

**MALAYSIA: FINANCIAL
SECTOR ASSESSMENT
PROGRAM FINANCIAL
SECTOR PERFORMANCE,
VULNERABILITIES AND
DERIVATIVES—TECHNICAL
NOTE**



MALAYSIA

FINANCIAL SECTOR ASSESSMENT PROGRAM

April 2014

FINANCIAL SECTOR PERFORMANCE, VULNERABILITIES AND DERIVATIVES—TECHNICAL NOTE

This Technical Note on Financial Sector performance, Vulnerabilities and Derivatives on Malaysia was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed in February 2013.

The policy of publication of staff reports and other documents by the IMF allows for the deletion of market-sensitive information.

Copies of this report are available to the public from

International Monetary Fund • Publication Services
700 19th Street, N.W. • Washington, D.C. 20431
Telephone: (202) 623-7430 • Telefax: (202) 623-7201
E-mail: publications@imf.org Internet: <http://www.imf.org>

Price: \$18.00 a copy

**International Monetary Fund
Washington, D.C.**

FINANCIAL SECTOR ASSESSMENT PROGRAM

MALAYSIA

FINANCIAL SECTOR PERFORMANCE, VULNERABILITIES AND
DERIVATIVES

TECHNICAL NOTE

FEBRUARY 2013

INTERNATIONAL MONETARY FUND
MONETARY AND CAPITAL MARKETS DEPARTMENT

Contents	Page
Glossary	4
Executive Summary	5
I. Structure of Malaysia's Financial Sector.....	6
II. Performance of Malaysia's Banking Sector.....	18
A. Capital	18
B. Asset Allocation and Quality	23
C. Liquidity	35
D. Earnings Efficiency.....	38
III. Financial Derivatives	42
References.....	54
 Tables	
1. Non-bank Credit Intermediaries	13
2. Residential Mortgage Asset Quality Under Various Scenarios	29
 Figures	
1. Malaysia's Financial Sector.....	6
2. Banking Sector: Assets and Deposits	7
3. Funds Raised in the Capital Market.....	7
4. Herfindahl Index for Banking Sector.....	10
5. Shareholding by Government-linked Institutions.....	11
6. Institutional Funds	14
7. Spreads Between 3-month Interbank and T-Bills Rates	15
8. Banking System Excess Liquidity and Deposit-to-Total Liabilities Ratio.....	16
9. European and U.K. Banks' Claims on Malaysia	17
10. Share of U.K. Banks' Claims in Total European Banks' Claims	17
11. Regulatory Capital to Risk-Weighted Assets	18
12. Tier 1 Ratio	19
13. Capital-to-Total Assets Ratio.....	19
14. Hybrids as Proportion of Total Regulatory Capital	19
15. Tier 2 Capital as Proportion of Total Capital.....	20
17. Domestic Banking Groups: Tier 1 Ratios.....	21
18. Domestic Banking Groups: Core Tier 1 Ratios	21
19. Composition of Bank Lending.....	23
20. Breakdown of Banking System Loans.....	24
21. Breakdown of Lending to Households	24
22. Gross NPL Ratios	25
23. Provision Coverage.....	25
24. Loans Under Restructuring	25
25. Regional Comparison: Gross NPL Ratio and Provision Coverage	26

26. Composition of Non-performing Loans.....	26
27. Household Debt, Income	27
28. Unsecured Lending: Commercial and Islamic Banks.....	28
29. Residential Mortgage: Lending and NPL	28
30. Trends in the Number of Counseling and Debt Management Cases	29
31. Breakdown of Exposure to Large Borrowers	30
32. Banks' Lending to Highly Leverage Companies.....	31
33. Banks' Lending to Highly Leverage Companies.....	32
34. Construction Sector Gross NPL Ratios.....	32
35. Malaysian Banks: Composition of Overseas Exposure in Asia.....	33
36. Liquid Assets-to-Deposits and Short-Term Funding.....	36
37. Customer Deposit-to-Total Funding	36
38. Proportion of CASA and Term Deposits	37
39. Banking System Deposit by Holders	37
40. ROA and ROE	38
41. Efficiency Measures.....	38
42. Return on Average Asset (ROAA)	39
43. Overhead Cost-to-Revenue Ratio	39
44. Share of Floating Rate Loans to Total Loans	40
45. Net Interest Margin	40
46. Breakdown of Derivatives	42
47. Breakdown of FX Derivatives	43
48. Breakdown of Interest Rate Derivatives	43
49. Derivatives Exposures	43
50. Contribution of Net Gains from Derivatives to Pre-Tax Profit	44
51. Spread between NDF-Onshore USD/MYR Forward	44
52. Cross Currency Basis Swap Spreads	45
53. Weekly Change in Cross Currency Basis Swap Spreads.....	45
54. Cross Currency Swap Basis Spreads and Domestic Excess Liquidity	46

Boxes

1. Malaysia's Masterplan for the Development of the Financial Sector and Capital Market, 2001–2010.....	8
2. Financial System Interlinkages, 2011	12
3. Do large Malaysian Banks Have Adequate Capital and Liquidity to Absorb European Banks' Deleveraging?.....	17
4. How Much Equity Do Banks Need to Promote Growth and Meet Basel III?	22
5. Late Credit Cycle	34
6. Assessing Efficiency Among Commercial and Islamic Banks: An Application of Data Envelopment Analysis	40

Appendices

1. Malaysia's Financial System	47
2. Islamic Banking in Malaysia	48
3. Data Envelopment Analysis (DEA) Methodology	51

Glossary

BAFIA	Banking and Financial Institutions Act
BNM	Bank Negara Malaysia (Central Bank of Malaysia)
CMP	Capital Market Masterplan
Commercial Banks	Non-Islamic Banking institutions (also known as <i>conventional banks</i>)
DFIA	Development Financial Institutions Act
D-SIB	Domestic Systemically Important Banks
EPF	Employees Provident Fund
FSMP	Financial Sector Masterplan
FSPSR	Financial Stability and Payments Systems Report
GFSR	Global Financial Stability Report
LGD	Loss given default
NPL	Non-performing Loan/ Non-performing lending
PD	Probability of Default
PIDM	Malaysian Deposit Insurance Corporation
SC	Securities Commission
SME	Small and Medium Enterprises
Takaful	Syariah-compliant insurance

EXECUTIVE SUMMARY

Strong regulatory oversight, coupled with efforts to restructure the banking sector in the aftermath of the Asian financial crisis in 1997–1998, has supported rapid growth in Malaysia’s financial sector over the last decade.¹ The banking sector has undergone consolidation while competition has increased following measures implemented under the Financial Sector Master Plan 2001–2010. The financial system weathered the 2008 global financial crisis well; the banking sector remained stable due to healthy capital and liquidity levels, while the impact on the domestic economy was felt primarily through trade channels.

Malaysian banks are presently well capitalized with comfortable tier 1 capital ratios. Domestic banking groups are expected to be able to meet Basel III capital requirements, barring any unforeseen tail-risk scenarios. Although the full implementation of Basel III only begins in 2019, maintaining high equity capital buffers should enhance stability and enables hybrid capital to be retired when they reach maturity or call dates.

Asset quality has been improving over the last five years. There has been a significant growth in lending to the household sector, driven by sustained economic growth. Personal loans and credit card lending have been growing rapidly, alongside mortgages. Lending to households currently accounts for 55 percent of total bank lending and household debt has risen to 74.2 percent of GDP in 2011, from 66.3 percent of GDP in 2006. While this may not be an immediate concern, potential risks could arise if a global economic downturn adversely affects the labor market and leads to strains in household balance sheets. Nonetheless, BNM, in its Financial Stability and Payments Systems Report 2011, assessed household financial buffers to be at comfortable levels as the growth in household debt has generally been accompanied by a corresponding expansion in household financial assets. The central bank remains vigilant in conducting continuous risk assessment.

Stronger financial positions and risk management capability have enabled domestic banking groups to pursue overseas expansions, mostly within the region. The importance to some banks of overseas assets and earnings is reaching levels which, based on international experience, warrant a review of internal controls. Currently, BNM monitors developments at material overseas operations of banks on a monthly basis and conducts frequent onsite examination on key material overseas outfit.

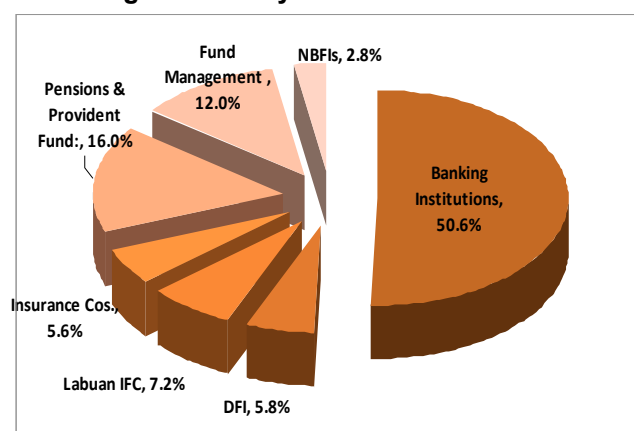
¹ Prepared by Julian T.S. Chow (IMF) in the context of the 2013 Malaysia FSAP (<http://www.imf.org/external/pubs/ft/scr/2013/cr1352.pdf>).

I. STRUCTURE OF MALAYSIA'S FINANCIAL SECTOR

Overview of the financial sector...

1. **The Malaysian financial system comprises banking intermediaries, insurance companies and capital market intermediaries** (Figure 1). Banking intermediaries can be classified into two groups. The first group is supervised by Bank Negara Malaysia (BNM); they comprise commercial banking institutions (including Islamic), investment banks (co-regulated with the Securities Commission) and development financial institutions (DFIs)². The second group, which falls under the supervision of various government departments and agencies, are non-bank financial institutions such as credit co-operatives, other DFIs and a building society. Insurance companies³ are supervised by BNM. BNM also regulates the foreign exchange and money market as well as undertakes oversight of the payment system. Capital market intermediaries are regulated by the Securities Commission and comprise fund management companies, broker-dealers, investment banks and the securities and derivatives market. There is also an offshore financial centre in Labuan, supervised by the Labuan Financial Services Authority, with businesses ranging from offshore banking, insurance, trust and fund management. Labuan business activities are carried out in non-Ringgit foreign currencies.

Figure 1. Malaysia's Financial Sector



Source: BNM

2. **The financial sector is well diversified.** Credit intermediation by the banking sector has increasingly been complemented by developments in the capital market through growth in provident and pension funds, insurance and mutual funds. Currently, the share of financing activity between financial institutions and capital markets is almost equal, at 54 percent and 46 percent respectively.

A decade of change ...

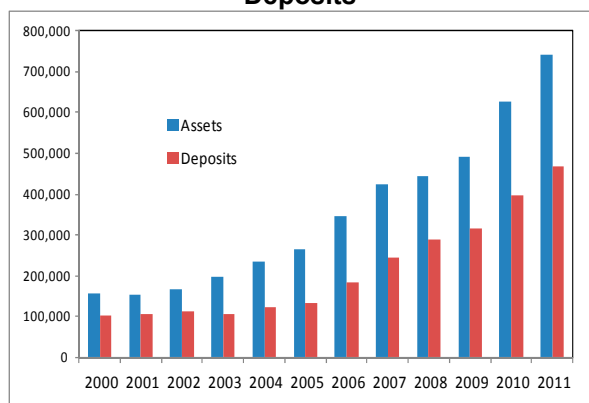
3. **Strong regulatory oversight, coupled with favorable macroeconomic conditions and conducive government policies, precipitated rapid growth in the financial sector.**

² There are 13 DFIs in Malaysia of which 6 comes under the purview of BNM through the Development Financial Institutions Act 2002.

³ Comprise conventional and Islamic (takaful) life and general insurers and reinsurers

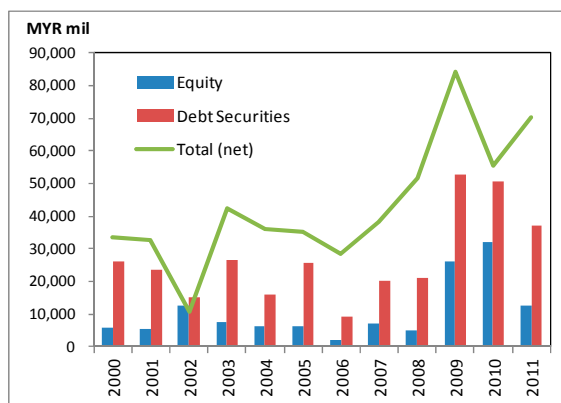
Over the last decade, Malaysia's banking assets and deposits grew at an annual compounded rate of 14 percent with average real GDP growth of 5.1 percent, higher than regional peers' average at 12 percent with average real GDP growth of 5.4 percent (Figure 2). The size of the capital market also expanded rapidly at an annual compounded rate of 11 percent. Funds raised through equity and bond issuance grew at an annual compounded rate of 8 percent (Figure 3). The robust growth was underpinned by two financial sector development blueprints – the Financial Sector Masterplan (FSMP) and the Capital Market Masterplan (CMP) (Box 1) – established to restore and reform the domestic financial system in the aftermath of the Asia financial crisis 1997.

Figure 2. Banking Sector: Assets and Deposits



Source: BNM

Figure 3. Funds Raised in the Capital Market



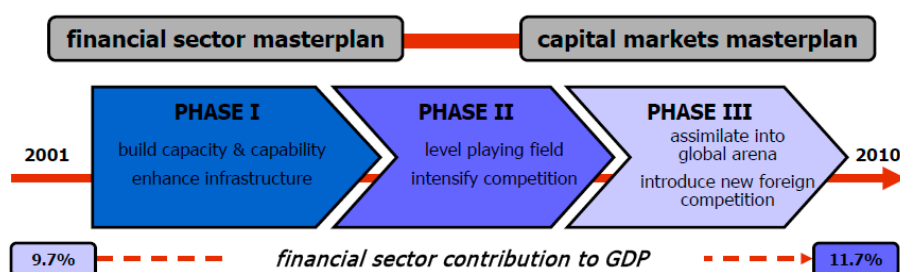
Box 1. Malaysia's Masterplan for the Development of the Financial Sector and Capital Market, 2001-2010

I. Financial Sector Masterplan 2001-2010

The FSMP, introduced by Bank Negara Malaysia in 2001, outlined a 10-year plan for the orderly development of the financial sector through institutional capacity building, financial infrastructure development, regulatory reforms and greater use of technology. The Masterplan was implemented in three phases with the following objectives:

- Phase 1: Enhancing domestic financial sector capacity and promoting financial stability to meet socio-economic objectives.
- Phase 2: Ensuring level playing field and intensify competitive pressure.
- Phase 3: Introducing new foreign competition and assimilating into global market.

Box Figure 1: Implementation of FSMP and CMP 1 in three phases



Source: BNM

To date, all of the FSMP recommendations have been implemented and some continue to be implemented on an ongoing basis. The FSMP has now been succeeded by the Financial Sector Blueprint 2011-2020 which outlines strategies to further enhance the competitiveness of the financial sector, promote inclusive access to financial services, encourage the development of the range of financial institutions, products and markets and accelerate regional and international connectivity.

Box Table 1. Banking Sector Progress from FSMP

1997: Pre-Asian Financial Crisis	2010: Progress from FSMP
<ul style="list-style-type: none"> Fragmented banking system 	<ul style="list-style-type: none"> Consolidation and rationalization of the banking industry, from 77 domestic banks (pre-crisis) to 8 domestic banking groups (currently). Strategic alliances with foreign institutions.
<ul style="list-style-type: none"> Under- developed bond market Heavy reliance by corporations on the banking system for financing 	<ul style="list-style-type: none"> Diversified financial sector with an active debt securities market, comprising both conventional and Islamic.
<ul style="list-style-type: none"> More rigid & prescriptive rules-based regulation & supervision 	<ul style="list-style-type: none"> Strengthened corporate governance & risk management practices. Robust surveillance, regulatory & supervisory framework.

<ul style="list-style-type: none"> Limited prominence of Islamic finance 	<ul style="list-style-type: none"> Malaysia as an international Islamic financial hub. Significant development of Islamic banking and takaful, Islamic equity, Islamic fund management and sukuk market.
<ul style="list-style-type: none"> Rigid price mechanisms 	<ul style="list-style-type: none"> Greater market orientation. Efficient delivery channels for financial products & services.
<ul style="list-style-type: none"> Gaps in access to financing 	<ul style="list-style-type: none"> Comprehensive consumer protection framework. Enhanced access to financing especially for SMEs and micro-enterprises.

Source: BNM

Bond market development and stability were also part of the FSMP's objectives in addition to CMP 1 due to their implications on financial institutions which are under the purview of BNM.

II. Capital Market Masterplan I (CMP 1), 2001-2010

The CMP 1, introduced by the Securities Commission, provided a comprehensive roadmap for the orderly growth and diversification of Malaysia's capital market. The plan identified six key objectives to strengthen fund-raising, promote the growth of the investment management industry, enhance market and intermediation competitiveness, provide a strong and facilitative regulatory regime and establish Malaysia as an international Islamic capital market centre. The CMP 1 objectives are as follows:

- To transform the domestic capital market into the preferred fund-raising centre for Malaysian companies.
- To promote an effective investment management industry and a more conducive environment for investors.
- To enhance the competitive position and efficiency of market institutions.
- To develop a strong and competitive environment for intermediation services.
- To ensure a stronger and more facilitative regulatory regime.
- To establish Malaysia as an international Islamic capital market centre.

