sup>4</sup> Foreign affiliates refer to foreign subsidiaries and branches of reporting banks

<sup>5</sup> UK banks' foreign claims on Malaysia based on BIS statistics accounted for 14.8% of GDP

<sup>6</sup> Consolidated claims of domestic banking groups, i.e. domestic banks with head offices in a given country and their foreign offices (branches and subsidiaries)

Source: BIS Consolidated Banking Statistics<sup>6</sup> (immediate risk basis) and internal computation

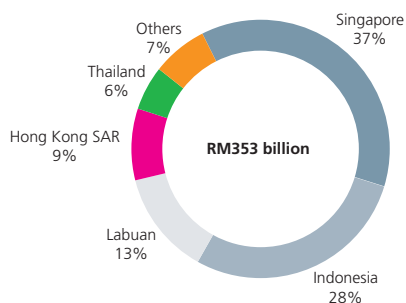
financing instruments offered by domestic and foreign banks. European-based insurers in the domestic insurance industry accounted for 21.8% of total premiums. During the year, two European insurers downsized their Asian operations due to regulatory constraints at the parent. This had a negligible impact on the domestic insurance industry as the Malaysian operations of these entities were quickly acquired by other insurers looking to expand and consolidate their presence in Asia and Malaysia.

### Overseas operations of domestic banking groups

The risk of contagion from the cross-border operations of Malaysian banks remains low. While banks have been growing their regional operations, this has been at a pace that is in line with the capacity to manage the attendant risks. Business expansions abroad are subject to the Bank's prior approval based on an assessment of the banking institution's ability to manage the expanded scope and scale of operations.

Chart 1.51

**Banking System: Asset Composition of Operations in Labuan IBFC and Overseas**



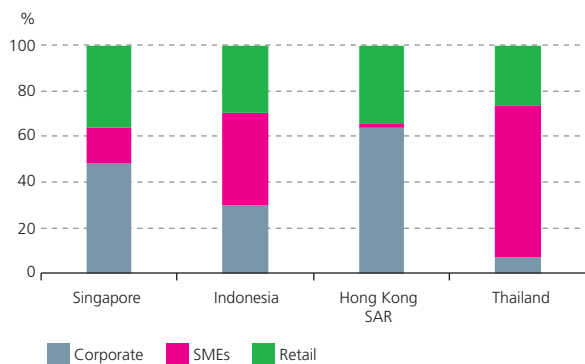
Source: Bank Negara Malaysia

Ongoing supervisory reviews by the Bank affirm the resilience of the domestic financial institutions to external shocks, both at the entity and group levels.

Total assets of branches and subsidiaries of domestic banking groups in the Asian region and other parts of the world amounted to RM353 billion as at the end of the fourth quarter of 2012, of which almost 70% was from operations in Singapore and Indonesia (Chart 1.51). The contribution of overseas operations to total assets of individual domestic banking groups ranged between 0.1% and 18.6%. The profile of the overseas operations of these banks remained broadly unchanged. Traditional lending activities and investments in debt securities continued to dominate the asset profile of these overseas entities, which accounted for 79% of total assets of overseas operations. The risk profile of these activities remains low.

Chart 1.52

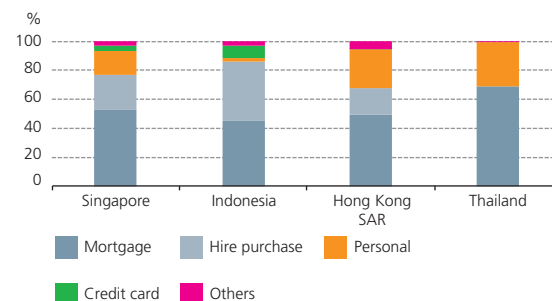
**Banking System: Loan Composition of Selected Overseas Operations**



Source: Bank Negara Malaysia

Chart 1.53

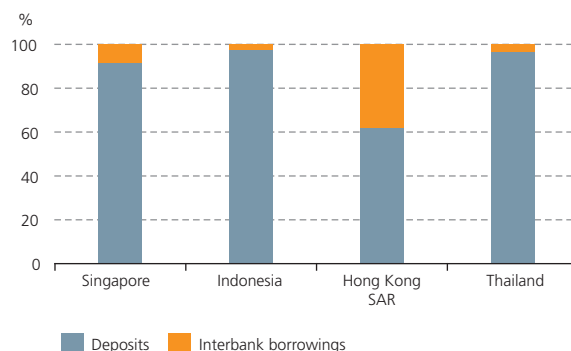
**Banking System: Retail Loan Composition of Selected Overseas Operations**



Source: Bank Negara Malaysia

Chart 1.54

**Banking System: Funding Structure of Selected Overseas Operations**

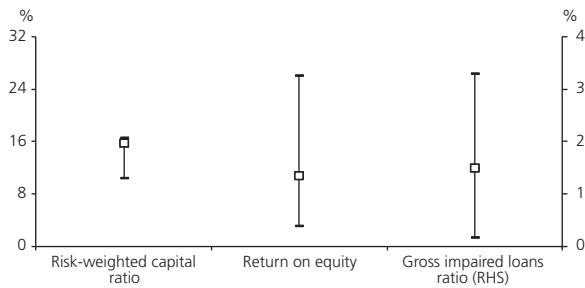


Source: Bank Negara Malaysia

Business loans extended by the overseas affiliates of domestic banking groups mainly comprised working capital facilities, bank guarantees and letters of credit for international trading activities (Chart 1.52). Retail loans are largely secured, mostly for the purchase of residential properties (51%) and vehicles (28%), while unsecured financing accounted for 22% of the total outstanding loans of overseas operations (Chart 1.53). Operations of overseas establishments continued to be funded predominantly by customer deposits (75%) (Chart 1.54). The loan-to-deposit ratio of selected overseas operations ranged between 65% and 108% and has remained relatively stable during the year, reinforced by improved group-wide risk management systems and practices which further limited the potential for funding pressures from overseas operations to spread to the Malaysian operations. The financial positions of overseas operations of domestic banking groups also

Chart 1.55

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



Source: Bank Negara Malaysia

remained sound. The risk-weighted capital ratios of selected subsidiaries remained robust, ranging between 10.4% and 16.4%. Overall loan quality remained intact with the level of impairment remaining broadly unchanged from 2011 (Chart 1.55). The contribution of selected overseas operations to individual domestic banking groups' profitability ranged between 1.2% and 33.8% for the year. The cross-border operations of domestic insurers remained small with total assets of RM959.9 million (amounting to only 0.4% of total insurance industry assets) spanning three countries in 2012 (2011: RM979.8 million).

The Bank's consolidated approach for the supervision of domestic financial institutions includes assessing risks that could emanate from the overseas operations of domestic financial institutions. This is undertaken through regular reporting requirements on all the overseas operations and for material overseas operations, the Bank undertakes on-site examinations on an annual basis. As regional expansion by domestic banking groups continued to grow, the Bank has strengthened existing arrangements for the regular exchange of information with host supervisors on developments in local economic and financial conditions, and on supervisory concerns and actions. The Bank hosted supervisory college meetings for three domestic banking groups with significant cross-border operations. These home-host engagements support the early identification of entity and group-wide vulnerabilities and timely supervisory responses.

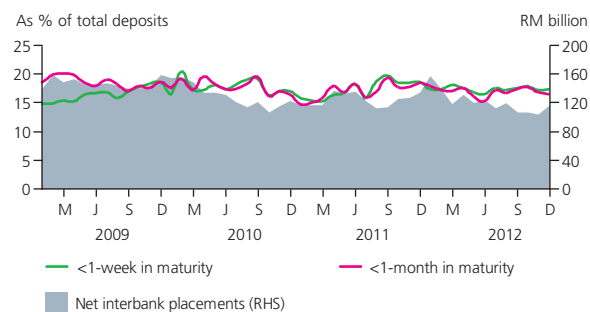
## MANAGING LIQUIDITY RISK

The domestic banking system continued to exhibit ample liquidity and stable funding positions to meet

deposit withdrawals and other liability obligations. The total ringgit and foreign currency liquidity buffers of the banking system remained well above the minimum regulatory requirement at 17% and 16.2% of total deposits for liquidity needs maturing in less than one week and one month respectively. Net interbank placements with the Bank amounted to RM114 billion or 8.1% of total deposits (Chart 1.56) while the ringgit interbank rates were stable across all maturities, with little sign of market segmentation or heightened counterparty risk aversion across different banks. The level of liquid assets remained stable at 17.1% of total assets or 52.8% of short-term liabilities (Chart 1.57). While the liquidity strains in the eurozone and selected Asian money markets eased during the year, the Malaysian banking sector was not materially affected by variations in the US dollar and foreign currency funding conditions. Malaysian banks have not been reliant on external funding from offshore wholesale markets, which accounted for less than 10% of total

Chart 1.56

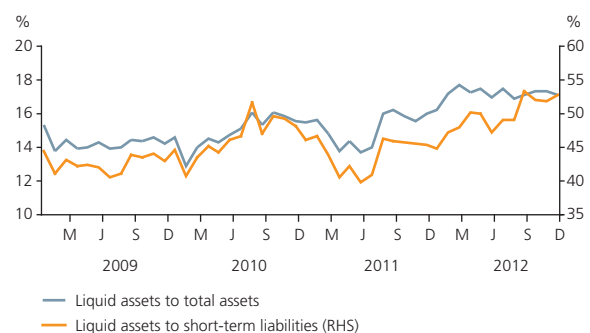
### Banking System: Liquidity Buffer and Net Interbank Placements



Source: Bank Negara Malaysia

Chart 1.57

### Banking System: Liquid Assets to Total Assets and Short-term Liabilities



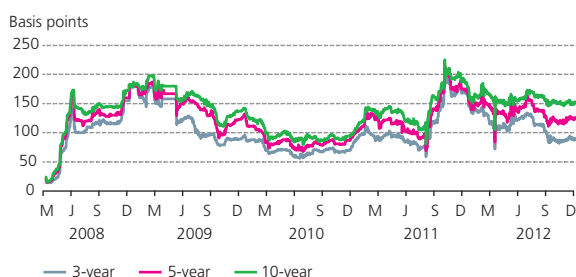
Source: Bank Negara Malaysia

funding. The ringgit deposit-based funding structure among banks in Malaysia has been well supported by the continued strong growth of 8.4% in deposits, resulting in a loan-to-deposit ratio of 82.1%. The profile of deposits was largely unchanged with an almost equal distribution between deposits from individuals (36.2%) and domestic business enterprises (36.3%). In terms of instrument type, 32.3% of bank deposits comprised current and saving accounts and negotiable instruments of deposit, while 37.9% were time deposits. Although these deposits are typically at call, in reality, they have and continued to demonstrate a high level of stability, including throughout the recent GFC and periods of higher capital outflows. Non-resident deposits only accounted for 3.2% of total deposits.

Overall foreign currency funding and liquidity positions also remained stable, taking into consideration that Malaysian banks are not reliant on cross-currency funding for domestic operations. Onshore US dollar liquidity conditions eased, with the USD/MYR cross-currency swap spreads narrowing to between 10 basis points and 40 basis points across the different tenures since the third quarter of 2012 (Chart 1.58). The banking system's foreign currency funding gap also remained stable and small at 0.3% of capital base (Chart 1.59), with low cross-border currency or maturity mismatches from external exposures to non-resident counterparties. Total foreign claims of the banking system continued to exceed foreign liabilities across all currencies, reflecting the relatively balanced net external asset positions for exposures denominated in US dollar, Singapore dollar, euro and other foreign currencies. The banking system maintained a surplus US dollar liquidity position in the less than one-week maturity bucket, while the mismatch for the less than one-month maturity bucket

Chart 1.58

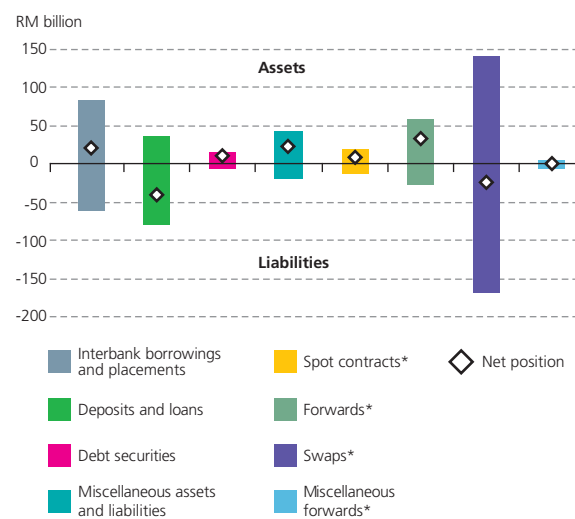
USD/MYR Cross-currency Basis Swap Spread



Source: Bank Negara Malaysia

Chart 1.59

Banking System: Foreign Currency Denominated Assets and Liabilities

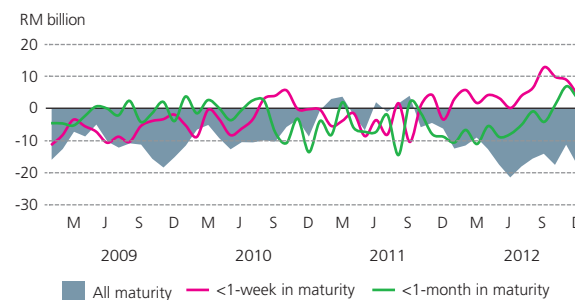


\* In notional amount

Source: Bank Negara Malaysia

Chart 1.60

Banking System: US Dollar Liquidity Mismatch



Source: Bank Negara Malaysia

improved significantly from a negative mismatch position for most of the year to a surplus position in the final quarter of 2012 (Chart 1.60). Over the years, banks have been paring down holdings of US dollar-denominated investments that were funded by short-term unsecured borrowings. This has reduced the vulnerability of Malaysian banks to potential roll-over risks that could arise from disruptions to US dollar wholesale funding markets. Since the GFC, Malaysian banks have also been more proactive in managing US dollar exposures through centralised liquidity management functions, particularly for US dollar funds, and ensuring a more balanced composition of foreign currency funds by maturity.

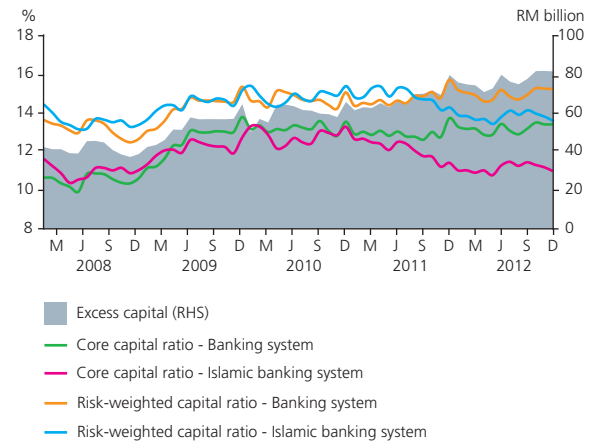
Liquidity stress tests conducted on the Malaysian banking system under the FSAP affirmed the resilience of Malaysian banks to adverse multi-factor shocks over a one-month horizon. For ringgit-denominated assets and liabilities, banks on aggregate recorded a post-shock net cumulative surplus of 3.2% of total deposits to accommodate liquidity stress over the one-month horizon; while in terms of US dollar denominated assets and liabilities, the banking system recorded a shortfall of USD6.4 billion. This is expected to be manageable relative to the level of the Bank's international reserves which stood at approximately USD140 billion as at 28 February 2013. The FSAP assessment also noted that although the GFC saw severe liquidity and funding shocks propagating across multiple financial systems in 2008 to 2009, Malaysian banks continued to maintain strong ringgit and US dollar liquidity buffers without experiencing severe funding pressures or sudden fund withdrawals. Using significantly higher run-off rates for deposits experienced by other banks in some emerging market economies which were more exposed to the GFC shocks, the top-down liquidity stress test conducted under the FSAP concluded that even in a higher stress scenario, only about half a dozen of the smaller commercial banks could potentially face a liquidity shortfall for the less than one-week maturity horizon. While the FSAP raised the potential vulnerability posed by the high level of reliance on deposits which are at call, such retail and corporate deposits have demonstrated a high level of stability throughout the GFC and other stress periods including the 2001 dot-com bubble and the 2003 SARS episode. The high level of corporate deposits is partly reflective of the high savings of businesses. Contagion risk across banks via the ringgit and foreign currency interbank markets was also well-contained with stress test results showing a severe impact only in the situation of an extreme distress involving the simultaneous defaults of large domestic commercial banks. Simulated defaults of foreign banks under assumptions of a further worsening of the eurozone crisis or conditions similar to the GFC showed that neither of these events were likely to trigger widespread contagion defaults of other Malaysian banks.

## FINANCIAL INSTITUTION SOUNDNESS AND RESILIENCE

Financial institutions remained resilient throughout the year, sustaining their financial performance while continuing to strengthen operational and risk

Chart 1.61

### Banking System: Capital Adequacy Ratios and Excess Capital



Source: Bank Negara Malaysia

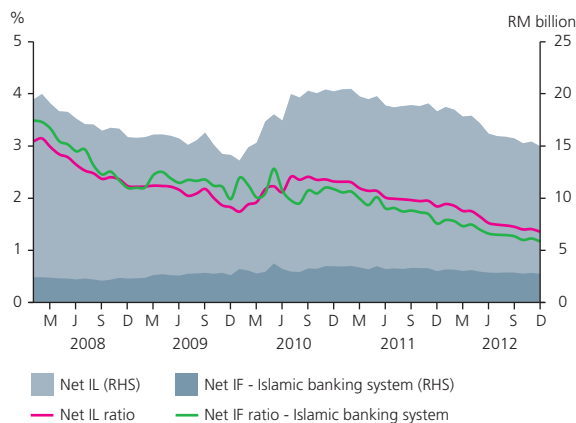
management. This was reflected in improvements to the composite risk rating (CRR) of 13% of banks and insurers. The CRR is a supervisory rating assigned by the Bank and represents the overall assessment of the inherent risk and quality of risk management of a financial institution across all its significant activities, taking into account the strength of the institution's capital and sustainability of earnings. The CRRs for the bulk of institutions were unchanged. As a group, financial institutions continued to manage their businesses prudently, and accorded close attention to the effective management of risks within each institution.

The capital position of financial institutions remained solid, both in the level and quality of capital. The banks' aggregate risk-weighted capital ratio and core capital ratio stood at 15.2% and 13.4% respectively (2011: 15.7% and 13.7% respectively) (Chart 1.61), with financial buffers amounting to more than RM80 billion to support business needs and withstand potential stresses. With a significant (85%) proportion of banks' capital in the form of equity capital (comprising common equity and reserves), banks are well placed to comply with the phased implementation of Basel III which began in January 2013. The aggregate common equity tier 1 capital ratio, tier 1 capital ratio and total capital ratio were at 12.1%, 13% and 14.5% respectively as at end-January 2013. Excess buffers for the banking system as a whole are estimated to remain high at above RM70 billion under Basel III.