By the end of 2010, 95 percent of the recommendations have been completed. Box Table 2 highlights some of the progress achieved under CMP 1. At present, CMP 1 has been succeeded by CMP 2 which focuses on strategies to expand the role of capital market and governance for investor protection.

Box Table 2. Capital Market Progress under CMP 1

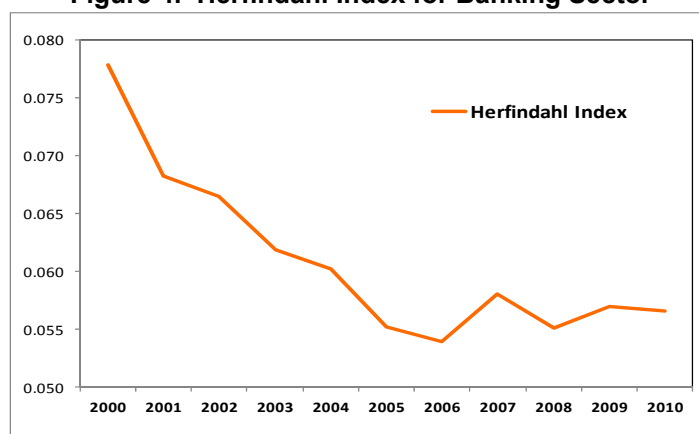
Market segments	Compounded Annual Growth Rate from 2000-2010 (percent)	Highlights
Stock market capitalization	11.1	<ul style="list-style-type: none"> Consolidation of exchanges and clearing houses followed by the de-mutualization and listing of the exchange (Bursa Malaysia). Consolidation of stockbrokers with some stock-broking firms evolving into investment banks. Settlement cycle shortened to T+3 in line with international benchmarks.
Debt securities outstanding	10.8	<ul style="list-style-type: none"> Malaysia is the 3rd largest local currency bond market in Asia.
Derivatives (notional value)	19.8	<ul style="list-style-type: none"> Global price discovery centre for crude palm oil (CPO) futures

traded)		<ul style="list-style-type: none"> Bursa Derivatives has strategic partnership with the CME Group Inc. (world's largest derivatives exchange) and migrated to CME's Globex trading platform in 2010.
Investment management (assets under management)	21.2	<ul style="list-style-type: none"> Penetration rate of the unit trust industry (measured by unit trust NAV over stock market capitalization) rose from 10.0% in 2000 to 17.8% in 2010.
Islamic capital market	13.6	<ul style="list-style-type: none"> Islamic capital market more than tripled in size from 2000-2010. As at the end-2010, more than half of Malaysia's capital market assets were Syariah-compliant. Malaysia pioneered the launch of many Islamic products and structures e.g. exchangeable sukuk, sovereign sukuk and Islamic REITs.

Source: Securities Commission

4. **The banking sector has undergone consolidation. Overall, competition has increased over the decade following measures implemented under the FSMP.** Following the consolidation and rationalization exercise in the aftermath of the Asia financial crisis, the Malaysian financial system has become less fragmented. The consolidation exercise has reduced the number of domestic commercial banks from 22 in 1986 to 8 banking groups currently. Finance companies were merged into commercial banking groups while discount houses and securities firms were merged to become investment banks.⁴ One of Malaysia's commercial banks is now placed among the world's top 200 banks by asset size.⁵ Consolidation has led to the rationalization of costs and raised competition (Figure 4 shows a decline in the Herfindahl Index of bank deposit by 27 percent over the decade as deposits are being priced more competitively). As the top five commercial banking groups

Figure 4. Herfindahl Index for Banking Sector



Source: IMF Staff's computations

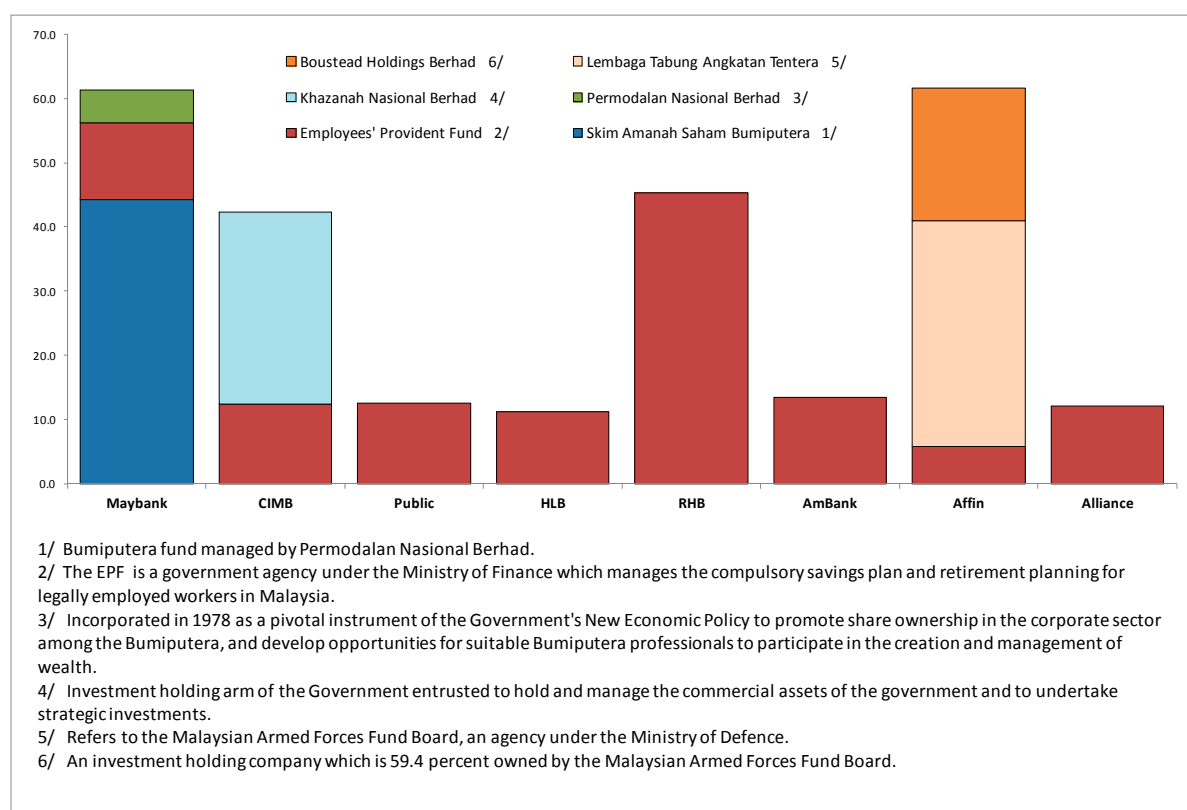
⁴ Under the arrangement, a discount house needs to merge with a universal broker (created following the merger of four securities firms) in order to become an investment bank.

⁵ Malaysia's largest bank, Maybank, is currently ranked 173 globally by asset size.

now account for 70 percent of total banking system assets, it is important that the competitive landscape is preserved.⁶

5. The shareholding of government-linked institutions and funds is substantial in a few banking groups. In four banking groups, these institutions and funds account for between 40–60 percent of total shareholding (Figure 5).

Figure 5. Shareholding by Government-linked Institutions (in percent of total)



Sources: Bloomberg, Annual Reports

6. The financial system has become highly interconnected. Banks, non-bank financial companies and mutual funds are linked through the wholesale funding market (Box 2). Financial conglomeration has taken a foothold with major banks owning insurance, fund management companies, and securities firms. Currently, there are 8 financial conglomerates in Malaysia of which 6 operate under a financial holding company (FHC) structure while

⁶ The top 5 commercial banking groups are Maybank, CIMB Group, Public Bank, Hong Leong Financial Group and RHB Capital.

[illegible]

- Almost all sectors except DFIs have direct net claims on the government, ranging from low to significant levels.
- Households have highly significant net claims on pension funds, mutual funds and insurance.
- Commercial banks exhibit moderate claims on households and government due to net lending activities.
- Mutual funds invest a moderate amount of their funds in banks as deposit placements while corporates net claims on the external sector is large reflecting their investments abroad.
- Pension (including provident) funds have significant claims on the government through investment in government securities.
- Corporations have net claims on banks arising from deposit placement.
- NBFIs (non-bank financial institutions) comprise cooperatives, leasing and factoring companies, building/housing institutions/corporations and Cagamas.

⁷ Financial conglomerates headed by a FHC are CIMB Group, RHB Group, Affin Group, Alliance Group, Hong Leong Group and AmBank Group. Financial conglomerates headed by a banking institution are Maybank Group and Public Bank Group.

Non-bank intermediaries

7. **Rapid growth was also evident in non-bank intermediaries, which include pension and provident funds, unit trusts, insurance companies and development financial institutions (DFIs).** These intermediaries comprise close to 40 percent of total financial system assets and their credit intermediation is sizeable at 93 percent of GDP (Table 1). Underpinning their growth were initiatives laid out in CMP 1 which saw an expansion in the domestic capital market by 2.8 times to MYR2 trillion (US\$666.7 billion) by the end of 2010 from 2000. SC estimates that the new initiatives under the CMP 2 would double the size of the domestic capital market to MYR4.5 trillion (US\$1.5 trillion) by 2020. In addition, BNM projected that by 2020, market-based financing activities would increase to 52 percent of total financing from 46 percent currently.

Table 1. Non-bank Credit Intermediaries

Regulator	BNM	Securities Commission	Co-operative Commission of Malaysia	Ministries	Not regulated
Intermediaries	<ul style="list-style-type: none"> - Insurance and Takaful Companies 1/ - DFIs 2/ - Building societies 3/ 	<ul style="list-style-type: none"> - Unit trust/ Investment funds - Securitization 	<ul style="list-style-type: none"> - Malaysia Co-operative Societies Commission 	<ul style="list-style-type: none"> - Employees Provident Fund (EPF) - Retirement Fund (KWAP) - DFIs not under DFIA - Govt. agencies - Money lenders - Pawn brokers 	<ul style="list-style-type: none"> - Other non-bank investors in debt securities

1/ Comprise (i) loan origination; (ii) purchase of debt securities; (iii) credit transfer/ securitization activities; (iv) credit enhancement activities or a combination of these

2/ Under Development Financial Institution Act (DFIA) 2002

3/ Building societies are not regulated/supervised by BNM. However, pursuant to BAFIA, companies undertaking leasing, factoring, development finance and building credit businesses are required to seek written acknowledgement from BNM to undertake such businesses. BNM maintains a registry of such companies for statistical purposes. Where necessary and triggers are met, the Ministry on advice from BNM may impose regulations on such institutions.

Source: BNM

8. **DFIs are specialized financial institutions established by the Government with specific mandates to achieve socio-economic development objectives.** DFIs provide credit via direct lending to targeted sectors such as agriculture, SMEs, infrastructure, maritime, export-oriented sector, high-technology and capital-intensive industries. Some improvements in the asset quality of DFIs supervised by BNM were noted – gross NPL ratios declined by 1.6 percentage points over the last 3 years, although NPLs remain high at 7.2 percent in 2011.⁸ The BNM noted that improvements in the quality of financing portfolio of these DFIs have been supported by strengthened underwriting standards and credit risk management

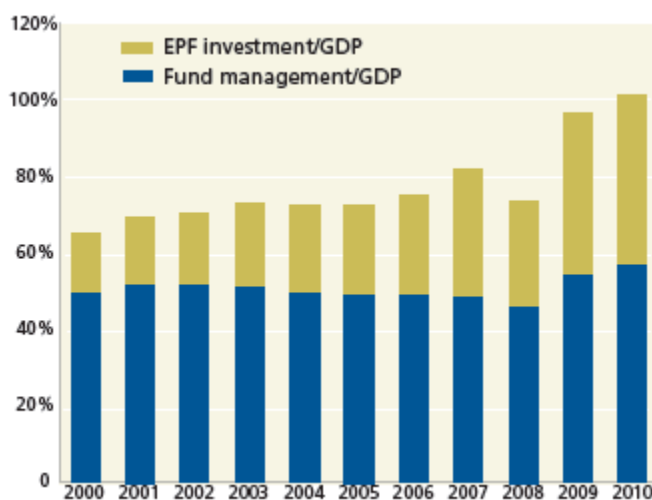
⁸ BNM noted that improvements in the quality of financing portfolio have been supported by strengthened underwriting standards and credit risk management practices. This is also reflected in the significantly lower quantum of newly impaired loans in the recent couple of years (2010: RM611 million; 2011: RM248 million).

practices.⁹ Provision coverage is reasonable at 79 percent¹⁰ though it has declined from 98.5 in 2009. These DFIs are also well capitalized with an average leverage ratio¹¹ of 13.7 percent in 2011, slightly lower compared to 14.8 percent in 2009.

9. **Co-operative intermediaries are relatively small at 0.4 percent of GDP.**¹² These co-operatives can be divided into 2 categories – financial and non financial. Non-financial cooperatives are involved in activities such as housing development, farming and agriculture, industrial and transportation whose objectives are to assist members in their respective services. Financial cooperatives take deposits and extend loans to members who are predominantly fixed-salary earners from the civil service and statutory bodies, and to a lesser private sector.

10. **Other non-bank credit intermediaries are institutional funds comprising unit trusts and the Employees' Provident Fund (EPF), pension funds and insurance companies.** In aggregate, institutional funds rose from 65 percent of GDP in 2000 to 102 percent of GDP in 2010, reflecting the large amount of savings in the economy (Figure 6). During the period, the investment management industry witnessed high double-digit growth with assets under management growing by 21.2 percent annually, largely driven by the unit trust industry where net asset value expanded 18.0 percent annually. Insurance companies, including takaful operators, account for 22.5 percent of GDP.

Figure 6. Institutional Funds (in percent of GDP) 1/



Source: Securities Commission

1/ Fund management excludes mandates outsourced by the EPF

Resilience during the Global Financial Crisis...

11. **The financial system weathered the 2008 global financial crisis well.** The impact on the domestic economy was felt primarily through trade channels as major export

⁹ The quantum of newly impaired loans have declined significantly in recent years (2011: RM248 million, 2010: RM611 million).

¹⁰ By comparison, in Thailand, the loan loss provisions for specialized financial institutions ranged between 11-24 percent from 2000-2009. See Asian Development Bank's report "Thailand: Restructuring of Specialized Financial Institutions".

¹¹ Computed as: Total Shareholders' Funds/Total Assets

¹² This figure excludes Bank Rakyat which is subjected to supervision/ regulation by BNM and governed by DFIA 2002.

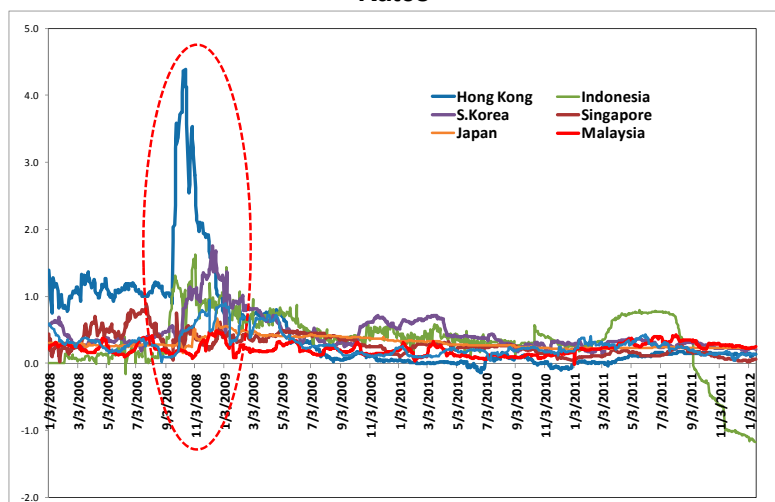
destinations in the U.S. and Europe were profoundly affected. The banking system remained stable due to healthy capital (Tier 1 ratio above 10 percent, on average) and liquidity positions. Moreover, banks had limited exposures to subprime securities and foreign borrowing.

12. **The collapse of Lehman in Q3 2008 triggered an increase in interbank–treasury bill spreads.** Nonetheless, the widening of spread in Malaysia was small in comparison with large Asian financial centers such as Hong Kong and Singapore, reflecting ample domestic liquidity (Figure 7). By the end of Q1 2009, spreads normalized.