Banks (including Islamic banks) registered a higher profit for 2012 from the continued expansion in lending and fee-related activities, while asset quality remained sound. Pre-tax profit increased by 12.3% to RM29.4 billion, with the average returns on assets and equity unchanged at 1.6% and 17.5% respectively. The Islamic banking system alone registered a strong profit growth of more than 60% for the year to RM4.9 billion (2011: RM3 billion), pushing average returns on assets and equity to 1.4% and 19.6% respectively (2011: 1% and 13.5% respectively). Profits of the banking system were mainly driven by higher interest/financing income (+12.9%) from the expansion in the financing portfolio of banks, which more than offset the higher funding costs on the expanded deposit base (+17.5%). In addition, expenses on loan loss provisions reduced significantly by almost half in tandem with lower new delinquencies and improved bad debt recoveries. Notwithstanding this, banks continued to maintain conservative loan loss provisioning practices with the loan loss coverage ratio remaining above 100% (Chart 1.62). Lower charges for loan losses during the year led to an improvement in net interest/financing margin which widened to 0.64 percentage point (2011: 0.57 percentage point) (Chart 1.63). Also contributing to profit was further growth in fee-based activities (largely from credit facilities, guarantees, underwriting, bancassurance and wealth management products) (+7.6%). Net treasury and investment gains grew modestly (+0.8%). While higher staff cost

Chart 1.62

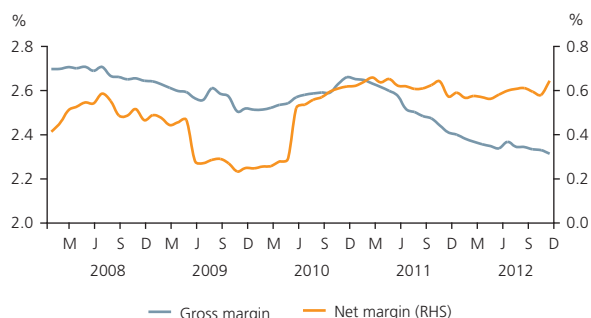
**Banking System: Impaired Loans (IL)/ Impaired Financing (IF) Level and Ratio**



Source: Bank Negara Malaysia

Chart 1.63

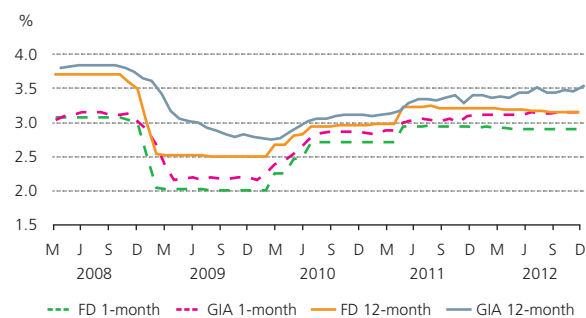
**Banking System: Gross and Net Interest Margins**



Source: Bank Negara Malaysia

Chart 1.64

**Islamic Banking: General Investment Account (GIA) Rates and Quoted Fixed Deposits (FD) Rates**



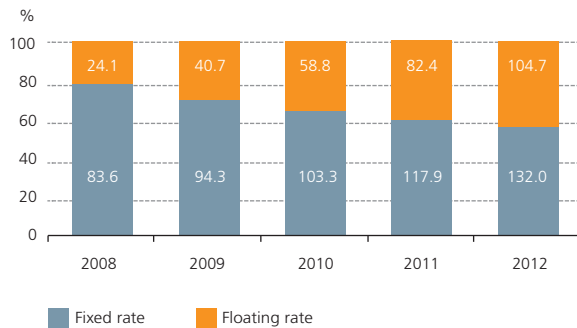
Source: Bank Negara Malaysia

and overheads continued to increase, growing by 8.3% and 10.6% respectively, these have moderated compared to previous years. The highly competitive talent market in the financial sector continues to be a major challenge for banking institutions with the talent shortage observed across many levels including in specialist, technical and management roles, and was more the case for the Islamic finance industry.

The active management of the rate of return risk by the Islamic banks and stable cost of funding reduced displaced commercial risks (DCR) confronting Islamic banks (Chart 1.64). DCR arises from the general expectations of the General Investment Account (GIA) depositors (representing 27.5% of Islamic banks' deposits) that the principal investment is protected and that there is certainty in returns which are comparable to conventional products. In managing the risk, Islamic banks pursued risk

Chart 1.65

## Islamic Banking: Fixed Rate and Floating Rate Financing



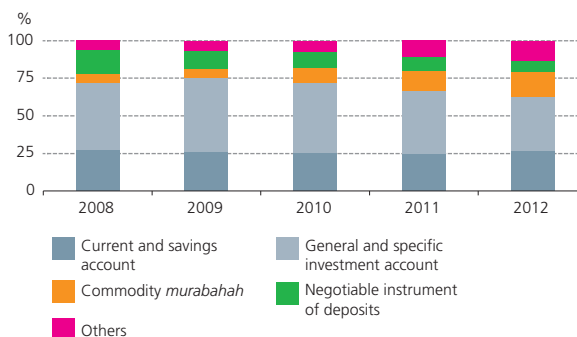
Note: All figures are in RM billion

Source: Bank Negara Malaysia

reduction strategies on both the asset and liability sides of the balance sheet. On the asset side, the share of floating rate assets in the financing books expanded by 27% to account for 44.2% of total financing (2011: 41.1%). These were mainly in the form of *musharakah mutanaqisah* (diminishing partnership) and *ijarah* (leasing) contracts. The higher composition of floating rate assets mitigates the re-pricing gap risk due to the mismatch between returns earned on assets and re-pricing of liabilities (Chart 1.65). On the liability side, more fixed-return commodity *murabahah* deposits were offered to lengthen the re-pricing date of liabilities in efforts to similarly narrow the re-pricing gap between assets and liabilities. Such deposits grew by 47.4% to RM52.7 billion or 17.2% of total deposits (Chart 1.66). Islamic banks have also taken measures to reduce the reliance on profit equalisation reserves (PER) as an instrument to manage depositors' return expectations. These

Chart 1.66

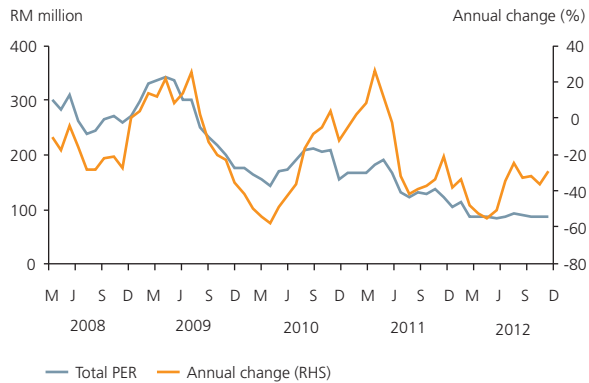
## Islamic Banking: Composition of Deposits



Source: Bank Negara Malaysia

Chart 1.67

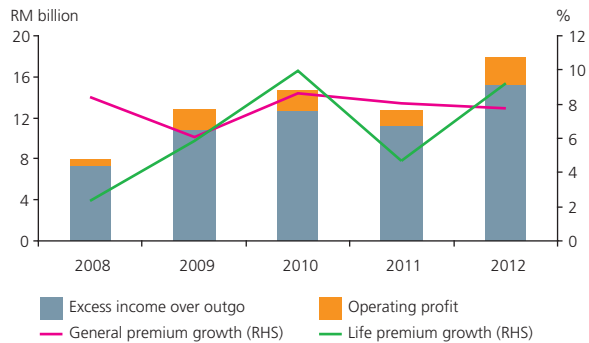
## Islamic Banking: Profit Equalisation Reserve (PER)



Source: Bank Negara Malaysia

Chart 1.68

## Insurance Sector: Profitability and Premium Growth



Source: Bank Negara Malaysia

included flexibilities provided in the profit-sharing ratio for banks to waive the share of profits, and reducing the concentration in long-term fixed return financing. The level of PER declined by 29.4% to RM85.6 million as at end-2012 (Chart 1.67). There was continued use of negotiable instruments of deposit, which accounted for 7.4% of total deposits, to achieve greater stability and diversification in the funding structure. Some Islamic banks also lengthened the maturity structure of the funding base through issuances of medium-term sukuk, thus further lowering the risk of funding mismatches.

The insurance and takaful industry recorded strong improvements in profitability on account of continued expansion in new business, better claims experience and improved investment returns. This reduced the relative level of risk exposures in the industry even as insurers

(including takaful operators) continued to deal with the challenges of operating in an environment of persistently low yields. The life and family takaful sector reported a strong rebound in its excess of income over outgo which increased by 38.2% to RM17.6 billion, supported by higher net premiums and contributions of 11.2% and a significant increase of about 200% in net capital gains (Chart 1.68). Operating profits of the general insurance and general takaful sector increased by 72.6% to RM2.9 billion, following a lower combined ratio of 96.9% (2011: 104.7%) and higher earned premiums which grew by 11.1% (Chart 1.69).

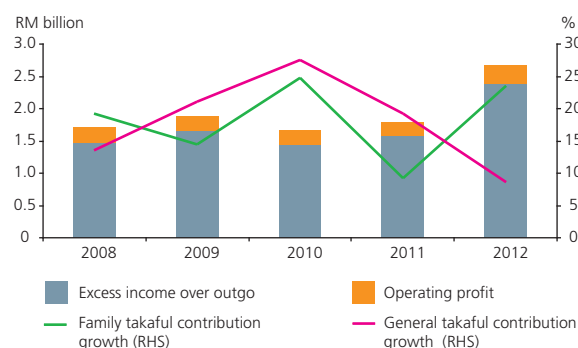
The industry has remained well-capitalised with the aggregate capital adequacy ratio (CAR) of the general and life insurance industry unchanged at 222.3% (2011: 222.5%). This was supported by stable levels of retained profits and bonus reserves (Chart 1.70). Total capital required increased slightly in tandem with continued business growth. Insurance risk, which measures the underestimation of insurance liabilities, claims experience and to a certain extent, impact from the discounting of liabilities, remained the largest component at 50.7% of total capital required, while market risk accounted for 30.6% of total capital required.

The prolonged low interest rate environment increases the challenge of managing insurance risk, particularly among life insurers. As insurance funds are invested in lower yielding assets, insurers' exposures to future claims costs are higher, particularly if products were priced assuming higher returns. Due to discounting effects, and the requirement for life insurers to discount their liabilities using risk free discount rates, higher valuations of liabilities as a result of lower MGS yields will increase the amount of regulatory capital that an insurer must hold. For well-matched portfolios, asset valuations will also increase in tandem, thereby increasing the value of capital available, but the relative impact on capital may not be fully offset, particularly for much longer term liabilities. In 2012, the capital position of insurers was generally not significantly affected by the aggregate decline of about 20 basis points in MGS yields. Based on a stress scenario of a 50 basis points decline in MGS yields, all life insurers are still able to meet the minimum supervisory target capital levels.

Thus far, the average investment yield of life insurers has been sufficient to meet total benefits.

Chart 1.69

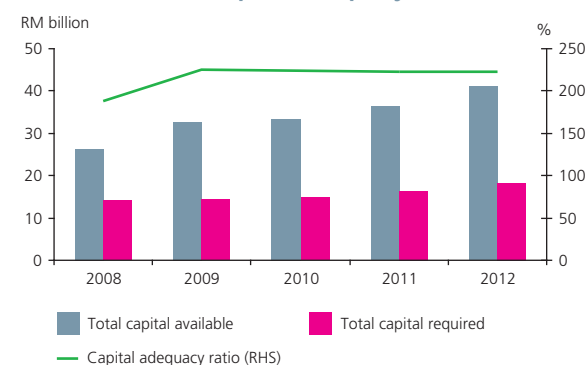
## Takaful Sector: Profitability and Contribution Growth



Source: Bank Negara Malaysia

Chart 1.70

## Insurance Sector: Capital Adequacy Ratio



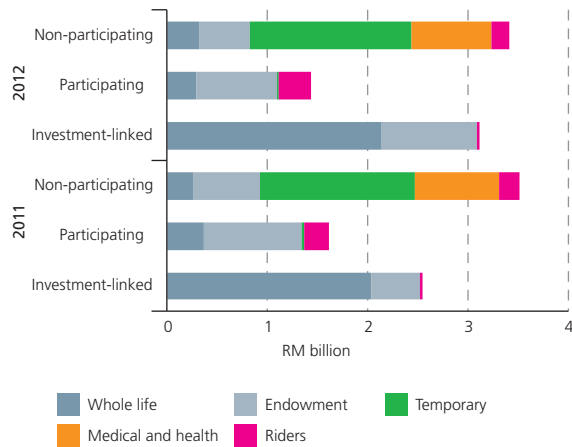
Source: Bank Negara Malaysia

Investment yield has been in the range of 5% to 6% in the recent five years, but improved to 7.3% in 2012. The generally conservative product design and strategies adopted by many of the life insurers in the more recent years are producing positive results. Assumed breakeven yield used for pricing insurance benefits has been low – at about 3% for guaranteed benefits and 5% for total benefits of participating products. A number of life insurers have also taken steps to rebalance their portfolios to increase the composition of less capital-intensive investment-linked and non-participating products (Chart 1.71). Given the current limitations on the ability of life insurers to fully match long-term insurance exposures with assets of similar maturity, these strategies have helped to reduce the vulnerability of insurers to interest rate risk.

In the general insurance sector, risks associated with the structural misalignment between premiums and

Chart 1.71

## Insurance Sector: Composition of Life Insurance Products



Source: Bank Negara Malaysia

claims losses remained high. The claims incurred ratio for compulsory motor third party liability insurance (motor 'Act') was substantially lower for the year at 236% (2011: 302.8%), likely due to actions by insurers to pass on more loss-making risks to the Malaysia Motor Insurance Pool which in turn would redistribute the risks equally among all general insurers. Greater premium flexibility allowed under the Pool would have contributed to the improved claims ratio. The equal sharing of losses, while having an uneven impact on individual insurers, has not had a material impact on the overall profitability of the industry.

Financial institutions remain resilient to extreme macroeconomic and financial conditions based on stress tests conducted by the Bank (refer to the box article 'Macroprudential and Microprudential Applications of Stress Testing in Malaysia'). The solvency stress test conducted on banks simulated the effects of a series of tail-risk

Table 1.9

## Solvency Stress Test: Key Assumptions and Shock Parameters for the Adverse Scenario

	Key assumptions	Largest point-in-time deviation from baseline scenario
Malaysia GDP shock	Sharp slowdown (comparable to economic contraction in 2009) followed by a gradual recovery taking into account spillovers from adverse movements in Europe, the US and PR China	
Balance sheet and income projections	Decline in annual growth of: <ul style="list-style-type: none"> <li>• Net interest income</li> <li>• Net trading and investment income</li> <li>• Fee-based and other income</li> </ul>	More than 60% More than 250% More than 300%
Capital growth (taking into account Basel III phase-out treatment)	<ul style="list-style-type: none"> <li>• Increase in retained earnings ratio (only organic capital growth allowed)</li> </ul>	More than 30%
Credit risk shocks	<ul style="list-style-type: none"> <li>• Probability of default (PD) shocks <ul style="list-style-type: none"> <li>- Business loans (including default of selected large borrowers)</li> <li>- Household loans</li> </ul> </li> <li>• Loss given default (LGD) shocks <ul style="list-style-type: none"> <li>- Business loans</li> <li>- Household loans</li> </ul> </li> </ul>	More than 180% More than 170%  More than 27% More than 17%
Market risk shocks	<ul style="list-style-type: none"> <li>• Decline in FBM KLCI</li> <li>• Yield shocks <ul style="list-style-type: none"> <li>- 10-year MGS</li> <li>- 10-year A-rated corporate bonds</li> </ul> </li> <li>• Appreciation/depreciation in major currencies against the ringgit</li> </ul>	More than 40%  More than 12% More than 23%  More than 20%

events materialising for the period 2013 to 2015, including contagion effects from the intensification of the sovereign debt crisis leading to a potential euro break-up, a sharper-than-expected cut in public spending in the US, and a hard landing in the People's Republic of China. Assuming no policy intervention by authorities, the corresponding spillovers on domestic conditions through the trade and financial channels were used to simulate the compounding year-on-year impact on banks' balance sheet growth, income generation, credit and market risks exposures, retained earnings and capitalisation. The impact has also taken into account the phased implementation of Basel III capital requirements (Table 1.9). Based on the results of the stress test, the total capital ratio of the banking system remained above 11% even under the adverse scenario in which major downside risks to the global economy occur simultaneously. The post-shock common equity Tier 1 capital ratio was more than twice the minimum requirement of 4.5% under the Basel III environment.

FSAP solvency stress test also revealed that the banks, at both the system and institutional levels, are able to withstand the impact of a sharp slowdown in the economy, followed by a swift recovery or a prolonged low GDP growth path. The stress test also indicated that due to the lower starting capital position, some smaller Islamic banks appear to be more susceptible to higher credit losses. This is not a concern as such banks are subsidiaries of commercial banks which adopt an efficient group-wide capital management strategy and therefore maintain relatively lower capital buffers at the subsidiary level. The adoption of such capital strategy is required to be supported by a strong capital commitment by the parent to ensure that solvency deterioration at the

subsidiary level does not pose reputational risk to the overall banking group.

The degree of contagion effects arising from a simultaneous occurrence of credit and funding shocks through the interbank channel was also assessed to be limited and largely contained within the banking group (Table 1.10). The potential system-wide capital impairment due to such network externalities was less than 1.5 percentage points. The systemic impact from the interconnectedness of banks in the interbank market was also observed to be limited, with only two bank failures resulting from the simulated defaults of 56 institutions and the knock-on effects. No new failures were observed after two rounds of contagion. Simulations of simultaneous defaults (two or more simulated initial defaults), based on size, interconnectedness and type of banking institutions, also indicated manageable system-wide contagion effects.

---

Stress test results reaffirmed the resilience of financial institutions to extreme macroeconomic and financial market conditions. The capacity of banks to withstand shocks was reinforced by assessment under the Financial Sector Assessment Program

---

**Table 1.10**

**Contagion Risk Stress Test: Assumptions and Shock Parameters**

Shock parameters	Shock magnitude
Solvency hurdle rate or default threshold	Total capital ratio of 8%
Risk-weight for interbank loans	20%
Loss given default of interbank loans	100%
% of funding not refinanced upon each default	50%
Haircut on assets under fire sale	50%

The multi-year stress test was also conducted for the insurance industry with a slight variation introduced to incorporate the insurance risk element. In particular, an MGS yield shock of 50 basis points was used to simulate the impact of revaluation of future liabilities for the life insurers and a higher claims shock mirroring worst experience in the past was incorporated for the general insurers. Similar to the banks, the shocks were applied on insurers' profitability and capital position. The stress test revealed that all the large insurers and most of the smaller insurers will remain profitable post-stress, thus providing continuity in capital generation. The overall insurance industry's profit was estimated to reduce by 18.4%, while the post-stress capital adequacy ratio for the insurers as a whole remained above the minimum regulatory requirement.

## OUTLOOK FOR DOMESTIC FINANCIAL STABILITY AND FOCUS OF SURVEILLANCE IN 2013

Malaysian financial institutions are well positioned to face the prevailing concerns on the banking sector and fiscal issues in Europe, as well as the US fiscal position, that are expected to continue in 2013. The balance sheets and funding positions of global banks have yet to be fully restored, hampering efforts to rebuild and enhance the resilience of financial systems in the advanced economies. This is also demonstrated in the slower-than-desired progress in the implementation of Basel III in these jurisdictions. The modest global growth outlook will continue to affect regional economies including Malaysia via the trade channel although intra-regional economic and trade linkages are expected to continue to increase. Bouts of higher volatility are likely to return intermittently to the global financial markets causing periodic swings in domestic financial markets. This is likely to be amplified by the effects of large volumes of capital flows as quantitative easing continues in many of the large advanced economies.