13. **The authorities were pro-active in taking pre-emptive measures to contain systemic risk during the global financial crisis.** Those measures include:

- Reductions to BNM’s Overnight Policy Rate (OPR) from 3.5 percent in October 2008 to 2.0 percent in February 2009.
- Extension of a blanket guarantee by PIDM on all MYR and foreign currency deposits from October 2008 until December 2010 for all banking institutions incorporated in Malaysia.
- Extension of access to the BNM’s standing liquidity facility to insurance companies.¹³
- Temporary reduction of the Statutory Reserve Requirement to 1 percent in 2009 (subsequently returned to 4 percent in 2011).
- Provision of USD liquidity to banks to facilitate trade-related transactions.¹⁴

Figure 7. Spreads Between 3-month Interbank and T-Bills Rates



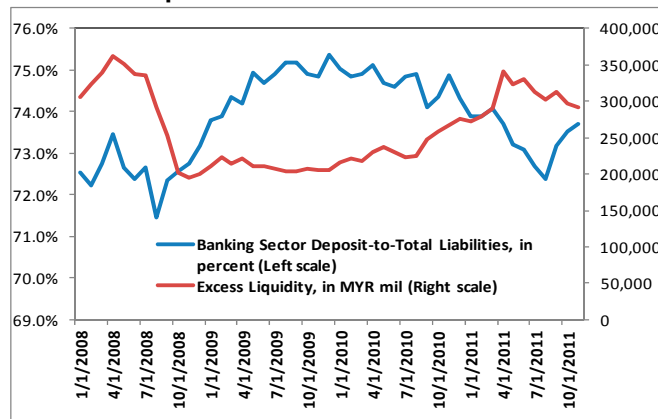
Source: Bloomberg

¹³ This facility was not utilized by the insurance companies during the crisis.

¹⁴ This facility was not utilized by banks during the crisis.

14. During the fourth quarter of 2011, global uncertainties from a worsening of the Eurozone debt crisis resulted in a tightening of global USD liquidity, but the impact on domestic banks was manageable. Reliance on foreign currency funding was minimal and banks were also able to raise funding as usual through the domestic bond market following strong demand from local fund managers, especially for high grade papers.¹⁵ In other countries such as Europe, wholesale funding was difficult but not in Malaysia. In addition, structural surplus liquidity (banking sector claims on the central bank)¹⁶ remained high (Figure 8).

Figure 8. Banking System Excess Liquidity and Deposit-to-Total Liabilities Ratio



Source: BNM

Muted impact from recent European banks' deleveraging ...

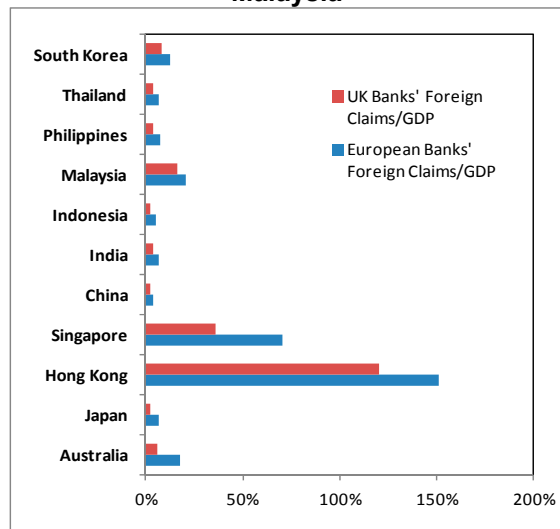
15. **The impact of deleveraging by European banks is expected to be low due to their small presence and stringent ring-fencing.** European banks' claims amounted to 20 percent of Malaysia's GDP as at end-2011, slightly higher compared to neighboring countries such as Indonesia, Thailand and Philippines but not as high as Singapore and Hong Kong SAR¹⁷ (Figure 9). U.K. banks account for 80 percent of total European banks' assets (Figure 10). Collectively, their market share is small, at 8.9 percent and local currency deposits form over 80 percent of their funding, of which 47 percent are from retail deposits. All foreign banks operate as locally-incorporated subsidiaries. BNM imposes a requirement to obtain approval prior to any repatriation of capital reserves and there were no surges in special dividend payments to the parent banks in 2011.

¹⁵ In December 2011, Malaysia's largest bank (Maybank,) raised MYR 1 billion (USD316 million) of 10- and 12-year subordinated debt at yields of 3.97 percent and 4.12 percent respectively (only 28bps and 43bps respectively above the 10-year Malaysian Government Bond) indicating that liquidity in the system remained sufficient and local banks were not in need of external funding. This compares with the implied MYR 5-year yield of 5.5 percent if borrowing were to be made from abroad in USD and converted into MYR through the USD/MYR cross currency swap.

¹⁶ Structural Surplus Liquidity (also referred to as Excess Liquidity) is defined as the amount of reserve money which is mopped up by the central bank. It is computed as: Bank deposits with the central bank *plus* OMO (BNM bills *plus* repo draining operations) *less* the Statutory Reserves Requirement.

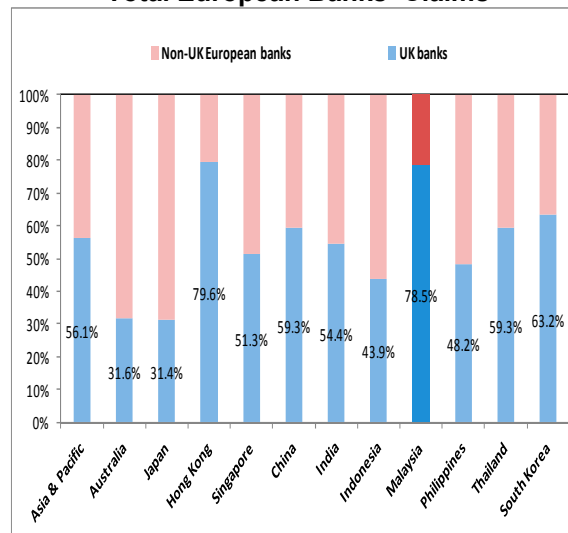
¹⁷ Based on BIS consolidated claims (immediate borrower basis) as of December 31, 2011. They are all locally-incorporated banks in Malaysia. U.K. banks alone account for 95 percent of these locally-incorporated European banks' market shares.

Figure 9. European and U.K. Banks' Claims on Malaysia



Source: BIS

Figure 10. Share of U.K. Banks' Claims in Total European Banks' Claims



Box 3. Do large Malaysian Banks Have Adequate Capital and Liquidity to Absorb European Banks' Deleveraging?

This box examines the impact of further deleveraging by European banks by attempting to answer the question of whether the top 4 Malaysian banks which account for two-thirds of total banking assets have sufficient capital and liquidity buffers to expand their balance sheets to absorb assets disposed by European banks. Two scenarios are explored with the following assumptions:

- The first scenario analysis on the availability of capital assumes the Tier 1 capital ratio of the top four largest domestic banking groups will be maintained at a minimum of 8.5 percent (in accordance with Basel III requirement including conservation buffers) and domestic banks will absorb the assets sold by European banks with no haircuts applied.
- The second scenario analysis on the adequacy of liquidity uses loan-to-customer deposit (LTD) ratio as a gauge for banks' liquidity position. It assumes that the funding for the purchase of these European banks' assets is drawn from liquidity buffers up to a maximum LTD ratio of 100 percent.

Results

The top 4 banks seem to have adequate capital and liquidity buffers to absorb asset sales by European banks. If European (excluding UK) banks were to de-lever by another 50-75 percent, the banks have between 12 to 8 times capital buffers to absorb those assets while meeting Basel III's Tier 1 capital requirement. Liquidity buffers range between 6 to 4 times of the asset disposal (Box Table 3).

The tipping point, however, is whether UK banks will de-lever from Asian operations to cover losses in Europe and if they do, how significant would the asset disposal be. In a tail scenario where all European banks (including UK) were to de-lever by another 50 to 75 percent, liquidity buffers would be thin at between 1.4 times and 0.9 times the expected value of assets disposal despite capital buffers being adequate. Such extreme events would be remote as the financial positions of U.K. banks with presence in Malaysia are healthy so far and thus there is lesser need for balance sheet repair. Nonetheless, the outcome could change if weaknesses in Eurozone significantly affect Asia.

Box Table 3. Adequacy of Capital and Liquidity to absorb European banks' deleveraging in various scenarios

Adequacy of Capital and Liquidity (times)	Various Deleveraging Scenarios			
	European Banks Excl. UK		All European Banks	
	50%	75%	50%	75%
Capital buffer	12.1	8.1	2.6	1.7
Liquidity buffer	6.4	4.3	1.4	0.9

Sources: Bloomberg, Annual Reports, BIS consolidated claims (immediate borrower basis)

Caveats

The following caveats underpinning this analysis should be considered to ensure accurate interpretation of the results:

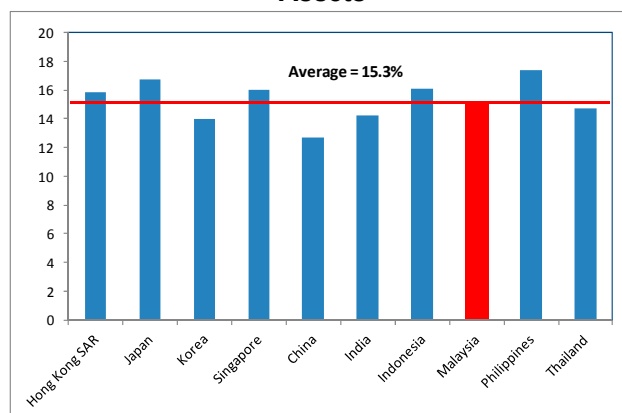
- The assumption that domestic banks will absorb assets disposed by deleveraging European banks may be drastic and banks may not drawdown cash reserves until LTD reaches 100 percent. The purpose of this exercise, therefore, is merely to test whether the capital and liquidity buffers are sufficient.
- The assumption of deleveraging by U.K. banks is only a tail-scenario. In actuality, these banks like all other foreign banks are locally incorporated subsidiaries with dedicated capital committed to the Malaysian operations as required under the Malaysian banking legislation and Malaysian operations are funded domestically, with over 80 percent in the form of local currency deposits.

II. PERFORMANCE OF MALAYSIA'S BANKING SECTOR

A. Capital

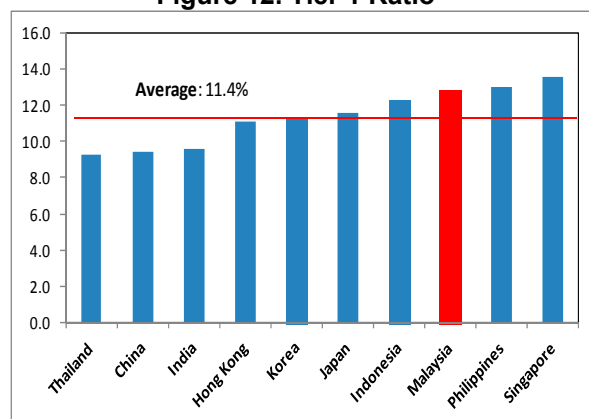
16. **Malaysian banks are presently well capitalized.** The banking sector risk-weighted capital adequacy ratio (RWCR) increased 1.6 percentage points since 2006 to 15.1 percent in 2011, comfortably above BNM's minimum requirement of 8 percent and Basel III's minimum total capital requirement of 10.5 percent.¹⁸ This level is comparable to Asian peers' average of 15.3 percent (Figure 11). Malaysian banks' tier 1 capital ratio stood at 12.8 percent, higher compared to the region's average of 11.4 percent (Figure 12). Normalizing the effects of risk-weighted assets, the banking sector capital-to-asset ratio is slightly above regional peers' average (Figure 13).

Figure 11. Regulatory Capital to Risk-Weighted Assets

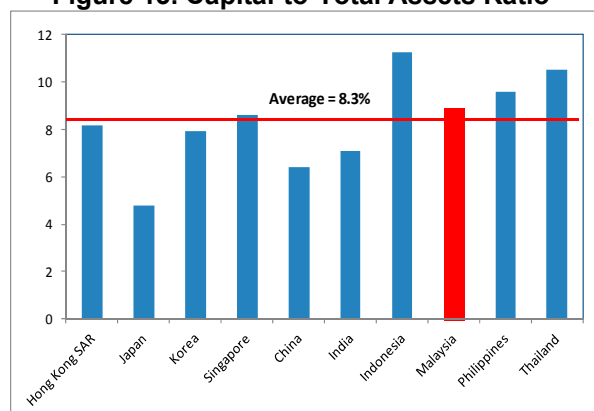


Source: GFSR, April 2012

¹⁸ Includes capital conservation buffer of 2.5 percent.

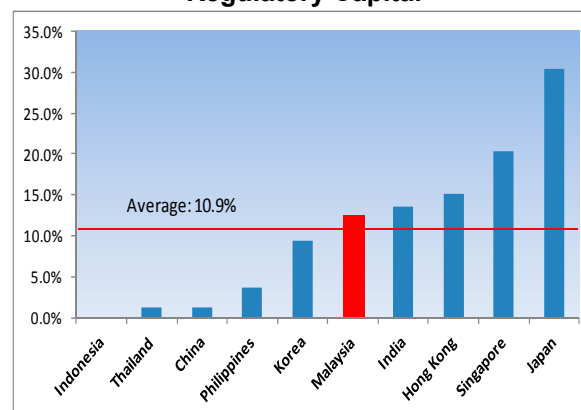
Figure 12. Tier 1 Ratio

Source: Bankscope

Figure 13. Capital-to-Total Assets Ratio

Source: GFSR, April 2012

17. **Within the capital structure, tier 1 hybrids comprise around 13 percent of total regulatory capital, slightly above the region's average (Figure 14). Nonetheless, the share of hybrids is not as high as in Asian financial centers such as Japan, Singapore and Hong Kong SAR. Some regional countries are replacing these types of capital with common equity or contingent capital ahead of the cutoff date for implementation of Basel III to enhance stability.**¹⁹

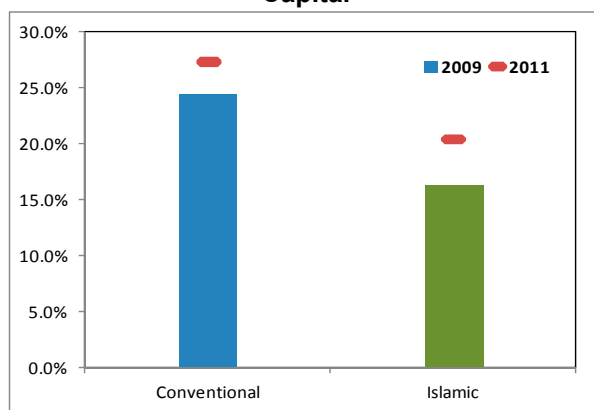
Figure 14. Hybrids as Proportion of Total Regulatory Capital

Source: Bankscope

¹⁹ The recent global financial crisis has shown that most forms of hybrid capital have weak loss absorption capacity.

18. **Recently, there has been an increase in tier 2 capital.** In 2009, tier 2 capital comprised 24.4 percent and 16.3 percent of conventional and Islamic banks' capital respectively. In 2011, they have increased to 27.4 percent and 20.3 percent respectively (Figure 15). Recent experience during the Global Financial Crisis shows that the failure of banks to redeem their hybrid securities on call dates could result in significant increase in credit spreads, and this could lead to funding pressures.²⁰ BNM is fully cognizant of this as the use of tier 2 sub-debts is subject to stringent approval process and banks' exposures are continuously under close surveillance.²¹

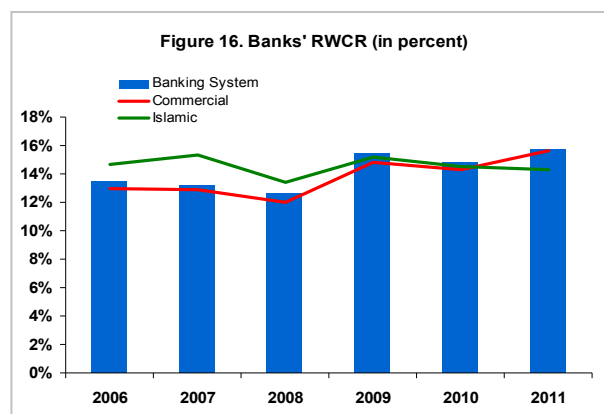
Figure 15. Tier 2 Capital as Proportion of Total Capital



Source: BNM

19. **There is a divergence in capital between commercial and Islamic banks.** Islamic banks' tier 1 ratio has been on a declining trend since 2009 whereas commercial banks' tier ratio remained stable (Figure 16). The divergence can be attributed to the following:

- Islamic banks were expanding financing faster than conventional banks,** with compounded annual growth of 38.3 percent compared conventional banks' 7.9 percent. According to the BNM, the strong growth reflects the effects of small financing base of Islamic banks in an environment of improved risk management capability.
- Capital management strategy adopted by the Islamic subsidiaries of commercial banks.** For efficient capital management purposes, capital is managed on a group-



Source: BNM

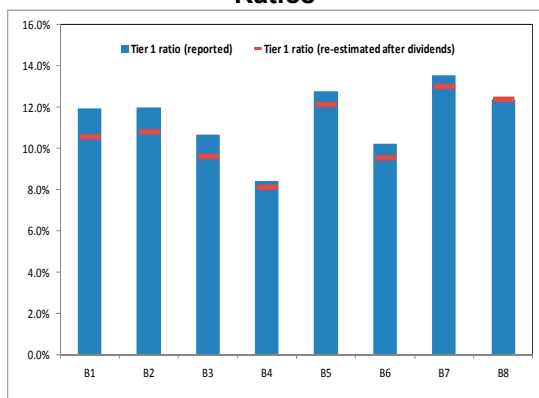
²⁰ In December 2008, Deutsche Bank announced it would not call its 3.875% euro Lower Tier II sub-debt maturing in 2014. This prompted the price of the sub-debt to plunge 12 points to around 88 percent of face value while Deutsche Bank's credit default swaps widened 10 basis points wider to around 155 basis points. The bank's shares also declined close to 10 percent.