---

### The new financial services legislation will strengthen the capacity of the Bank to deal with risks to financial stability at an early stage and in a comprehensive manner

---

Against more favourable conditions in the domestic and regional economies, the Malaysian financial sector is well placed to cope with the uncertain external developments. Credit risk exposures of banks are expected to be contained within acceptable levels in 2013 following the sound credit risk management practices of the banks, balance sheet strength of businesses and continued expectations of stable income and employment prospects that will preserve household incomes. However, the business expansion and lending activities of the NBFIs and the high leverage of the lower-income households are key areas that will continue to be closely monitored by the Bank. There will also be greater engagement and coordination with other relevant authorities. Appropriate measures will also continue to be taken

to manage the sources of risks that are increasing the vulnerability of lower-income households.

The new financial services legislation will further strengthen the capacity of the Bank to deal with risks to financial stability at an early stage and in a more comprehensive manner. The new legislation also empowers the Bank to impose regulations on entities that are not regulated by the Bank in order to preserve overall financial stability. The retail lending market will continue to remain highly competitive, and will require supervisory attention to remain focused on the effective implementation of responsible financing practices, banks' risk appetite, lending standards and risk pricing practices. The market risk exposures of financial institutions are expected to remain at the levels seen in 2012. The domestic financial markets are also expected to remain orderly and have the capacity to intermediate the volatile movements in capital flows. Liquidity and funding conditions in 2013 are also expected to remain supportive of efficient domestic intermediation by financial institutions in Malaysia.

The Bank's surveillance and supervisory priorities in 2013 will continue to be focused on:

- monitoring developments in household sector leverage, residential property prices and supply conditions in the office space segment;
- monitoring changes in the risk-taking activities, including the risk appetite, of financial institutions, with a particular focus on lending standards, risk pricing and valuation practices, and responsible conduct towards consumers;
- continued assessments of the nature, scale and scope of the activities of NBFIs involved in extending credit to the household sector and of other systemic non-bank entities;
- continuing the engagement with other domestic regulatory authorities, including in addressing risks involving the activities of NBFIs, in enhancing the framework for improving the transparency of over-the-counter derivative exposures and in strengthening domestic crisis management framework;
- enhance further the supervision and oversight of the overseas operations of the Malaysian financial institutions;
- further strengthening the domestic regulatory and supervisory framework for implementation of the Financial Services Act 2013 and Islamic Financial Services Act 2013;

- further strengthening the financial market infrastructure, in particular the payments and settlements systems to support the increasing volumes of cross-border and multi-currency transactions; and
- promoting effective regional cooperation and coordination in financial regulation and crisis management through active participation in the multi-lateral groupings of central banks and supervisory authorities.

## Developments in the Housing Market and Implications on Financial Stability

Developments in the housing market can have an important impact on financial stability. Changes in house prices have both direct and indirect impact on the demand for credit by households and their debt servicing capacity, particularly in situations in which rising house prices has not been accompanied by rigorous lending standards and if it results in excessive debt accumulation by households and housing developers. In the event of sharp downward adjustments in house prices, the impact on the balance sheets of banking institutions could be severe, with significant risks to financial stability.

As with most economies, the housing market in Malaysia is an important component of the domestic economy. For households and businesses, residential properties have also become an attractive form of investment. Over the period from 1Q 2010 to 2Q 2012, house prices in Malaysia, measured by the Malaysian House Price Index (MHPI), registered a strong average increase of 9.1% annually, surpassing the average annual growth of 3.2% in the preceding 10-year period. During the same period, bank financing for property acquisition and development also recorded robust annual growth, expanding at double digit levels since February 2008. Bank lending (including holdings of debt securities) is highly concentrated in the property market, particularly in the residential segment. Aggregate financing by the banking system for property acquisition and development amounted to RM454.3 billion or 41% of total financing as at end-2012, while bank holdings of private debt securities was RM4.6 billion. Of this amount, the banks' exposures to the residential property market in the form of end financing stood at RM303.9 billion or 27.4% of total banking system loans (2011: RM269.2 billion), with another RM19 billion in the form of working capital and bridging loans for construction of properties. The lending market for purchase of residential properties is, however, competitive and relatively well-dispersed across institutions, with the normalised Herfindahl-Hirschman Index valued at 0.08 at the end of 2012.

As a pre-emptive measure, macroprudential policies were introduced by the Bank in late 2010 to mitigate unsustainable developments in the property sector. Importantly, this has also been accompanied by heightened supervisory scrutiny over bank lending practices which are observed to have remained intact with no evidence of a systematic easing of prudent lending standards. The Bank also took early actions to address weaknesses in the pricing practices for home loans observed among some banking institutions.

The Bank's assessment remains that risks to financial stability from price adjustments in the housing market are contained. Impaired financing for the residential property sector by the banking system remained low at 1.9% of total financing for purchase of residential properties (2011: 2.3%). Apart from some positive signs that the macroprudential measures are taking effect and that continued discipline is being observed in bank lending practices, risks to financial stability are also assessed to be modest based on evidence that suggests macroeconomic fundamentals continue to drive house price developments. This article presents an analysis on the factors driving trends in house prices in Malaysia based on findings from a multivariate regression model of the MHPI.

### Modelling House Prices in Malaysia

While the increase in house prices has generally been broad-based, the trend has been more pronounced in certain locations such as in Kuala Lumpur, Selangor and Penang (Table 1) and for certain types of properties such as high-rise and detached properties.

To analyse the factors driving trends in Malaysian house prices, a set of independent variables was identified and tested to establish their preliminary significance in the Malaysian context. They are organised into three clusters (macroeconomic factors, financial factors and policy measures) and regressed against the MHPI using the ordinary least squares method. These 13 variables are presented

Table 1

## Annual Growth of House Prices in Malaysia

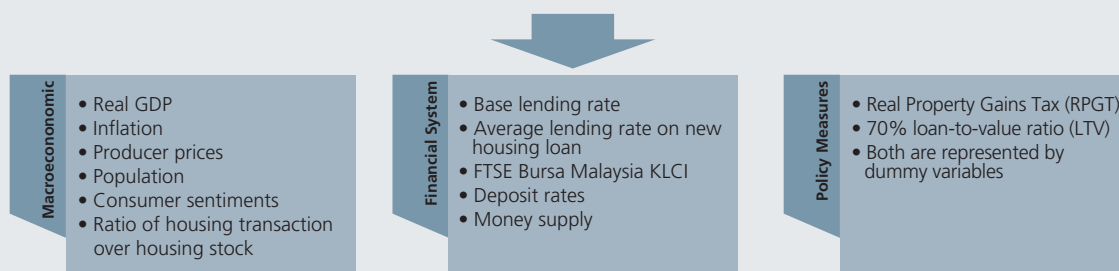
	Average growth rate (%)	
	1Q 2001 - 4Q 2009	1Q 2010 - 2Q 2012
<b>Malaysia</b>	<b>3.2</b>	<b>9.1</b>
Kuala Lumpur	4.0	12.2
Selangor	2.4	11.3
Penang	4.3	8.9
Sarawak	4.1	5.1

Source: National Property Information Centre

in Diagram 1. The selection of these variables was made on the basis of an array of published studies on determinants of house prices in developing as well as developed economies. Two key studies were instructive for this purpose (i) a study by Glindro et al. (2011)<sup>1</sup> of nine Asia-Pacific economies, including Malaysia, from 1993 to 2006 using 13 variables<sup>2</sup> which found that house prices tend to be more volatile in markets with lower elasticity of housing supply and a friendlier<sup>3</sup> business environment; and (ii) a study by Tsatsaronis and Zhu (2004)<sup>4</sup> across 17 industrialised countries between 1970 and 2003 based on six variables<sup>5</sup>, which found that house prices are driven by economic growth, inflation, term spread between a long-maturity government bond and short-term interest rates, and bank credit<sup>6</sup>.

Diagram 1

## Selected Variables for Analysis of Factors Driving Malaysian House Prices



Note: Indicators of housing supply and variables related to bank credit, such as loans outstanding, applications, approvals and disbursements, have been excluded from the regression analysis due to endogeneity bias. In addition, bank credit has been assessed not to be significant in influencing house prices according to a study on the Malaysian housing market by the IMF-World Bank Financial Sector Assessment Program Mission 2012

Source: Bank Negara Malaysia

<sup>1</sup> Glindro, E.T. et al. (2011), 'Determinants of House Prices in Nine Asia-Pacific Economies', International Journal of Central Banking, September, 163-204.

<sup>2</sup> Quarterly data for nine Asia-Pacific economies. Data include house prices, real gross domestic product (GDP), population, construction index, land supply index, mortgage credit-to-GDP ratios, real mortgage rates, real effective exchange rates, stock price index, business freedom index, financial freedom index, corruption index and property rights index.

<sup>3</sup> Refers to a business environment characterised by a high degree of ease to do business, better regulatory conditions, lower corruption, a wider range of intermediation functions by the financial sector, a higher degree of flexibility in acquiring land and better legal protection to land/home owners.

<sup>4</sup> Tsatsaronis, K. and Zhu, H. (2004), 'What Drives Housing Price Dynamics: Cross-Country Evidence', BIS Quarterly Review, March, 65-78.

<sup>5</sup> Quarterly data for 17 advanced economies. Data include house prices, real GDP, consumer price inflation, short-term interest rate, term spread and bank credit.

<sup>6</sup> For further reading on international house prices, see Adams, Z. and Füss, R. (2010), 'Macroeconomic Determinants of International Housing Markets', Journal of Housing Economics, Vol. 19, Issue 1, 38-50.

The period under consideration was from 1Q 2001 to 2Q 2012 and was further divided into two sample periods. The first sample period was from 1Q 2001 to 2Q 2010. The second and slightly longer sample period was from 1Q 2001 to 2Q 2012, to capture the steeper increase in house prices during the period 3Q 2010 to 2Q 2012.

### Results of the Model

The results showed that, in general, house prices in Malaysia are driven primarily by macroeconomic factors and to a lesser degree by financial factors, Government regulations and policies (Table 2). In the more recent period, previous values of house prices were also found to be a relevant determinant of house prices (Diagram 2 and Chart 1).