²¹ BNM now requires banks to obtain approval when utilizing any of the available tier 2 sub-debt program to avoid financial institutions from taking advantage of Basel III's grand-fathering provision.

wide basis where a relatively lower capital position is maintained at the subsidiary level.²²

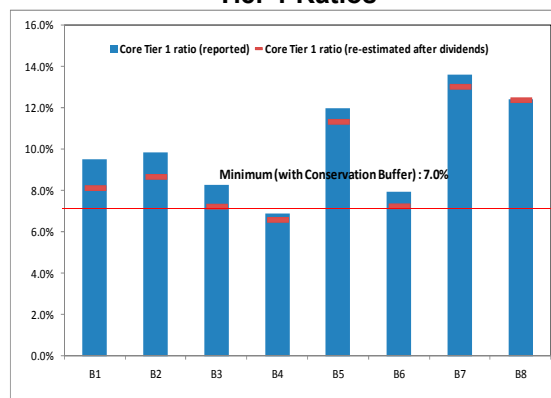
20. **Domestic banking groups should be able to meet Basel III capital requirements by 2019.** As at end-2011, 7 out of 8 domestic banks have already met Basel III's tier 1 and core tier 1 capital requirements,²³ after adjusting for dividend payouts (Figure 17 and Figure 18). The shortfall for the banking group with a core tier 1 (CET1) ratio below 7 percent is small, at around 0.4 percent and with the full implementation of Basel III only taking effect in 2019, assessment by the BNM shows that the bank is well-positioned to be in full compliance with the Basel III requirement (including capital conservation buffer) when it becomes effective on 1 January 2019.²⁴ A number of regional countries have published final national rules on Basel III to be implemented in 2013 and taken steps to enhance banks' equity capital, both to ensure compliance and enable continuous extension of credit to finance economic growth.²⁵

Figure 17. Domestic Banking Groups: Tier 1 Ratios



Source: Annual Reports, Bloomberg, IMF Staff computations

Figure 18. Domestic Banking Groups: Core Tier 1 Ratios



²² BNM assessed this strategy to be supported by strong capital commitment by the parent which ensures that the Islamic subsidiary remains resilient and does not pose financial and reputational risks to the overall banking group. The strategy is consistent with the supervisory expectations of BNM on the parent bank in terms of financial commitment for the entire group (similar to the expectations imposed on financial holding company or bank holding company structure).

²³ Tier 1 capital requirement of 8.5 percent (6.0 percent tier 1 capital *plus* conservation buffer of 2.5 percent); Core Tier 1 capital requirement of 7.0 percent (4.5 percent core tier 1 capital *plus* conservation buffer of 2.5 percent)

²⁴ The gradual phase-in for CET1 (at 3.5 percent) and conservation buffer (at 0.625 percent) begins in 2013 and 2016 respectively.

²⁵ China will enforce final regulations during the third quarter of 2012. Japan and India have published final national rules to be implemented in 2013.

Box 4. How Much Additional Common Equity Do Banks Need to Promote Growth and Meet Basel III?

This Box is intended as a scenario analysis to gauge banks' capital needs over the next 7 years^{a)} in three economic growth scenarios under two situations of with or without dividend payout, while meeting Basel III minimum common equity tier I of 7 percent (minimum common equity of 4.5 percent with capital conservation buffer of 2.5 percent). The three economic growth scenarios which form the basis of the analysis are as follows:

- *Baseline Growth Scenario*: annual GDP growth rate of 5 percent with bank credit growth of 8.8 percent per year.
- *High Growth Scenario*: annual GDP growth rate of 6.5 percent with credit growth of 12.2 percent per year.
- *Low Growth Scenario*: annual GDP growth rate of 2 percent with credit growth of 3.6 percent per year.

The analysis is based on 8 domestic banking groups, accounting for 73 percent of total banking system assets, using publicly available data. Credit growth estimates are premised on real GDP growth scenarios and projected inflation while capital generation is derived from banks' average ROEs over the last decade from 2000-2011. Loan growth is assumed to be funded by growth in deposits, with loan-to-deposit ratios being maintained at current levels of above 70 percent.

Results

In baseline and low growth scenarios with capital generation from earnings, all 8 domestic banks are expected to be able to meet Basel III's minimum core tier 1 capital requirement while supporting economic growth.

In a 'high growth' scenario, capital is sufficient if dividends are not paid. Even if average dividends are paid, only 1 bank is projected to require additional common equity injections of around U.S.\$260 million (0.03 percent of 2011 GDP) to meet the minimum CET1 requirement of 7 percent. (Box Table 1). BNM indicated that dividend requests would unlikely be approved should earnings retention prove to be critical to further strengthen capital.^{b)}

Box Table 1. Basel III Minimum Common Equity at 7.0 percent

Number of Banks falling short of Basel III Core Tier 1 Capital Requirements of 7 percent	Low Growth (Real GDP growth of 2% per year; inflation of 1% and loan growth of 3.6% per year)	Baseline Growth (Real GDP growth of 5% per year; inflation of 2.5% and loan growth of 8.2% per year)	High Growth (Real GDP growth of 6.5% per year; inflation of 4% and loan growth of 12.2% per year)
Out of 8 Domestic Banking Groups:			
<u>Without Dividend Payout</u>			
With projected earnings	-	-	-
Additional Equity Capital needed (US\$ mil.)	-	-	-
Additional Equity Capital needed (as percent of 2011 GDP)	-	-	-
<u>With Dividend Payout</u>			
With projected earnings	-	-	1
Additional Equity Capital needed (US\$ mil.)	-	-	262
Additional Equity Capital needed (as percent of 2011 GDP)	-	-	0.03%

Sources: Bloomberg, Bankscope, and Author's computations.

1/ Projected earnings are computed based on average ROE from 2000 to 2010. "Baseline" scenario assumes average ROE; "High Growth" scenario assumes Average ROE+0.5*SD and "Low Growth" scenario assumes Average ROE-1*SD where SD is the standard deviation of ROEs. Dividend Payout is computed based on the average of the ratio of Cash Dividends Paid and Declared-to-Net Income during the same period where data is available.

a) The implementation of Basel III begins in 2019 for G-20 countries.

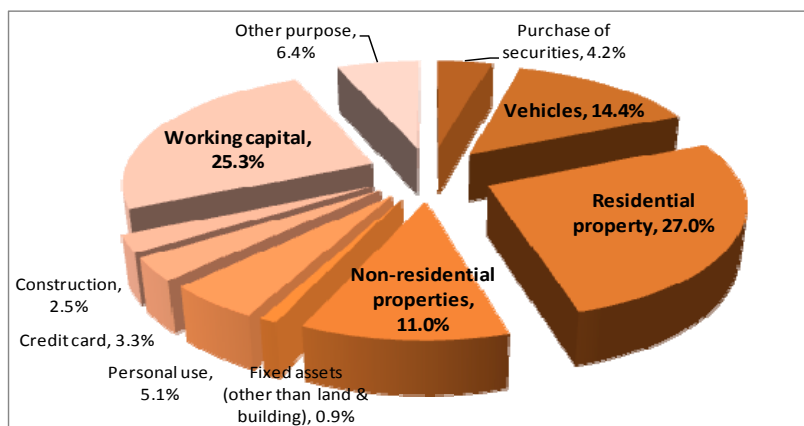
b) Banks are required to obtain BNM's approval prior to distributing dividends.

B. Asset Allocation and Quality

Overview of bank lending...

21. **Lending by Malaysian banks can be classified into lending to households and business enterprises.** Lending to households comprises 55 percent of total lending, of which a significant proportion is attributable to mortgages (26 percent) and vehicle loans (12 percent). Lending to businesses²⁶ largely takes the form of working capital loans followed by the purchase of non-residential property with shares of 25.3 percent and 6 percent of total lending respectively (Figure 19).

Figure 19. Composition of Bank Lending



Source: BNM

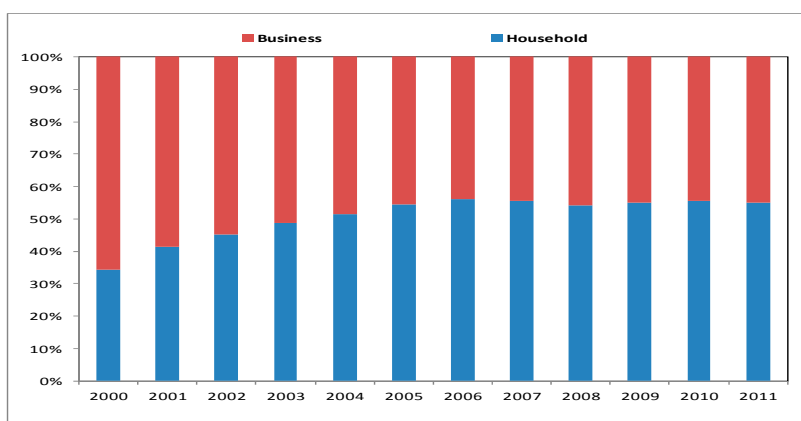
22. **Over the last decade, there has been a significant growth in lending to the household sector.** From 2000 to 2011, the share of lending to households as a proportion of total bank lending increased from 34 percent to 55 percent (Figure 20), encouraged by:

- Economic growth, averaging 5 percent per year over the past 10 years which raised household incomes and bolstered consumer confidence.
- Lower interest rates, expanded credit coverage and increase in the range of product offerings by banks following developments in the financial sector.
- Government's efforts which support home ownership, particularly for first-time home buyers.²⁷

²⁶ Lending to government-linked comprise 12 percent of total lending to business enterprises.

²⁷ Through initiatives such as stamp duty exemption on the purchase of first residential property and Malaysia My First Home Scheme to assist young adults earning MYR3,000 per month or less to own their first home.

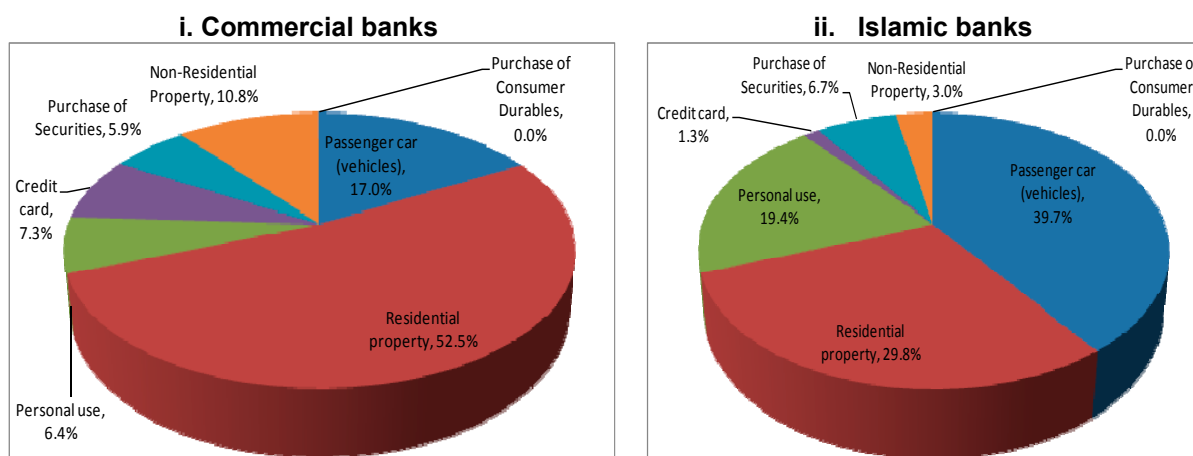
Figure 20. Breakdown of Banking System Loans



Source: BNM

23. **Islamic banks have a higher share of lending to households, as a proportion to total lending, compared to commercial banks.** In 2011, household financing comprise 61 percent of Islamic banks' total lending, close to 10 percentage points higher than commercial banks. Commercial banks are more exposed to property lending (residential and non-residential), which comprise two-thirds of their lending to households (Figure 21(i)). Islamic banks, on the other hand, have a higher exposure to hire purchase (passenger vehicle) and personal loans which account for 60 percent of their total lending to households (Figure 21(ii)).

Figure 21. Breakdown of Lending to Households

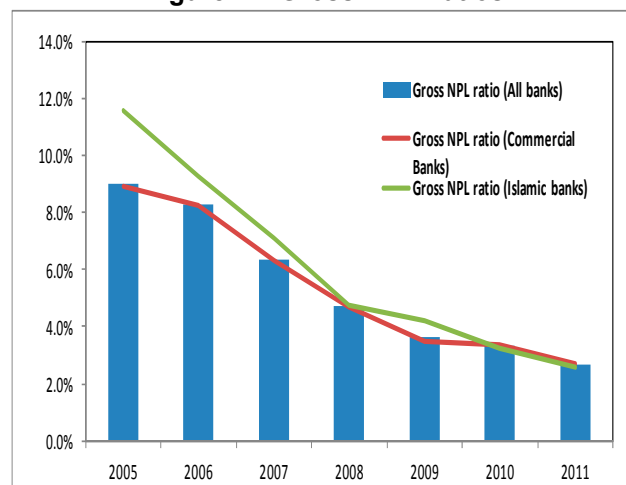


Source: BNM

Improving asset quality...

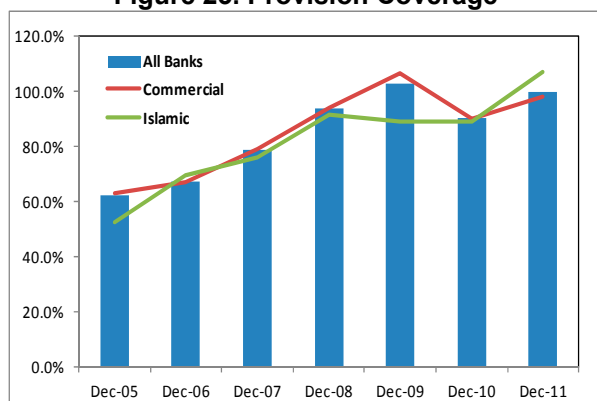
24. **The banking system's NPL ratios have been on a declining trend since 2005.** Asset quality continued to improve despite the global financial crisis in 2008/09 as external spillover implications were limited, buffered by the relatively resilient regional economy. The gross NPL ratios²⁸ of commercial and Islamic banks declined from 8.9 percent and 11.6 percent respectively in 2005 to 2.7 and 2.6 percent respectively in 2011 (Figure 22). Provision coverage²⁹ also improved from around 60 percent in 2005 to near 100 percent in 2011 (Figure 23). Some increases in loans under restructuring were noted in 2008 and 2009, amounting to 1.1 percent of total loans (Figure 24). These restructured loans were subsequently recognized as non-performing loans following the adoption of the Financial Reporting Standard (FRS) 139 beginning January 1, 2010.

Figure 22. Gross NPL Ratios



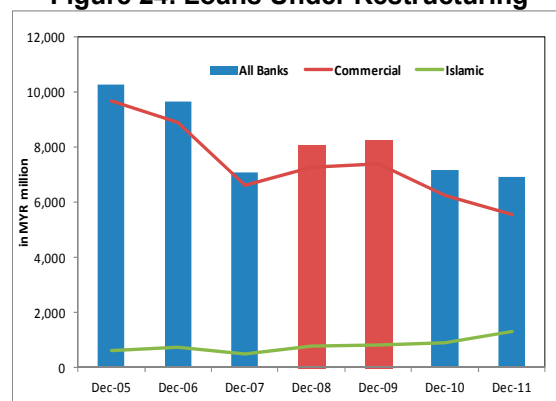
Source: BNM

Figure 23. Provision Coverage



Source: BNM

Figure 24. Loans Under Restructuring



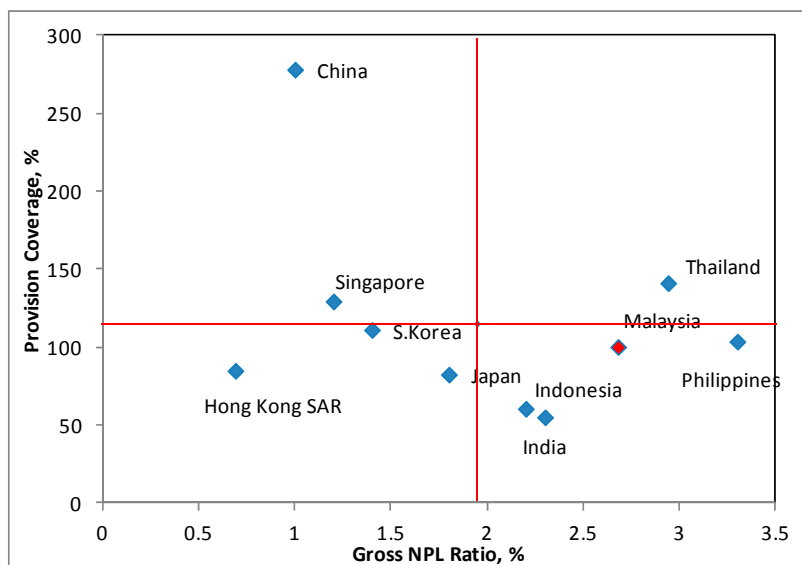
25. **The gross NPL ratio appears to be slightly higher compared peers' average, but the collateral cover is currently at a comfortable level as highlighted by BNM.** The banking sector gross NPL ratio and provision coverage were reported at 2.7 percent and 99.6 percent respectively as at end-2011. This compares with the region's average of

²⁸ Gross non-performing financing in the case of Islamic banks.

²⁹ Refers to the ratio of total provisions to non-performing loans.

2.0 percent and 114.7 percent respectively (Figure 25). An assessment by BNM indicated that banks have sufficient collateral cover over NPLs, at 1.4 times.

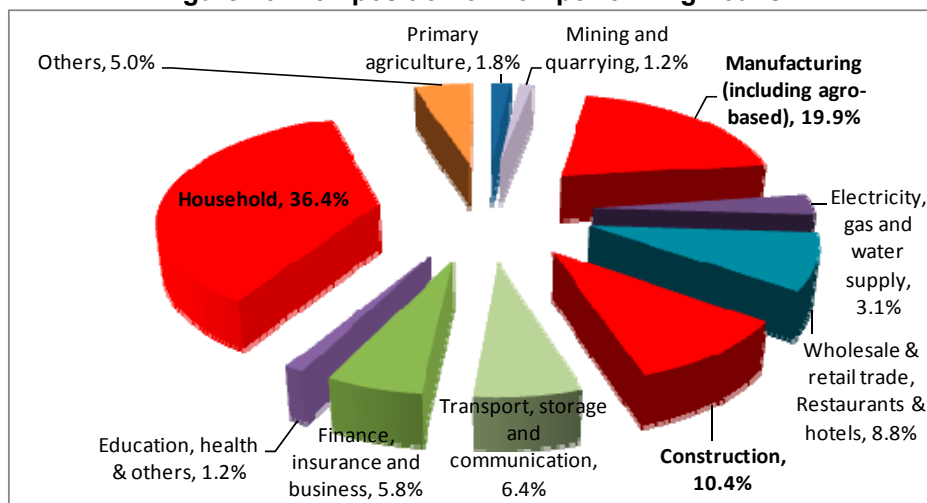
Figure 25. Regional Comparison: Gross NPL Ratio and Provision Coverage



Sources: GFSR (April 2012), BNM, Monetary Authority of Singapore

26. **Non-performing lending to the household sector accounts for 36 percent of total NPLs, while the remaining are NPLs from lending to businesses.** Within business enterprises' NPLs, manufacturing sector is the largest, followed by construction (Figure 26).

Figure 26. Composition of Non-performing Loans



Source: BNM

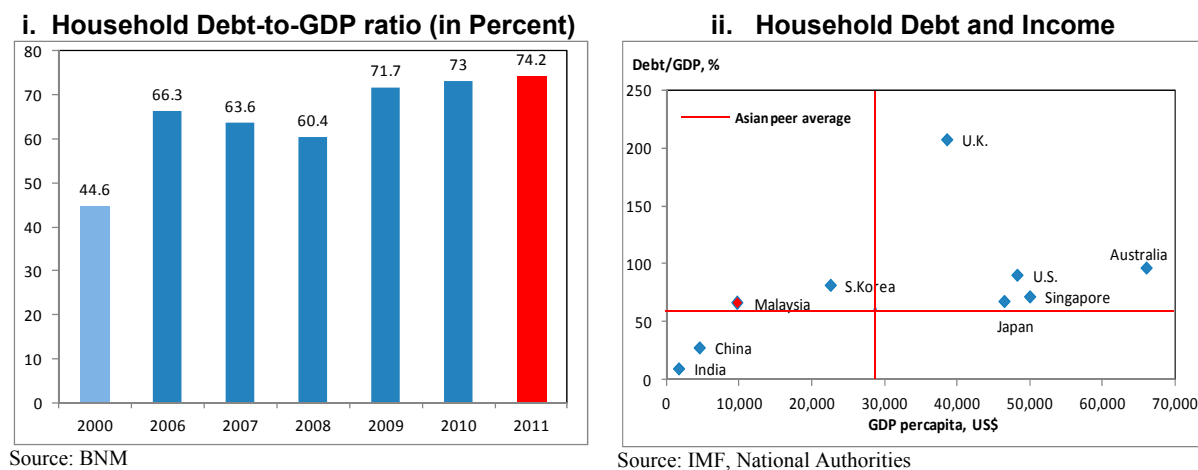
Potential vulnerabilities in the event of an economic downturn...

27. **While household debt may not be a problem at present as long as economic growth continues, a tail-scenario of an economic downturn which adversely affects the labor market could weaken household's ability to service these loans.**³⁰ Over the last decade, the ratio of household debt-to-GDP has been on a rising trend, supported by economic growth, conducive employment conditions and rising income levels (Figure 27(i)). While the current household debt level is high in comparison with peers after taking into consideration per capita income (Figure 27(ii)), BNM's analysis suggests that:

- The rising trend in household indebtedness has been supported by healthy household fundamentals and financial capacity.³¹
- Sustained high savings rate should provide sufficient buffer to households if faced with income shocks.³²

The BNM is aware of the substantial growth in retail financing and has introduced guidelines requiring banks to engage in prudent, responsible and transparent financing practices³³. Moreover, the BNM has also indicated it is undertaking further efforts to enhance the data capture on the household sector to enable more robust and granular monitoring and assessment of household leverage position by income category.

Figure 27. Household Debt, Income



³⁰ Evidence suggests that downturns are more severe when they are preceded by larger increases in household debt (See World Economic Outlook, April 2012).

³¹ Households' current financial asset-to-debt ratio is 2.3 times.

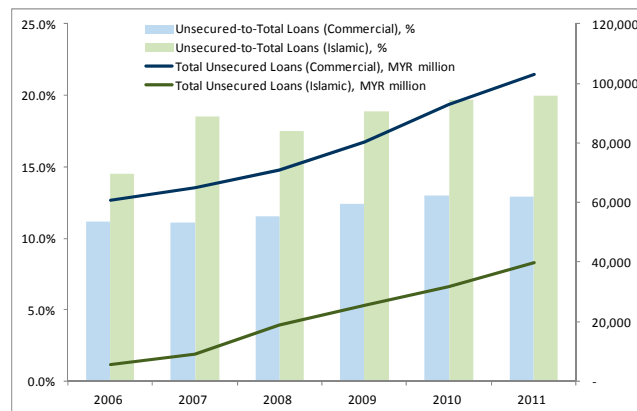
³² Three quarters of debts are backed by deposits.

³³ Guidelines on Responsible Financing 2011, among others, require banks to conduct in-depth suitability and affordability assessment on customers before deciding to offer financing.

28. **Unsecured financing in the form of personal loans and credit cards has been growing rapidly.** Personal loans and credit cards account for around 15 percent and 5 percent of total household debt respectively. The growth in unsecured lending by Islamic banks has outstripped commercial banks by a factor of 4 times, at a compounded annual rate of 47 percent, over the last 5 years. In 2011, Islamic banks' unsecured lending comprised 20 percent of total lending compared to commercial banks' 12 percent share³⁴ (Figure 28).

Household mortgages could be at risk in a severe downturn...

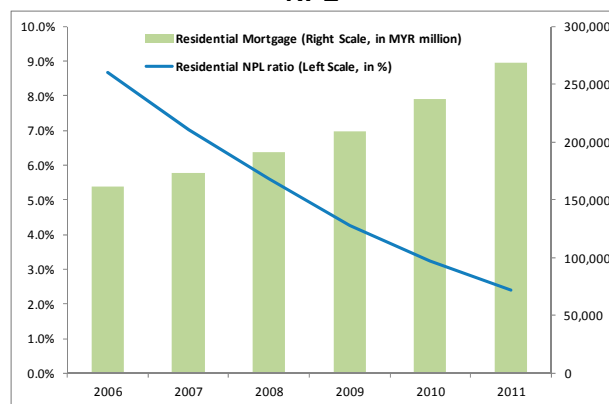
Figure 28. Unsecured Lending: Commercial and Islamic Banks



Source: BNM

29. **Residential mortgage financing accounts for half of total bank lending to households.** While residential mortgages have been growing at a compounded annual rate of 11 percent over the last 5 years, the sector's gross NPL ratios have improved markedly from 8.7 percent to 2.4 percent on the back of resilient economic growth (Figure 29). The banking sector PD and LGD for residential mortgage lending are currently low, at 3.1 percent and 19 percent respectively. A noteworthy point for consideration is the potential impact of a severe downturn. Past experience in macroprudential stress testing of credit

Figure 29. Residential Mortgage: Lending and NPL



Source: BNM

³⁴ A majority of personal loans were offered by one Islamic cooperative bank to civil servants through direct salary deductions. BNM acknowledges that while direct salary deduction does not pose threat to financial stability at the current moment, the risk to financial stability remains. As such, the central bank has engaged the Cooperatives Commission and the Commission has adopted the responsible financing guidelines.

risk by the World Bank shows the potential for sharp increases in PD and LGD, leading to deterioration in banks' mortgage lending portfolio (Table 2).³⁵

Table 2. Residential Mortgage Asset Quality Under Various Scenarios

Residential Property	2011	Scenario Analysis	
		Country-specific adverse scenario 1/	Tail Scenario from international stress 2/
Average PD	3.1%	10.0%	18.5%
Average LGD	19.0%	30.0%	42.5%
Analysis			
Expected Loss Amount (MYR mil)	1,583	8,064	21,133
Residential loans (MYR million)	268,788	260,724	247,655
Total Loans (MYR million)	998,198	990,134	977,065
Residential NPL (MYR million)	6,432	14,496	27,565
Total NPL (MYR million)	26,580	34,644	47,713
Impact on Asset Quality			
Pro-forma residential NPL ratio	2.4%	5.6%	11.1%
Pro-forma total gross NPL ratio 1/	2.7%	3.5%	4.9%
Change in Tier 1 capital		-5.9%	-15.4%

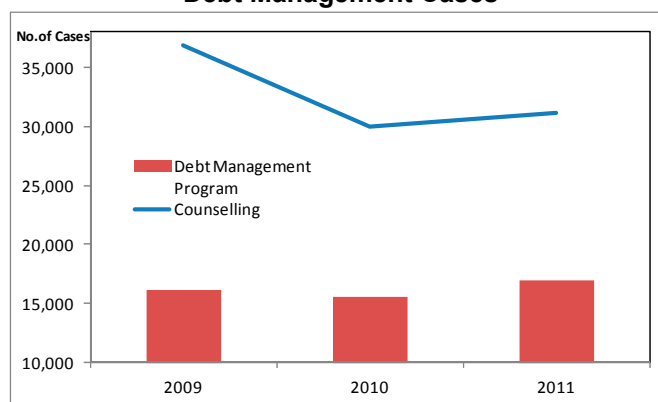
1/ Based on Stress Test parameters calibrated for Malaysia (in a country adverse scenario).

2/ For comparison purpose only. Based on past experience in macroprudential stress testing of credit risk by The World Bank, the median PD and LGD are 18.5 percent and 42.5 percent respectively in an international stress scenario (Buncic and Melecky, 2012).

Continued active surveillance helps to detect early risks ...

30. Given the high exposure of banks to the household sector, BNM has continued with the surveillance of developments and early warning indicators such as debt-servicing patterns of households to enable pre-emptive measures. Currently, a centralized Central Credit Reference Information System (CCRIS) enables banks to track the repayment behavior of household borrowers and perform credit assessment. Loans-in-arrears after a month are reported in the system.³⁶ Indicators such as trends in the number of cases of counseling

Figure 30. Trends in the Number of Counseling and Debt Management Cases



Source: BNM, AKPK

³⁵ World Bank's experience in macroprudential stress testing of credit risk shows the possibility that the consumer mortgage loans' median PD and LGD could rise to 18.5 percent and 42.5 percent respectively in an international stress scenario. See Buncic and Melecky (2012).

³⁶ BNM currently monitors overall levels of arrears on portfolio basis. Any upward trends in delinquent loans would be highlighted at least on a quarterly basis during when accounts are approved. BNM also assesses the robustness of the banks' monitoring and recovery functions.

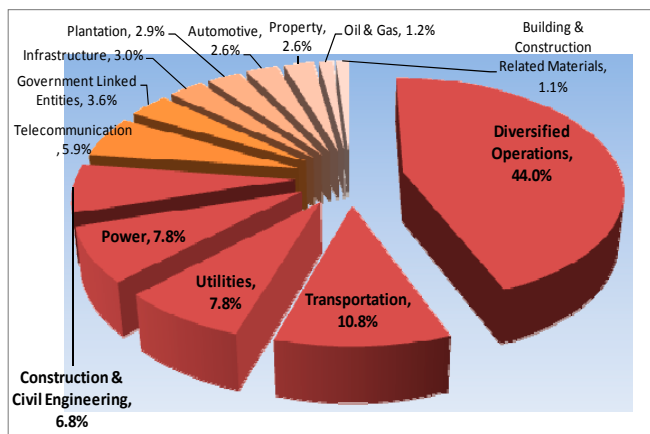
and debt management program conducted by the Credit Counseling and Debt Management Agency (AKPK) are also monitored by the BNM. Recently, there have been some increases in the number of counseling and debt management cases³⁷ (Figure 30). BNM highlighted the central bank's continued vigilance in conducting continuous risk assessment.

Lending to the business sector

31. Banks are more exposed to large corporations than to SMEs.³⁸

Loans to total business sector (inclusive of large corporations and SMEs) accounts for 38 percent of overall banking system loans, of which 58 percent are large corporations while the remaining are SMEs. Lending quality to SMEs has improved significantly with gross NPL ratios improving from 10.2 percent in 2006 to 3.9 percent in 2011. About 22 percent of the financial institutions' total exposure to the business sector is to large corporate borrowers (Figure 31).³⁹

Figure 31. Breakdown of Exposure to Large Borrowers¹



Source: BNM

1. Exposures via loans and private debt securities held by FIs.

Exposures to high-leveraged companies...

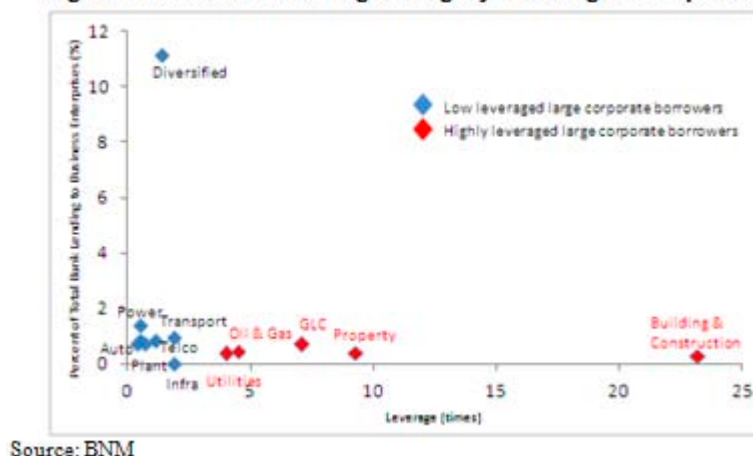
32. Banks' lending to highly leveraged companies is currently low. Lending to high-leverage companies (debt-to-equity ratio of 2 times and above) account for 2 percent of total lending to business enterprises or around 0.8 percent of total bank lending. These companies are in the sectors of building and construction-related materials, property, government-linked companies, oil and gas, and utilities (Figure 32). An assessment by BNM indicated that impaired loans of these highly leveraged corporations are low, accounting for only 0.4 percent of total impaired loans in the business sector.

³⁷ BNM indicated that the recent increase is partly due to increased participation and awareness of the program.

³⁸ SMEs are defined as corporations with a turnover of under MYR25 million.

³⁹ Total exposures are defined as loans and private debt securities issued by corporates held by financial institutions. Financial institutions include banking institutions and insurers/takaful operators. Large corporate borrowers are defined as borrowers with at least MYR1 billion debt via loan and private debt securities held by financial institutions.

Figure 32. Banks' Lending to Highly Leverage Companies



Lending to Government-linked Companies...

33. **The non-performing lending to government-linked companies remains low despite a marginal increase in 2011.** Bank lending to government linked companies (GLCs)⁴⁰ accounts for 12 percent of total lending to business enterprises and 5 percent of total bank lending. The average gross NPL ratio for GLCs is very low, at an average of 0.03 percent over the last 3 years. Lending to GLCs is subjected to the same prudential limits on single customers prescribed by the BNM.⁴¹

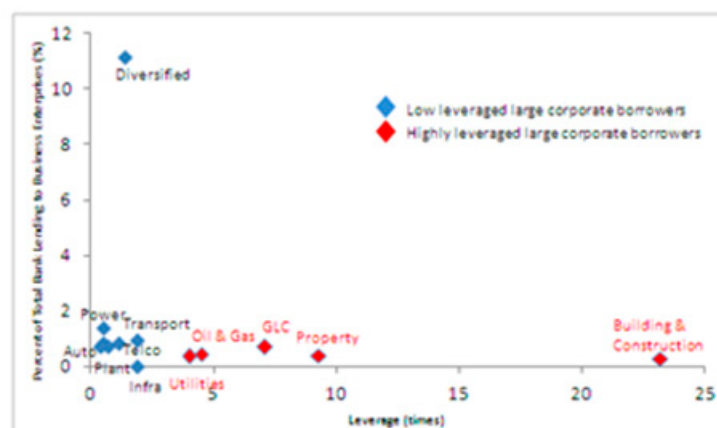
NPLs increased in some sectors during the global financial crisis...