**Table 2**

#### Modelling House Prices in Malaysia

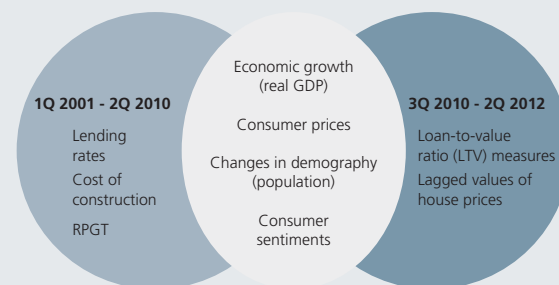
Dependent variable = Malaysian House Price Index		
	Model 1	Model 2
Constant	2.41***	5.48***
Real GDP(-2)	-	0.28***
Real GDP(-4)	0.49***	-
Consumer Sentiment	0.06***	0.04***
Consumer Sentiment (-1)	0.09***	0.03*
Consumer Sentiment (-2)	0.06***	0.02***
Consumer Sentiment (-4)	0.03***	-
Population (-4)	7.14***	7.75**
RPGT	-0.48*	-
Base Lending Rate (-1)	-2.87***	-
Inflation	0.88***	0.36**
Inflation (-2)	0.31**	-
Cost of Material for Construction (-3)	-0.34***	-
LTV	-	-4.24***
MHPI (-5)	-	0.33**
Adjusted R-squared	0.90	0.88

Note: OLS estimation, \*\*\*, \*\* and \* indicate significance at the 1, 5 and 10 percent levels

Source: Bank Negara Malaysia

**Diagram 2**

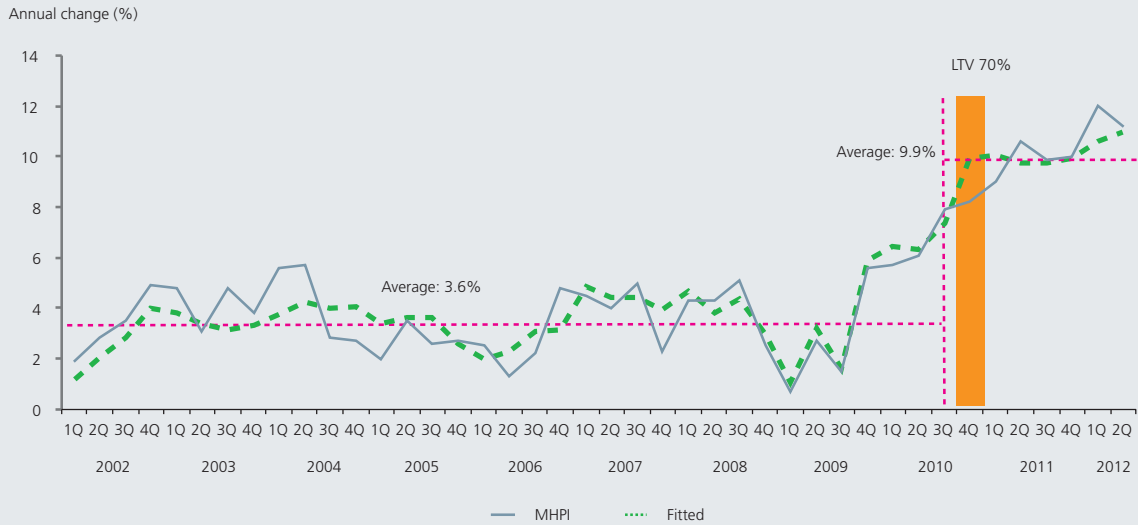
#### Factors Affecting Increase in House Prices



Source: Bank Negara Malaysia

Chart 1

MHPI and Fitted Values (1Q 2002-2Q 2012)



Source: National Property Information Centre and internal computation

**1Q 2001 to 2Q 2010**

During this period, house prices in Malaysia rose by an average annual rate of 3.4%. The increase in house prices was driven primarily by the following factors:

**(i) Economic growth (real gross domestic product)**

During the period of steady economic growth and stable lending rates from 2002 to 2008, house prices increased modestly at an average annual rate of 3.6% before moderating to a rate of 0.7% in 1Q 2009 when the domestic economy experienced a contraction following the global recession. This suggests a positive impact of rising household incomes on house prices. With economic growth, household incomes increase along with the means to own houses. This, in turn, induces demand for housing, consequently raising prices.

**(ii) Demographic changes**

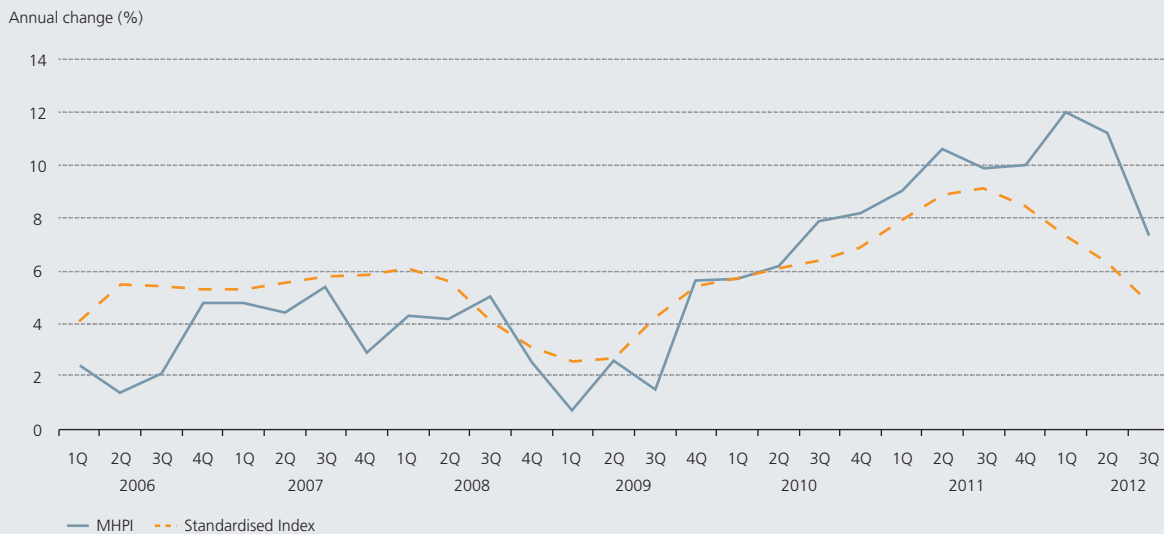
Based on the highest coefficient result, changes in demographic structures are the main determinant of house prices. As an increasing number of younger Malaysians enter the job market, more are likely to begin acquiring their first property at an early age, adding to existing demand. According to the 2010 Census by the Department of Statistics Malaysia, the working age population (15 to 64 years old) increased to 67.3% in 2010 from 62.8% in 2000. In addition, rapid urbanisation in major states and employment centres has also contributed to higher demand for housing in urban areas.

**(iii) Consumer price inflation**

Consumer price inflation has a positive impact on house prices. Inflation can directly impact house prices through two channels. The first is via higher input cost - as prices for construction materials, land prices and labour wages increase, newer houses become more expensive than older ones. The second relates to rental yields - increases in consumer prices and related inflation expectations are typically factored into higher rents, which in turn translate into higher house prices. Inflation also has an indirect impact by increasing the attractiveness of houses as a hedge against inflation. This has been exacerbated by the search for higher yield, given lower or more volatile returns on other forms of investments, such as deposits and equities.

**(iv) Producer Price Index**

The cost of construction has an effect on house prices. To ascertain this relationship, a standardised index that aggregates prices of essential construction materials, such as roofing, cement, glass and timber, was also developed in order to deal with the underlying volatility in the prices of these materials. This index was then used as a leading indicator for house prices in Malaysia. This analysis which covered the period 1Q 2005 to 3Q 2012 found that the rise in house prices has been preceded by an increase in the index level (Chart 2).

**Chart 2****Standardised Index of Construction Materials for Housing Market**

Source: National Property Information Centre and internal computation

**(v) Lending rate**

Consistent with expectations, lending rates have an inverse effect on house prices. In general, higher lending rates would make it more costly for consumers to acquire new housing loans, leading to lower demand for houses. Given the inelastic supply of houses in the short run, which constrains the ability to adjust to changes in demand, house prices would be driven lower.

**(vi) Real Property Gains Tax (RPGT) and consumer sentiment**

The implementation of RPGT had the intended inverse effect on house prices. By compressing net returns on property investments, RPGT serves to counter-balance rising consumer sentiments. This reins in over-exuberance among property investors and has a dampening effect on over-investment and speculative activities in the housing market.

These results are consistent with the rational behaviour of economic agents in the property market. Developments in house prices are therefore largely explained during this period by the expected actions of house buyers and property developers in response to economic factors and policy measures. This contributed to prices that closely resemble the 'fair' or 'equilibrium' value of property in the housing market<sup>7</sup>.

<sup>7</sup> The 'fair' or 'equilibrium' price for a house should be equal to the discounted value of future services that one would derive from the property. In the short run, however, house prices could deviate from the 'fair' or 'equilibrium' values due to shocks or some unique features of the property.

### 3Q 2010 to 2Q 2012

During this sample period, house prices increased at a higher rate, averaging 9.9% annually. Similar to the previous sample period, real economic activity, consumer sentiments, demographic changes and consumer price inflation continued to influence the evolution of house prices. In addition, the following variables were also found to be significant:

#### (i) **Macroprudential measures**

In late 2010, the imposition of a loan-to-value (LTV) ratio of 70% on individuals with more than two housing loans had a dampening effect on the increase in house prices and also contained short-term expectations and speculative activity. The annual growth in lending to individuals with three or more housing loans declined sharply, from 14.5% in November 2010 to 1.9% in December 2012 (Chart 3).