34. **While the overall asset quality has been improving, NPLs in the utilities (electricity, gas and water supply) and transportation-communication sectors increased during the economic slowdown in 2009.**⁴² Collectively, they contribute close to 10 percent of total gross NPLs (Figure 33). Asset quality of these sectors has improved in 2011.

⁴⁰ The list of companies included as GLCs comprise 863 companies which comprise among others Putrajaya Committee's GLC list, State government owned companies/ investment bodies and private debt securities (PDS) issuers (consisting quasi government, those with implicit and explicit guarantee from the government). Khazanah Nasional Berhad ("Khazanah"), essentially a sovereign wealth fund, is the investment holding arm of the Government of Malaysia entrusted to hold and manage the commercial assets of the government and to undertake strategic investments.

⁴¹ The BNM also noted that these lending are subject to the same underwriting practices as other private corporations.

⁴² Malaysia registered three quarters of negative GDP growth in 2009, in line with other regional peers whose economic growth weakened following external headwinds emanating from the Global Financial Crisis.

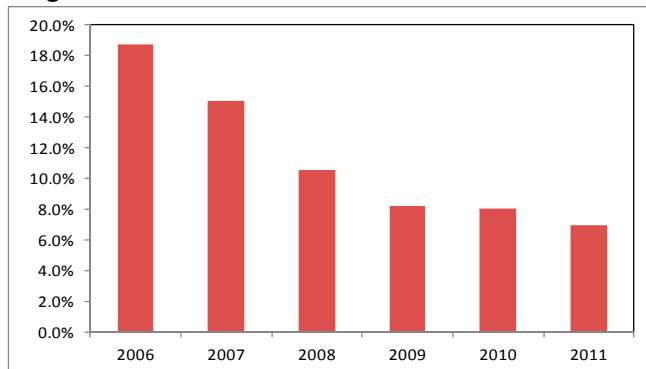
Figure 33. Banks' Lending to Highly Leverage Companies

Source: BNM

Growth in lending to the construction sector ...

35. **Bank lending to the construction sector has been growing at an annual compounded rate of 5.2 percent from 2006 to 2011 and now accounts for around 4 percent of total bank lending and 10 percent of total NPLs.** Asset quality

has improved remarkably with gross NPL ratios declining from 19 percent in 2006 to 7 percent in 2011 (Figure 34). Market analysts expect financing to this sector to increase in line with construction activities related to housing development and Entry Point Projects (EPP).⁴³ Recent experience suggests that it is important to keep track on these exposures as they are

Figure 34. Construction Sector Gross NPL Ratios

Source: BNM

susceptible to economic cycles. For instance, in Korea, delinquencies in project financing for residential property development rose by almost 20-fold in 2010 from 2006, albeit from a low base, as domestic demand for housing weakened in the aftermath of the global financial crisis.⁴⁴ BNM's monitoring of this sector has intensified in recent period in view of the growing bank exposures to this sector and given developments in the property market as a whole.

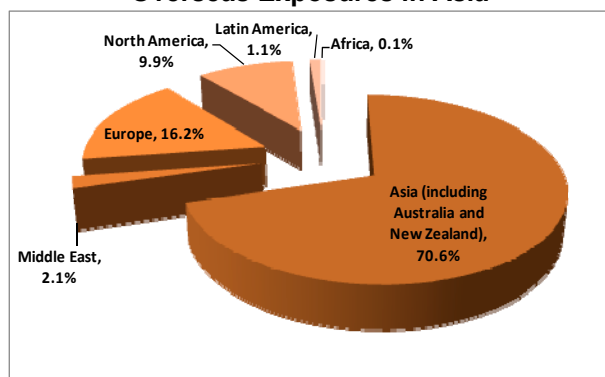
⁴³ Part of the Economic Transformation Program (ETP).

⁴⁴ On average, these loans comprise nearly 5 percent of total loans among the four largest Korean commercial banks.

Banks' overseas expansion...

36. **In recent years, Malaysian banks have been actively pursuing expansion abroad.**⁴⁵ Asia continues to be the preferred destination, comprising 70 percent of assets abroad (Figure 35), of which Singapore and Indonesia are the top two countries. The regional expansions were carried out through establishing branches/subsidiaries and joint ventures. Lending activities have been the main source of growth, accounting for 75 percent of total assets of overseas operations.

Figure 35. Malaysian Banks: Composition of Overseas Exposures in Asia



Source: BNM

37. **The contribution of overseas operations to profits has been good thus far.** BNM's Financial Stability and Payment Systems Report 2011 indicated that six out of eight Malaysian banking groups have overseas operations in 19 countries worldwide with assets accounting for 19 percent of their total assets. Operating income from overseas operations now accounts for 30 percent of total operating income. At individual banking group level, the contribution of overseas operations to profitability ranged between 2 percent to 35 percent.⁴⁶ Banks need to carefully manage risks, especially regional spillovers as the majority of expansion is within the region. From international experience, there may be a need to review internal risk management and supervisory response when the share of overseas assets reaches 30 percent of total assets as the banks' risk profiles may have changed. For example, banks with large cross border exposures such as Austria's Raiffeisen and Erste (assets in Eastern Europe amounting to 39 percent and 51 percent of their total assets respectively) incurred huge losses when economic troubles hit those markets⁴⁷.

Stylized credit cycle ...

38. **The Malaysian economy has been expanding rapidly over last decade, with real GDP growth rising from 0.5 percent in 2001 to a peak of 7.2 percent in 2010 before moderating to 5.1 percent in 2011.** As credit growth continued to outpace economic activity, the credit cycle may be advancing towards a late expansionary phase (Box 5).

⁴⁵ Refer to Technical Note on Cross Border Bank Flows.

⁴⁶ Overseas expansion by banks and insurers require the prior approval of BNM, which takes into account, amongst others, the strength of the financial institution's financial capacity, risk management infrastructure and practices, and oversight by the parent institution. As part of its consolidated supervision, BNM imposes monthly reporting by overseas operations of banks and insurers and conducts annual on site examination on the material overseas operations of the domestic banks. In addition, BNM also conducts supervisory colleges meetings and bilateral engagements with host supervisors to discuss issues and concerns relating to the overseas operations of the domestic financial institutions.

⁴⁷ Raiffeisen Bank International indicated its intention to withdraw from some Eastern European markets.

Box 5. Late Credit Cycle?¹

Introduction

In general, the traditional credit cycle goes through four distinct phases in sequence: expansion (rising leverage, rising asset prices), moderation or outright downturn (falling asset prices, increased defaults, strains to banks' credit metrics), consolidation or repair (cleansing balance sheets) and recovery (restructuring, increasing margins, falling leverage). At early stages of expansion, credit growth drives economic growth, creating a multiplier effect which raises income. Typically spurred by inflows of foreign capital, this drives up asset prices, leading to appreciations in equity and property prices. Loan growth increases as banks emerge from a recovery phase with relatively clean balance sheets. Corporates with low levels of initial debt are able to borrow more to fund expansions in tandem with the rising demand and improving profitability. As the cycle advances, leverage builds up in the economy and rising asset prices pushes valuations into an expensive territory. The banking system becomes susceptible to asset quality deterioration as debt levels rise to unsustainable levels. Ultimately, these pressure points culminate in a moderation or downturn, the duration and severity of which will depend on a confluence of factors which include the extent of external spillovers, quality of financial regulation and supervision and space for countercyclical measures.

As the credit cycle advances towards a late expansionary stage, policy considerations should focus on cushioning the impact of a potential moderation, thus shortening the consolidation and recovery phase. This may include bolstering the resilience of banks to withstand shocks through counter-cyclical policies which include promoting earnings retention, raising banks' capital base and extending macroprudential tools to curb continued exuberance and promote macroeconomic stability. Additionally, it would prudent to maintain sufficient policy flexibility and space for preemptive measures to support the domestic economy if macro indicators point to elevated risk of a downturn.

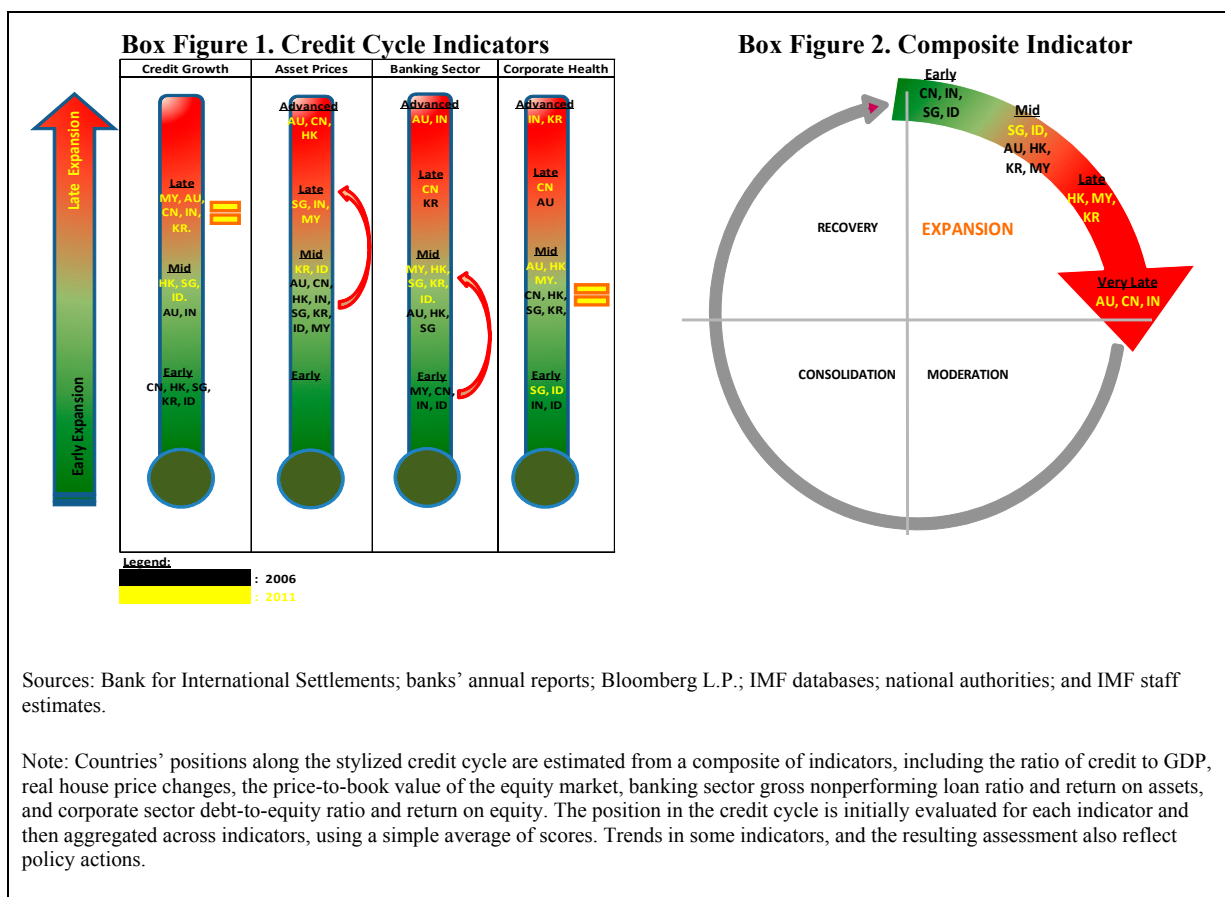
Where is Malaysia along the credit cycle?

Malaysia has been expanding rapidly over last decade, as real GDP growth rose from 0.6 percent in 2001 to a peak of 7.2 percent in 2010 before moderating to 5.1 percent in 2011. While it is difficult to pinpoint the exact tail-end, the credit cycle seems to have progressed from a mid to late stage as credit growth continued to outpace economic activity:

- Credit in the economy has been growing at a rapid pace over the last 5 years, at a compounded annual rate of close to 10 percent. The country's private sector credit-to-GDP stood at 112 percent in 2011, higher than the region's average of 106 percent, and signs of tapering off are beginning to emerge.
- Some signs of correction in asset prices are beginning to emerge. The equity market's price-to-book value has been declining since 2011, reversing the earlier uptrend. Nonetheless, the residential real estate prices continue to appreciate even after adjusting for CPI inflation.
- There has been improvement in banks' credit asset quality. Nonetheless, increasing competition had led to compressions in net interest margins and returns on assets.
- The financial position of the corporate sector remains healthy thus far as gearing has been reduced while ROE has increased.

The late phase of the expansion cycle does not necessarily imply that the countries will reel into a downturn or a recession, but a moderate growth scenario is possible. Box Figure 1 below depicts estimates using four credit cycle indicators, comparing 2011 with 2006. Box Figure 2 shows estimates computed from a composite of the four indicators.

¹ Based on IMF's GFSR Team's input for the October 2012 GFSR. The October 2011 GFSR highlighted that most EM countries (with the notable exception of the CEE region) at that time were in the expansionary phase and thus well advanced along the credit cycle.



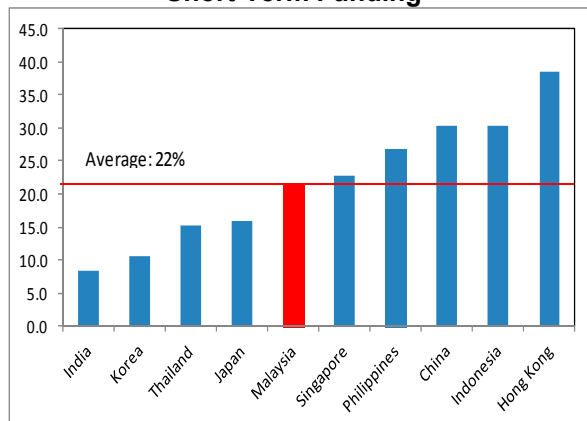
C. Liquidity

Banks are overall liquid...

39. **Banks are liquid at present, with sufficient liquid assets to cover short-term liabilities.** The banking system's liquid assets-to-deposits and short term funding is in line with the region's average, at around 22 percent (Figure 36), and banks are required to comply with the BNM's New Liquidity Framework.⁴⁸ In addition, funding from domestic deposits remains ample, accounting for 85 percent of total funding, slightly higher in comparison with regional peers (Figure 37).

⁴⁸ BNM requires banking institutions to "bucket" all maturing assets and obligations by maturity and maintain surplus liquidity of at least 3 percent of total outstanding deposits (current, savings and fixed deposit accounts) for the one-week bucket, and 5 percent of total outstanding deposits for the above one week to one month bucket after taking into account historical adverse behavior assumptions.

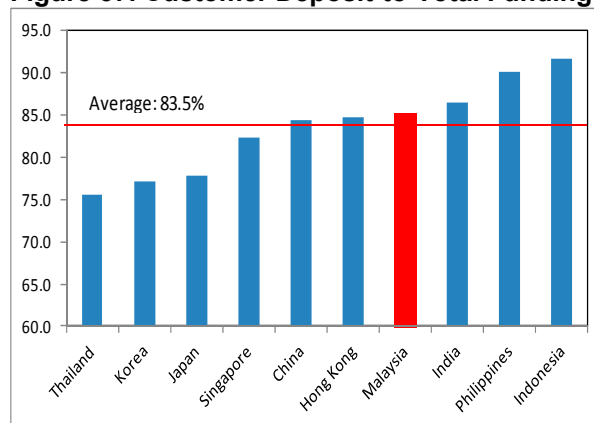
Figure 36. Liquid Assets-to-Deposits and Short-Term Funding



Source: Bankscope

¹To ensure consistency in measurement across peer countries, Bankscope's definition of "Liquid Asset" is used, i.e. Trading Securities+Loans/Advances to Banks+Reverse Repo/Cash Collateral+Cash due from banks.

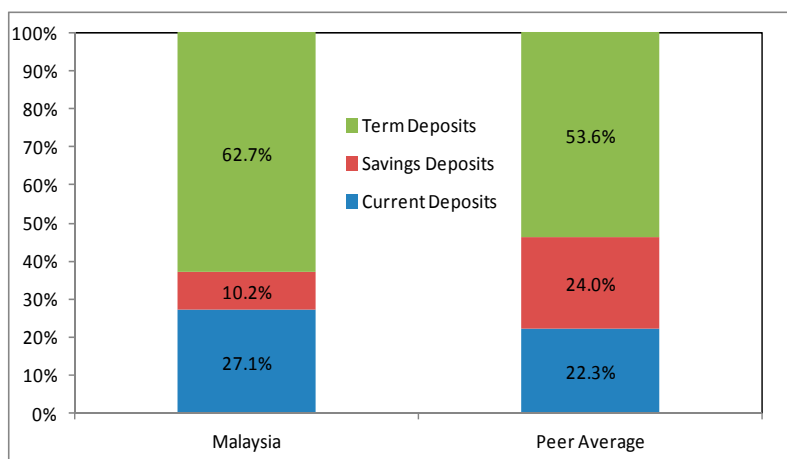
Figure 37. Customer Deposit-to-Total Funding



40. **Funding is currently stable with a sizable low-cost domestic deposit base.** Banks are able to access stable low-cost current account and savings account (CASA) deposits which contribute close to 40 percent of total deposits. The share of term deposits⁴⁹ is also high relative to peers and this could provide some cushion in the event of large withdrawals of CASA deposits (Figure 38). Term deposit holders are allowed to make full withdrawals prior to the maturity of the deposit without incurring any losses to the principal value although returns may be forfeited. Deposits are insured⁵⁰ by the Malaysian Deposit Insurance Corporation (PIDM) up to a maximum limit of MYR 250,000 (US\$84,000) per depositor per member institution. This includes both the principal amount of a deposit and the interest. According to PIDM, the insured limit provides for 99 percent of existing depositors to be insured in full or 33 percent of total deposits in the banking system.