Chart 3

#### Number of Borrowers with Multiple Housing Loan Accounts



#### (ii) **Lagged value of house prices**

Previous house prices had a positive impact on current house prices. This contrasts with the period preceding 3Q 2010 when the variable was found to be statistically insignificant. This could be explained by the large increases in house prices over a short period of time which may have impacted the way economic agents respond to new information in the pricing of properties. Theoretically, in a situation where new information on economic and financial activity is lagging or costly to acquire within a very short time, some economic agents may form extrapolative expectations<sup>8</sup>. By 2Q 2012, house prices had increased by 33% from the observed lows in 1Q 2009. This could have encouraged economic agents to believe that house prices will continue to rise, leading some of them to engage in over-investments and speculative activities in order to reap the higher expected return on investments. The resultant additional demand particularly in an environment of an intensified search for higher yield, in turn, feeds into higher prices of houses.

<sup>8</sup> For a discussion on this concept, see Brunnermeier, M.K. and Oehmke, M. (2012), 'Bubbles, Financial Crises and Systemic Risk', National Bureau of Economic Research, NBER Working Paper Series, No. 18398.

**Conclusion**

The analysis shows that the increase in house prices over the period 2001 to 2012 has been largely driven by macroeconomic factors, and to a lesser degree financial variables, Government regulations and policies, and previous values of house prices. Economic growth, changes in demography and inflation are the main drivers of house prices as observed throughout the period of the study. In the more recent period, house price developments have shown some divergence from the explanatory variables observed in earlier periods, indicating the possibility of early signs of the build up of risks from over-investments and speculation in certain preferred locations. The role of lagged house prices, though having a smaller effect relative to other factors in driving the recent steeper increase in house prices, will require continued close monitoring and where appropriate, targeted actions to address any market distortions and ensure the continued affordability of housing.

It is important to note that the recent steeper increase in house prices in Malaysia has not been influenced by changes in banks' credit policies. This was the conclusion of the IMF in a separate assessment of price developments in the Malaysian housing market in 2012, which showed that the increase in the rate of loans for the acquisition of residential property has remained stable relative to current and future expectations of borrowers' income, and general conditions in the credit market. This further supports the Bank's assessment that risks to financial stability from house price developments remain modest. While the growth momentum in lending for purchase of residential properties was sustained after 2010, the implementation of the LTV ratio by the Bank had the intended effect of moderating bank lending associated with purchases of residential property for investment and speculative purposes, while preserving access to financing for genuine home purchasers. Together with recent measures by the Government to raise the RPGT (with effect from 1 January 2013), increase housing supply and improve public transportation, these measures should continue to support a more sustainable trend in house prices going forward.

## Macroprudential and Microprudential Applications of Stress Testing in Malaysia

Stress testing is an integral component of the Bank's financial stability framework. Used in conjunction with other microprudential and macroprudential assessment tools, stress testing supports the Bank's financial stability assessments and facilitates pre-emptive policy actions through forward-looking examinations on the performance of banks' capital and liquidity positions under various adverse market conditions and the robustness of their contingency plans. Since the late 1990s, stress testing applications have evolved to provide a wider coverage of risks and include multi-faceted approaches, reflecting the increasing complexity and interdependency of systemic and institutional risk dimensions.

Stress tests have been more widely used for some time now by financial institutions to formulate business strategy and planning, for capital management, and to set an institution's risk appetite and limits. Experience with the use of stress tests during the Global Financial Crisis also demonstrates the importance of their informational value to markets during times of stress – both on the extent of institutional soundness of banks and on the potential for wider spillovers to the financial system. As observed during the crisis, such information can contribute towards significantly reducing market uncertainty, especially under stressed conditions, and potentially, the cost of resolution.

This article provides an overview of the Bank's stress testing framework, covering the main approaches used and the key features of the design and application of stress tests.

### Multiple and Integrated Applications

The Bank's approach to stress testing combines top-down and bottom-up approaches both to detect and assess vulnerabilities in the financial system as a whole, and to identify specific risks to individual financial institutions. A top-down approach to stress testing is one which applies a defined set of macroeconomic scenarios and related stress factors to aggregate portfolios of exposures in order to identify vulnerabilities in the financial system which can arise from changes in economic and financial conditions. In contrast, a bottom-up stress testing process adopts a more granular approach that is tailored to an institution's specific portfolio mix and historical experience, and allows room to capture variations in institutional responses to changes in market conditions. Given the margin for error in modelling techniques and key assumptions used in the conduct of stress tests, and the inherent limitations of both top-down and bottom-up approaches, the combination of multiple stress testing approaches in Malaysia serves to support a more robust assessment of systemic stability and institutional soundness. These approaches are illustrated in Diagram 1 and elaborated below.

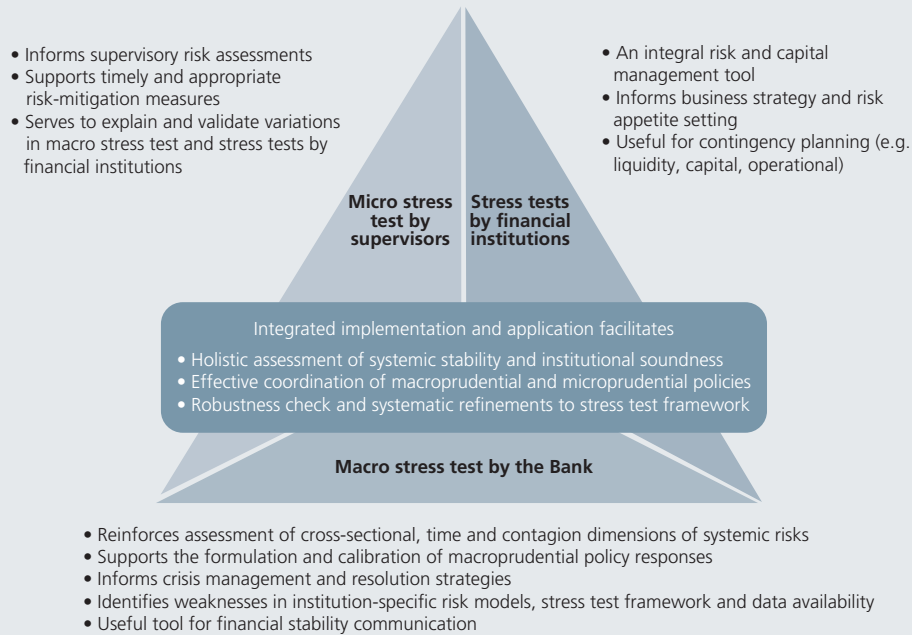
#### (i) Macro stress test by the Bank

The macro stress test represents a top-down approach that is used to (i) assess system-wide resilience and behaviour under exceptional but plausible risk events; (ii) identify systemic risks and vulnerabilities, including cross-sector or cross-institution contagion, and the potential spillovers to the broader economy; and (iii) determine potential system-wide capital and liquidity needs under stress conditions.

Macro stress tests were first used during the Asian Financial Crisis in 1997/98 to form the basis for decisions on the formulation of a holistic resolution strategy to address the crisis. By projecting the potential deterioration in asset quality and impairment in the revenue generating capacity of banks across the financial system, the stress tests facilitated the assessment of the potential scale, scope and financial resources required of the institutional arrangements that were put in place at that time. Information obtained through the stress tests on the potential losses and capital shortfalls was critical in shaping the recapitalisation and asset carve-out strategies which followed. Since then, macro stress tests have become a regular feature of the Bank's financial stability assessments and are used to evaluate pre-emptive actions by the Bank to address emerging risks well before conditions deteriorate to the point of an imminent

Diagram 1

## Multiple Approaches and Applications of Stress Testing



system-wide crisis. When used in conjunction with sensitivity analyses and other early warning indicators, the macro stress tests provide valuable information for deciding on the nature, timing and calibration of macroprudential policy responses. The results of macro stress tests are deliberated at the Financial Stability Committee of the Bank.

**(ii) Stress tests by financial institutions**

Stress testing by financial institutions has been a prudential requirement since 1998, a bottom-up approach to complement the macro stress test. When first introduced, these stress tests were conducted by financial institutions using a set of scenarios and shock parameters prescribed by the Bank. This offered an opportunity for financial institutions to build internal stress testing capabilities while providing useful, if relatively generic, insights into potential vulnerabilities of individual institutions to risks. This prescriptive approach was substituted in 2007 with a more customised approach following significant improvements in the risk management capacity, infrastructure and practices of financial institutions over time. Today, financial institutions are required to conduct stress tests that reflect the unique risk profiles and major risk drivers of their business. Such tests must comply with the Guidelines on Stress Testing issued by the Bank which set out expectations on the design, implementation and governance of the stress testing process by financial institutions. In addition, to bolster the efficacy of stress tests as a risk and capital management tool, the tests must satisfy the 'use-test' criteria, where financial institutions must be able to demonstrate that the stress test results are actually used by management for the purpose of business planning, setting of risk appetite and limits, and for the management of capital and liquidity. The results of the stress tests are submitted bi-annually to the Bank and used by the Bank to validate and enrich the micro stress tests undertaken by supervisors. The stress tests by financial institutions also feed into and complement the conduct of forward-looking multi-year stress testing as part of the Internal Capital Adequacy Assessment Process (ICAAP) for the purpose of determining institutional regulatory and internal capital targets.

**(iii) Micro stress tests by supervisors**

Micro stress tests by supervisors, also a bottom-up approach, are conducted primarily to assess vulnerabilities and the risk-bearing capacity of individual financial institutions. Forward-looking information derived from these tests has become increasingly important to better inform the Bank's supervisory assessments and interventions which aim to identify and address risks in a timely manner. Results of the tests are deliberated during regular engagements between supervisors and financial institutions to obtain a view on the adequacy of an institution's contingency plans, risk mitigation strategies and financial buffers. Where relevant, the Bank may, based on these engagements, require institutions to increase capital and liquidity buffers, including through adjustments to dividend payments or by reining in expansion plans. In addition, micro stress tests serve to cross-check the results of macro stress tests and stress tests by financial institutions. Supervisory micro stress testing serves a particularly important role in (i) reducing the risk of overdependence on complex and computationally-intensive models; (ii) identifying institution-specific vulnerabilities and cross-institutional interlinkages that might be obscured in aggregated data and system-wide estimations; and (iii) encouraging financial institutions to observe an appropriate degree of prudence in conducting internal stress tests and to maintain an adequate focus on tail-risks.

The three stress testing approaches are closely coordinated and integrated within the Bank. The macro stress test provides an important robustness check to bottom-up tests, while achieving consistent applications of stress factors across all institutions to support the identification of system-wide vulnerabilities. It can also promptly surface weaknesses in the data quality and risk management models and practices of individual financial institutions. It also fosters a deeper understanding of the impact of collective behavioural responses to stress and the potential for second-order effects arising from systemic linkages between the financial system and the macroeconomy, thus contributing to more comprehensive risk assessments by supervisors and financial institutions.

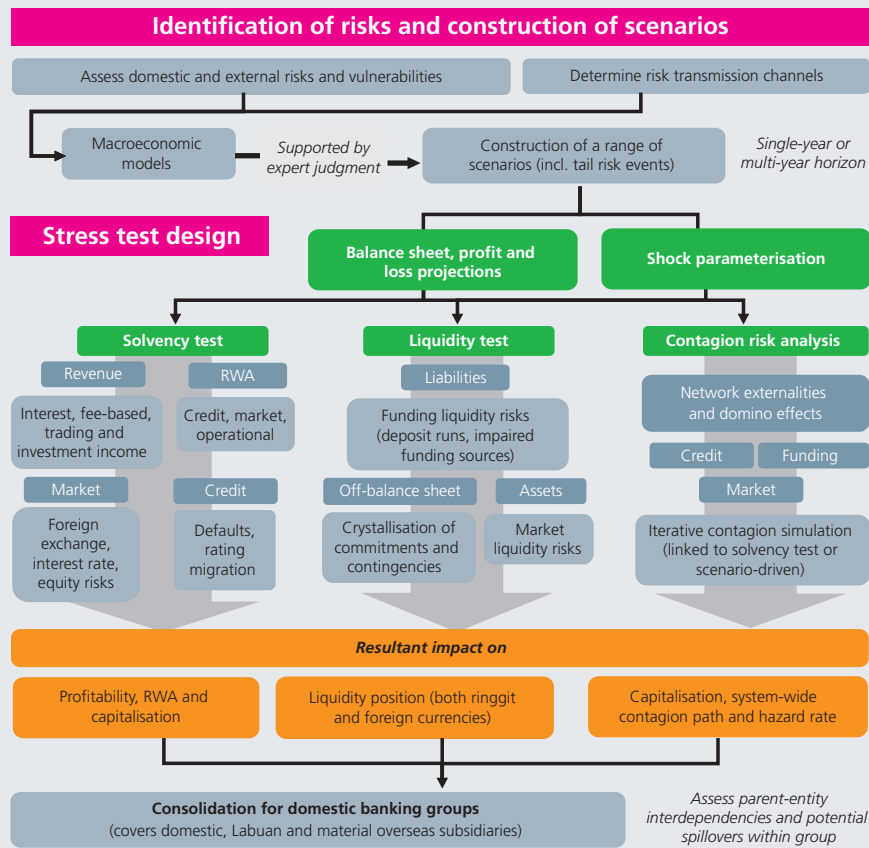
Micro stress tests, in turn, draw on and refine the shock parameters used in macro stress tests to provide a better depiction of institution-specific risk profiles, taking into account different degrees of each institution's sensitivity and behavioural responses to common risk factors. This reflects an institution's specific internal risk control and business strategies, while preserving a level of consistency in application (through a reference to macroeconomic scenarios provided by macro stress tests) and an appropriate focus on tail-risks. Coordination between the stress tests also works in the other direction, where inputs from micro-level supervisory stress tests are used to validate and refine the system-wide calibration of shock parameters used in macro stress tests. Combining the forward-looking analyses from these multiple approaches provides a sound basis for the Bank's risk outlook and policy decisions.

**Key Features of the Bank's Stress Testing Framework****(i) Identification of risks and construction of stress test scenarios**

For the purpose of the stress tests, three scenarios – baseline, adverse and extreme – are constructed from a range of economic and financial indicators using macroeconomic modelling techniques that capture domestic and global economic conditions and the channels through which risks are likely to be transmitted based on defined relationships between different economic sectors (Diagram 2). The stress scenarios are generally applied over a one-year horizon (except where the Bank judges that institution-specific circumstances call for an extended horizon, for example to more fully capture the impact of stress, or to assess the potential impact of planned material changes in strategy). In the stress tests conducted for the Financial Sector Assessment Program in 2012, the time horizon was extended to five years to assess the resilience of the banks to different recovery paths of the economy following an economic shock event. By applying econometric models and statistical approaches, the identified scenarios and corresponding macro-financial variables are used to calibrate shock parameters for all risk areas covered in the stress tests and then applied to project financial institutions' balance sheets.

Diagram 2

## Key Elements and Processes of the Bank's Stress Testing Framework



Three principal stress tests are conducted – a solvency test, a liquidity test and an analysis of contagion risk. To minimise model risks associated with non-linearities and structural breaks that are typically observed during severe stress periods, expert collective judgment and cross-country historical experience are used in the calibration process to mitigate the underestimation of shocks.

**(ii) Scope of application**

Macro and micro stress tests are conducted at the entity level and consolidated at the group level for banking groups. The capacity of the parent entity to absorb losses is further assessed if the results of entity-level stress tests of any subsidiary within the group breach the minimum thresholds. In this event, the shock parameters are further refined to take into account parent-entity interdependencies and potential contagion or spillovers within the group. Stress tests are also performed on the material overseas operations of financial institutions based on macroeconomic and financial scenarios and shock parameters that are calibrated to the operating environment in the host jurisdictions and the risk profiles and internal controls of such operations.

**(iii) Solvency stress test**

The scenario-based solvency stress test incorporates simultaneous shocks on revenue, credit and market risk exposures. These shocks are simulated at the system-wide or institutional level using the Bank's internal satellite models. Revenue shocks are applied by simulating the effect

of slower loan repayments and lower income from securities held and proprietary trading activities on gross operating, trading and investment income. Credit risk shocks typically involve simulating the impact of macroeconomic conditions and changes in the credit quality of major asset classes on profit (through increased provisions and write-offs due to changes in debt servicing capacity) and capital (through higher risk weights applied to exposures to provide for unexpected losses). The relevant shocks include (i) an increase in the probability of default and loss given default for various financing segments; (ii) accelerated credit rating migrations and higher corresponding defaults on fixed income securities and rated business loans; and (iii) higher utilisation of undrawn commitments and contingencies, combined with higher defaults during stress periods. To simulate potential mark-to-market and valuation losses from trading book portfolios, shocks are applied to interest rate, equity and foreign exchange risk exposures. Interest rate risk shocks include (i) the steepening or flattening of yield curves; (ii) the widening of credit spreads between Malaysian Government Securities and private debt securities; and (iii) increasing basis risks. Foreign exchange shocks simulate the effects of extreme volatility in the exchange rate of multiple major currencies against the ringgit on financial institutions' net long or short positions, while equity shocks are translated into extreme declines in the equity market and applied to financial institutions' proprietary equity holdings and share margin financing portfolios.

**(iv) Liquidity stress test**

The liquidity stress test involves multi-factor cash flow analyses to assess the potential liquidity shortfall of banks within a one-month horizon for both ringgit and major foreign currency-denominated assets and liabilities. The scenarios feature a combination of market-wide and institution-specific stress events such as rating downgrades and acute capital erosion leading to heightened risk aversion. On the liability side, runs on deposits are simulated based on the historical worst run-off rates experienced by financial institutions, covering negotiable instruments of deposit (NID), and retail, corporate and short-term deposits. The potential impact from a sudden drying-up of interbank funding and impairment of foreign currency swap markets is simulated by restraining the rollover of interbank borrowings and foreign exchange swaps payable maturing within a specified time horizon. In addition, the drawdown of commitments and contingencies is assumed to increase to capture potential outflows from all off-balance sheet liquidity or credit facilities extended by banks. On the asset side, an erosion in the value of liquefiable assets to buffer against liquidity shocks, differentiated by types of securities, is simulated using market risk shocks applied in the solvency test.

**(v) Network contagion analysis**

The Bank's stress testing framework also includes an assessment of potential contagion effects from simultaneous credit and funding shocks in the interbank market. This is used to identify and assess the effects of systemic linkages associated with banks that are 'too big to fail' or 'too interconnected to fail'. The approach applies an analysis of network externalities arising from interbank relationships within the banking system to measure the extent of spillover (or domino) effects propagated by simulated bank failures in the interbank market. This is achieved by tracking the contagion path and quantifying potential capital losses arising from iterative credit and funding shocks. The simulation begins with a particular bank failure or a set of bank failures (defined as trigger banks). Two forms of contagion shocks are then simulated, disregarding any policy responses by the Bank. The first is a credit shock, in which the trigger banks default on interbank borrowings from all banks, compelling these banks to absorb losses. The second contagion effect is that of a funding shock in which the trigger banks cease to provide interbank funding, causing liquidity strains for the banks that they fund. Affected institutions are assumed to replace the 'lost' funding, through asset fire sales to restore their balance sheets. Depressed asset prices in turn trigger a wide-spread decline in the market value of other banks' portfolios. The simultaneous credit and funding contagion shocks are simulated in an iterative manner until no additional bank falls below the specified solvency threshold. By observing the reverberation of credit and funding shocks, this stress test seeks to identify (i) banks that are significant sources of contagion; and (ii) banks that are highly vulnerable to contagion effects.