⁴⁹ Known as "fixed deposit" in Malaysia.

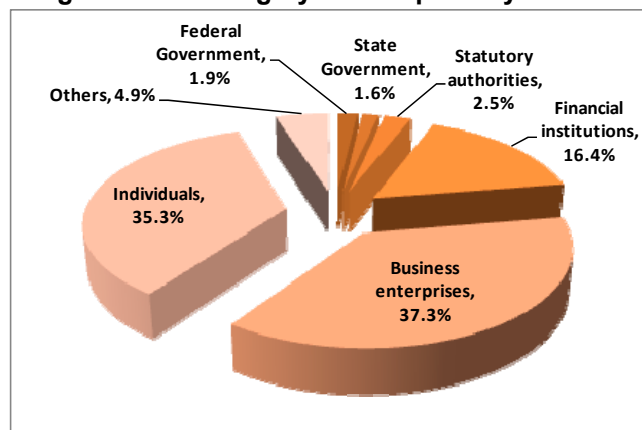
⁵⁰ Coverage is also extended to foreign currency denominated deposits. All commercial banks licensed under the Banking and Financial Institutions Act 1989 and all Islamic banks licensed under the Islamic Banking Act 1983, including foreign banks operating in Malaysia, are members of PIDM currently. There is also separate deposit insurance protection up to the RM250,000 limit for Islamic accounts.

Figure 38. Proportion of CASA and Term Deposits

Source: Bankscope

Share of corporate deposits is high...

41. **Deposits from business enterprises comprise 37 percent of total banking deposits, slightly higher compared to household deposits which account for 35 percent** (Figure 39). Deposit placements by one large corporate accounted for 24 percent of total business deposits or 9 percent of total banking system deposits; this corporate holds balances with most banks in Malaysia. Thus far, major banks have been managing liquidity risk well with contingency plans in place. On-going efforts to strengthen liquidity management, including internal stress tests, will further strengthen banks' preparedness in the event of large withdrawals.

Figure 39. Banking System Deposit by Holders

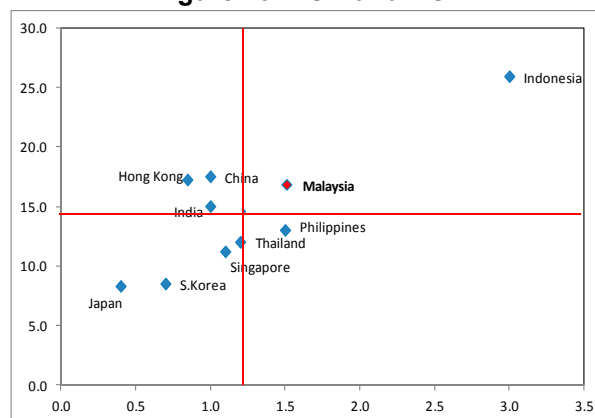
Source: BNM

D. Earnings Efficiency

42. **The banking sector is overall profitable.** Return on assets (ROA) and return on equity (ROE) were 1.5 percent and 16.8 percent respectively for 2011, above regional averages (Figure 40). In terms of efficiency, banks have outperformed average regional peers:

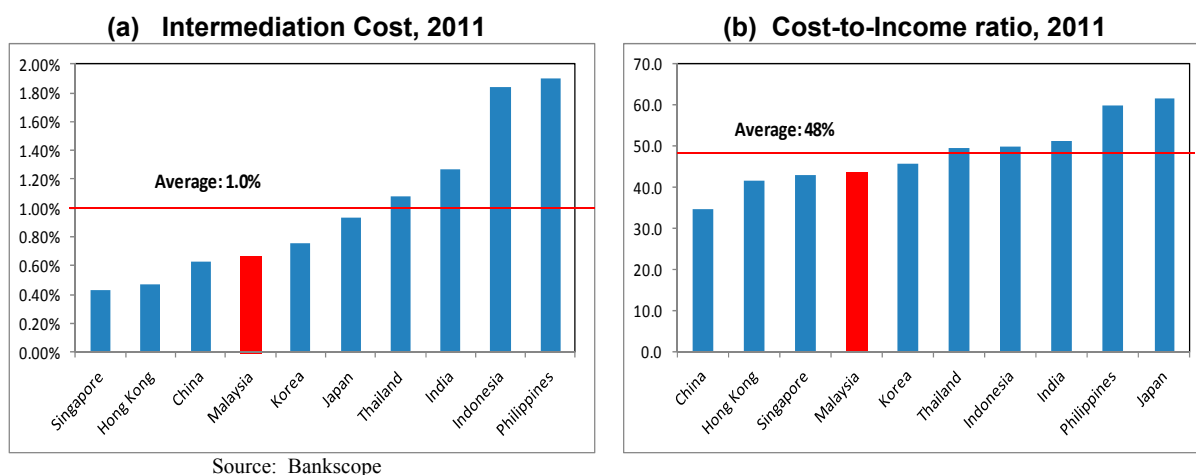
- Intermediation cost⁵¹ is lower vis-à-vis peers' average (Figure 41(a)).
- Cost-to-income ratios are relatively lower and are almost comparable to financial centers such as Hong Kong and Singapore (Figure 41(b)).

Figure 40. ROA and ROE



Source: GFSR (April 2012)

Figure 41. Efficiency Measures



Source: Bankscope

43. **While both commercial and Islamic banks are profitable, some divergence has been noted.** Commercial banks' profitability has been improving after the global financial crisis in 2008 while Islamic banks' profitability seems to be showing signs of moderation from 2010 (Figure 42). The divergence is largely attributed to the overhead cost-to-revenue ratios for Islamic banks which are relatively higher by around 4 to 5 percent due to start up costs of foreign full-fledged Islamic banks. This gap is gradually improving (figure 43). Feedback from the industry also indicated that the cost structures of some standalone Islamic

⁵¹ Measured as the ratio of operating expenses to total assets

banks are slightly higher relative to Islamic banks which are within banking groups as the latter are able to reap the benefits of shared platforms. Nevertheless, Islamic banks' overall cost efficiency has been improving significantly over the past 5 years when benchmarked against commercial banks and further improvements to the cost of funds could be made by increasing CASA deposits (Box 6).

Figure 42. Return on Average Asset (ROAA) and Return on Average Equity (ROAE)

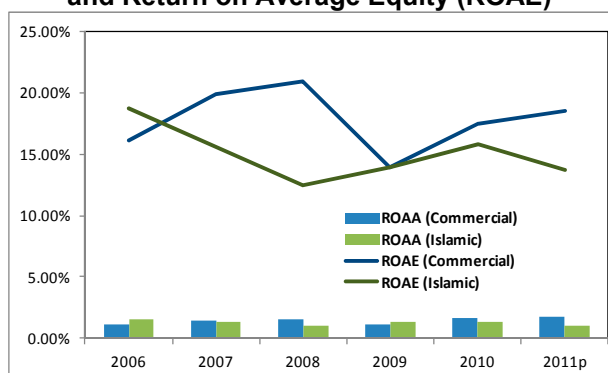
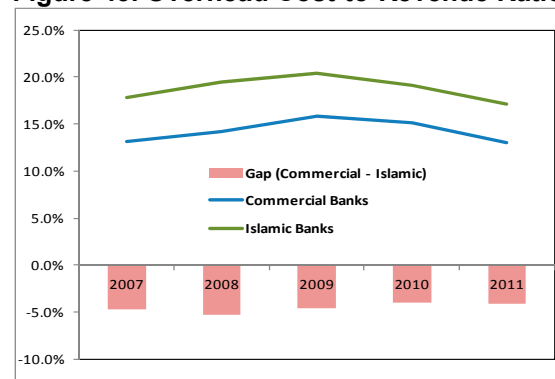
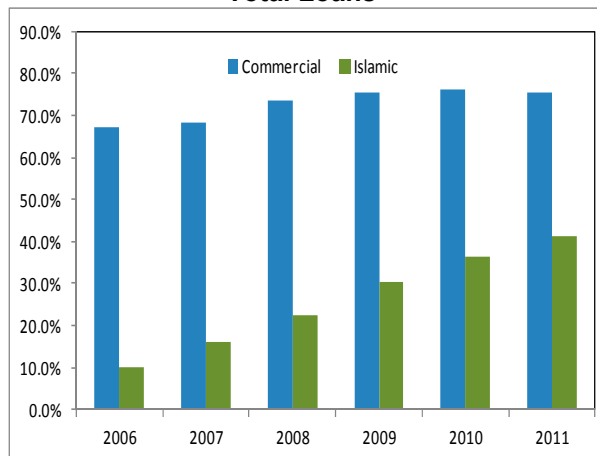


Figure 43. Overhead Cost-to-Revenue Ratio

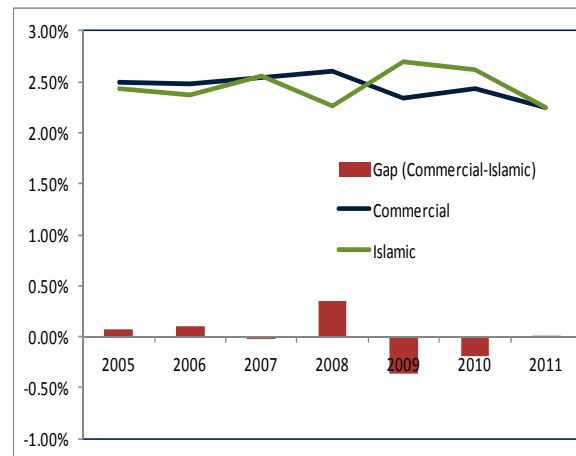


Source: BNM

44. **Islamic banks have a significantly lower share of floating-rate loans.** Floating-rate loans account for around 40 percent of Islamic banks' total loans compared to commercial banks' 75 percent (Figure 44). While this may benefit Islamic banks during a policy loosening cycle, profit margins would be reduced in a normalization/tightening cycle. This was evident during the policy loosening cycle in 2009 where Islamic banks' net profit margins (NIMs) outperformed commercial banks but the gap has been closing in when policy rates were normalized in 2010 (Figure 45). BNM indicated that Islamic banks have intensified their effort in increasing floating rate assets as evidenced by the rising share of floating rate financing, and actively using hedging instruments such as swaps to manage such risks.

Figure 44. Share of Floating Rate Loans to Total Loans

Source: BNM

Figure 45. Net Interest Margin¹

1/ Equivalent to Net Profit Margin (NIP) for Islamic banks

Box 6. Assessing Efficiency Among Commercial and Islamic Banks: An Application of Data Envelopment Analysis

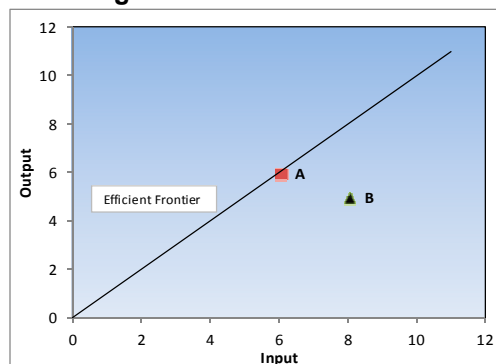
Introduction

Performance benchmarking is useful in revealing strengths and weaknesses of business operations, activities, and processes to identify opportunities for improvement. While single output-to-input financial ratios such as ROA and ROE are used to characterize financial performance, they cannot evaluate operating efficiency. Further, the use of single measures ignores potential interactions, substitutions, or tradeoffs among various performance measures. One way to mitigate this is use optimization techniques such as Data Envelopment Analysis (DEA)¹ to empirically estimate an efficient frontier based on observations on similar business operations across firms at a specific time by using common inputs and outputs.

DEA is a linear programming technique for evaluating performance and benchmarking in a multivariate setting. The methodology uses information on the input-output combination of individual entities to construct an efficiency frontier enveloping the data. This frontier is then used to measure the efficiency of the individual entities relative to a benchmark entity chosen by the model. DEA produces efficiency estimates without requiring the specification of a production function or a profit-maximization model for generating its results. An example is illustrated in Box Figure 2 which shows that under a constant returns-to-scale (RTS) assumption with observed inputs and outputs, entity A which lies on the efficient frontier is efficient while entity B which falls below the frontier is less efficient vis-à-vis point A. Essentially, DEA helps to identify benchmarks for which entities can target their own performance.

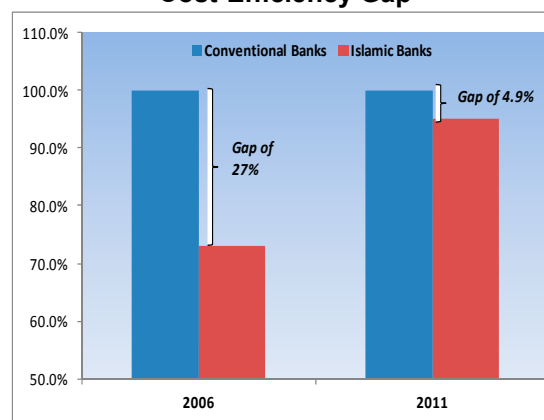
Results from DEA Frontier Analysis

The analysis applied to commercial (conventional) banks and Islamic banks in 2006 and 2011 indicate the following:

Box Figure 2. DEA Efficient Frontier

- **Commercial banks continue to exhibit higher cost efficiency than Islamic banks in both periods²** (Box Figure 3). This is consistent with the observation that the ROAA and ROAE for Islamic banks somewhat lagged behind conventional commercial banks by 0.75 percent and 4.75 percent respectively in 2011.

Box Figure 3. DEA Efficient Frontier and Cost-Efficiency Gap



- **Over the last 5 years, the cost efficiency gap between commercial and Islamic banks has narrowed by five-fold.** From 2006 to 2011, there have been improvements in Islamic banks' cost efficiency as the index has risen from 73.0 percent in 2006 to 95.1 percent in 2011 (Box Table 1).

Box Table 1. Cost and Revenue Relative Efficiency Scores from DEA Frontier, FY2011

	Cost Efficiency, 2011		Cost Efficiency, 2006	
	Score	RTS indication*	Score	RTS indication*
Commercial Banks	100.0%	Constant	100.0%	Constant
Islamic Banks	95.1%	Increasing	73.0%	Increasing
Mean	97.6%		86.5%	

Sources: BNM (FSR) data, IMF Staff computations

NOTE: Results are based on DEA simulations under constant returns-to-scale assumption with three inputs (Deposits, No. of Employees and Total Assets) to produce one output (Loans & Advances).

* RTS denotes "returns-to-scale"

The analysis also shows that Islamic banks are operating under increasing returns-to-scale. One way to enhance returns would be to reduce costs, perhaps by increasing CASA deposits.

Caveats

Caveats underpinning this analysis worthy of consideration to ensure accurate interpretation of the results are as follows:

- This study assumes constant return to scale whereby all banks are presumed to be operating at an optimal scale. In reality, banks may face imperfect competition and other constraints.
- The number of banks during the two periods under study is different due to new entrants, especially for Islamic banks.

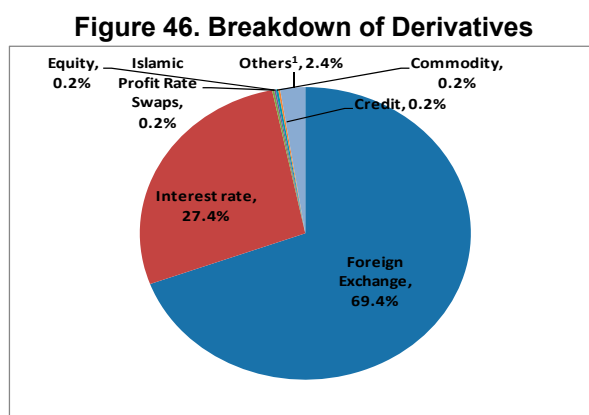
¹ See Appendix 3 for a description of the DEA framework and Zhu (2003) for detailed presentations of the DEA methodology. This study follows the approach adopted by Lee, Yoong Hon et. al. (2011).

² This analysis uses an asset approach whereby deposits together with real resources such as labor and capital are used as inputs to generate loan and advances. Two periods are examined for comparison, namely 2006 and 2011. An efficiency score below 100 indicates that the bank-group is relatively less efficient than the benchmark.

III. FINANCIAL DERIVATIVES

45. **Over the past 5 years, derivatives have been increasingly used by banks to manage risks and as product offering to corporate clients.** These have largely been through the OTC market. The un-pegging of the ringgit against the US dollar in July 2005 has prompted the need for hedging, underpinning the demand for foreign exchange (FX) derivatives for trade purposes. Financial innovation has also led to structured deposits linked to derivatives being marketed to depositors.⁵² The incentive for banking institutions to issue structured deposits stems from the reduction to their cost of funding. For depositors, these deposits provided potentially higher returns during periods where interest rates were low, especially after the overnight policy rate was reduced by 150 bps in 2009 to 2 percent.

46. **The growth in FX derivatives has outpaced interest rates (IR) derivatives over the last five years, at compounded annual rates of 18 percent and 5 percent respectively.** In 2011, FX derivatives comprise 70 percent of total OTC derivatives, followed by IR derivatives which account for around 27 percent (Figure 46). The market shares of OTC derivatives between domestic banking groups and locally-incorporated foreign banks are almost equal⁵³ as domestic banks have been increasing their share from 36 percent in 2007 to 45 percent in 2011.



Source: 2011 League Tables, BNM

1. Structured derivatives, KLIBOR futures, bond futures

47. **Derivatives are largely plain vanilla.** Plain vanilla FX swaps and forwards account for 88 percent of total FX derivatives (Figure 47) while plain vanilla interest rate swaps account for 60 percent of total IR derivatives (Figures 48). These derivative instruments are liquid up to tenors of 3 to 5 years.

⁵² The customer base for these products is limited to sophisticated investors in search of higher returns and subject to customer suitability assessment by banks, including minimum investment amount, e.g. MYR50,000.

⁵³ In some neighboring developing countries such as India, derivatives are concentrated in foreign banks (above 80 percent in the case of India).

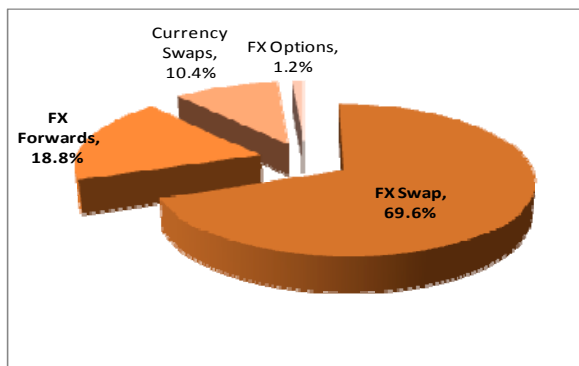
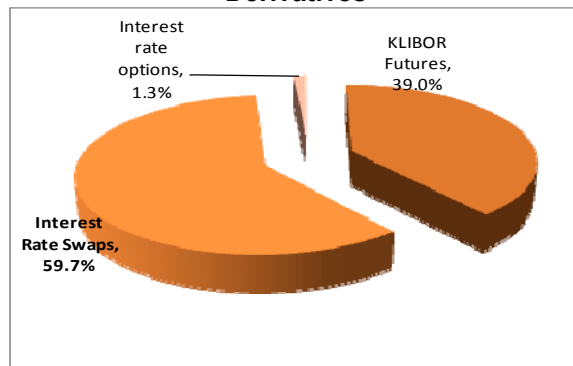
Figure 47. Breakdown of FX Derivatives¹

Figure 48. Breakdown of Interest Rate Derivatives



Source: 2011 League Tables, BNM

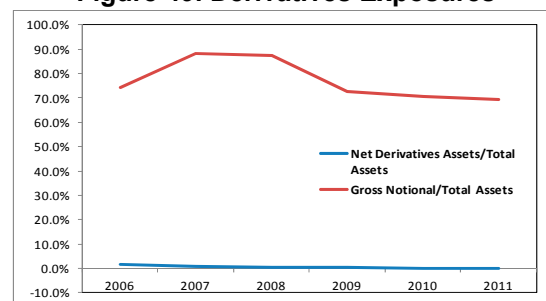
¹ FX Swaps comprise all swaps involving Ringgit in the currency pair e.g. USD/MYR or EUR/MYR. Currency Swaps are those that do not involve Ringgit in the currency pair e.g. USD/SGD or EUR/USD swaps.

48. **The share of credit derivatives such as credit default swaps (CDS) is negligible, at 0.2 percent.** Feedback from market participants shows that the lack of demand for CDS is due to the domestic bond market being heavily skewed towards high grade bonds and thus there is no incentive to hedge.

Banks' exposure to derivatives is manageable ...

49. **Overall, banking institutions' current exposure to FX and IR derivatives⁵⁴ is small.** On a net basis⁵⁵, the current exposure to FX and IR derivatives account for 0.01 percent of total assets. Without netting⁵⁶, the gross notional value of these derivatives to total assets is close to 70 percent (Figure 49), relatively small when compared to a developing Asian country such as India whose ratio is close to 200 percent.

Figure 49. Derivatives Exposures



Source: BNM

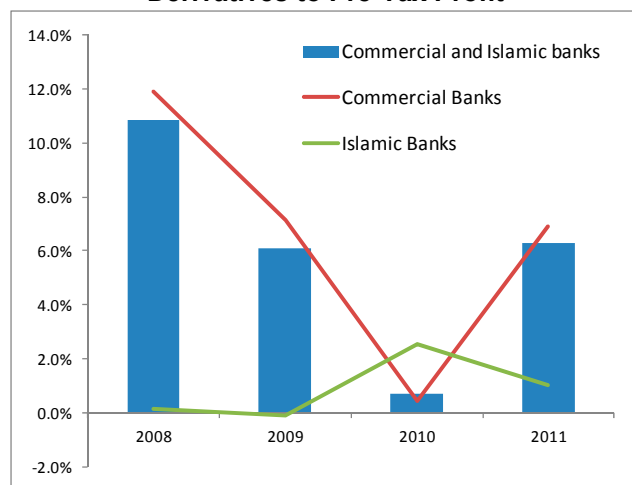
⁵⁴ Comprise FX and IR derivatives, Islamic profit rate swaps, equity derivatives, commodity derivatives, credit derivatives, structured derivatives, LIBOR futures and bond futures.

⁵⁵ Refers to the difference between derivative assets and liabilities.

⁵⁶ Due to the "close-out netting" provisions in the PIDM Act, ISDA members which enters into derivatives transactions do not recognize netting as being enforceable in Malaysia. Bank Negara Malaysia is in the process of proposing legislative changes in 2012 that will preserve the contractual rights and obligations of counterparties under netting and collateral.

50. **The performance of commercial banks' derivatives portfolio has been good thus far.** For commercial banks, net gains from derivatives amounted to 11.9 percent of pre-tax profits in 2008, steadily declining through 2010 before rebounding to 7 percent in 2011. For Islamic banks, net derivatives gains were flat through 2009 and started to pick up in 2010 to around 3 percent before declining in 2011 (Figure 50). While the contribution of net derivatives gains remains relatively low in 2011, it will be important to continue monitoring their trends as any sharp increase could raise bank's exposures to market risks.

Figure 50. Contribution of Net Gains from Derivatives to Pre-Tax Profit

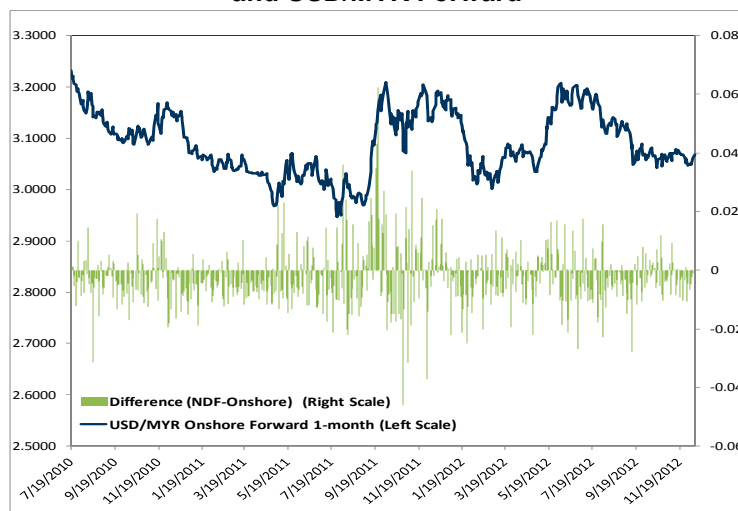


Source: BNM

Interlinkage with the offshore derivatives markets...

51. **In line with some regional peers, the onshore USD/MYR forward appears to be influenced by the offshore non-deliverable forward (NDF).** When the divergence between NDF vis-à-vis onshore forward spikes above zero, the onshore forward rate increases and vice versa⁵⁷ (Figure 51). This could be due to: (i) arbitraging of the two markets by offshore funds when rates are not aligned; and (ii) movements in the offshore market setting expectations on the onshore market.

Figure 51. Spread between NDF-Onshore USD/MYR Forward and USD/MYR Forward



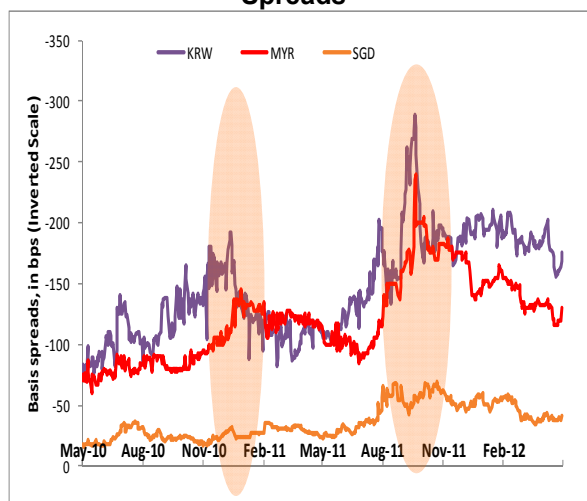
Source: Bloomberg

⁵⁷ Granger Causality Test with two lags on 1 and 3 months NDFs and onshore forwards also shows that changes in NDFs 'Granger-cause' changes in the onshore forward. Note that the Granger causality does not necessarily imply true causality as there may be other explanatory variables. The test shows that price movements in offshore NDFs tend to lead the onshore market.

52. **Feedback from the market indicates that the MYR NDF market is one of the most liquid in Asia**, with normal trades of around US\$2 billion a day. Currently, trading volume has shrunk, in line with other regional NDF markets, with trades of around U.S.\$350-650 million a day. Hedge funds are the biggest players since they cannot access the onshore market⁵⁸, whereas real money investors can, and prefer to use onshore because it is cheaper. However, most non-resident real money investors do not hedge, since currency play is an important part of investing in the MYR market.⁵⁹

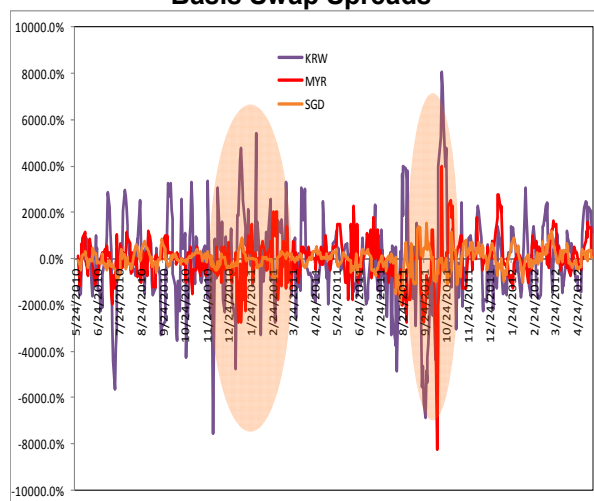
53. **The USD/MYR cross currency basis spreads also appear to be moving in tandem with the cross currency basis spreads of regional currencies**, such as USD/KRW and USD/SGD (Figure 52). This could be due to the active use of Malaysia's bond market by foreign corporations and institutions to issue bonds in MYR and then swapping the proceeds into foreign currencies when arbitrage opportunities to lower the cost of debt financing occurs.⁶⁰ For instance, Korean issuers have raised approximately MYR7.1 billion (USD 2.3 billion) and swapping them back into KRW since 2008. This has also led to the volatility of USD/MYR basis moving in tandem with the USD/KRW basis (Figure 53).

Figure 52. Cross Currency Basis Swap Spreads



Source: Bloomberg

Figure 53. Weekly Change in Cross Currency Basis Swap Spreads



⁵⁸ Hedge funds can access the onshore market if they have an underlying asset (e.g., BNM bills or government bonds). In reality, most of them do not have such assets but still want to take a view on the currency via the offshore NDF market.

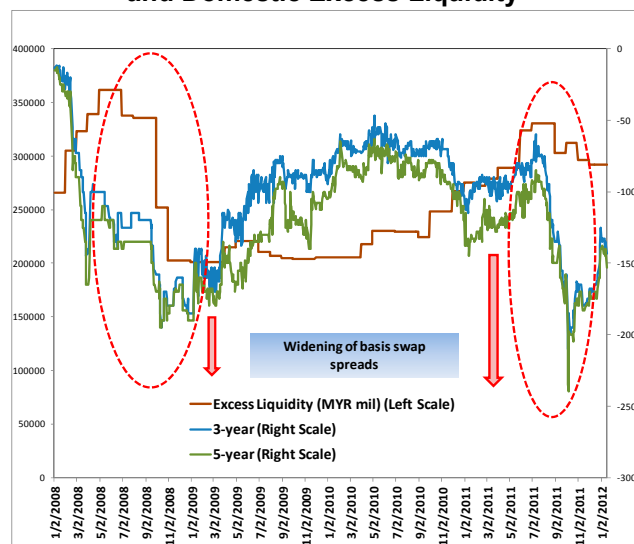
⁵⁹ MYR yields are low relative to neighboring countries, such as Indonesia.

⁶⁰ Other factors which could drive the cross currency basis spreads include generalized dollar funding stress, hedging activity of investors and the liquidity at different maturities

54. **International experience shows that a widening of cross currency basis swap spreads in some markets could influence the liquidity of domestic markets, particularly during stress.**⁶¹

Dislocations in international funding market could prompt domestic corporations and banks with large foreign currency funding needs to borrow locally and then swapping those proceeds into foreign currencies to fund overseas obligations. In some cases, this could lead to a reduction in domestic liquidity⁶², which in turn, could feed back into a widening of the basis spreads due to higher funding cost.⁶³ In Malaysia, this effect is not significant at present as excess liquidity remains high (Figure 54).

Figure 54. Cross Currency Swap Basis Spreads and Domestic Excess Liquidity



Source: Bloomberg

⁶¹ Rising risk premiums and a reduction in dollar funding could also contribute to a reduction in liquidity and widening of basis spreads.

⁶² In instances where the central bank sells foreign exchange reserves.

⁶³ During the Lehman crisis in 2008, an Asian country experienced significant strains in domestic liquidity when one of its largest banks had to fund its own overseas operations and its large corporate clients with overseas obligations through domestic borrowing. The strain on liquidity was compounded by a festival season, during which the demand for cash was high.

Appendix 1. Malaysia's Financial System

As at end-2009 and 2011

Types of Institutions	No. of Institutions		Total Assets					
			in MYR million		As percent of Total		As percent of GDP	
	2009	2011	2009	2011	2009	2011	2009	2011
Banking Institutions :	54	54	1,426,206	1,781,863	50.6	50.6	200.1	202.2
Commercial banks	22	23	1,139,726	1,386,980	40.4	39.4	159.9	157.4
<i>of which: Foreign</i>	13	17	273,480	353,323	9.7	10.0	38.4	40.1
Islamic banks	17	16	224,938	326,841	8.0	9.3	31.6	37.1
<i>of which: Foreign</i>	6	6	34,695	42,768	1.2	1.2	4.9	4.9
Investment banks	15	15	61,542	68,042	2.2	1.9	8.6	7.7
Development Financial Institutions (DFI):	13	13	165,915	204,727	5.9	5.8	23.3	23.2
<i>of which: Regulated under DFI Act 2002 1/</i>	6	6	124,714	159,264	4.4	4.5	17.5	18.1
<i>of which: Not regulated under DFI Act 2002 2/</i>	7	7	41,202	45,462	1.5	1.3	5.8	5.2
Labuan International Business and Financial Centre:	384	517	221,239	252,577	7.8	7.2	31.0	28.7
Commercial Banks:	42	43	102,062	121,058	3.6	3.4	14.3	13.7
<i>of which: Conventional</i>	36	37	100,736	120,188	3.6	3.4	14.1	13.6
<i>of which: Islamic</i>	6	6	1,326	870	0.0	0.0	0.2	0.1
					0.0	0.0	0.0	0.0
Investment Banks	17	17	1,503	1,595	0.1	0.0	0.2	0.2
Insurance Companies	149	181	8,422	11,610	0.3	0.3	1.2	1.3
Leasing Companies	136	229	75,653	87,910	2.7	2.5	10.6	10.0
Private Funds	38	45	33,149	29,989	1.2	0.9	4.7	3.4
Public Funds	2	2	449	416	0.0	0.0	0.1	0.0
Insurance Companies:	48	53	162,825	197,884	5.8	5.6	22.8	22.5
<i>of which: Conventional Life</i>	9	9	70,881	79,771	2.5	2.3	9.9	9.1
<i>of which: Conventional General</i>	24	22	21,285	25,406	0.8	0.7	3.0	2.9
<i>of which: Takaful Life</i>	-	4	-	-	0.0	0.0	0.0	0.0
<i>of which: Composite (Conventional)</i>	7	6	58,213	75,759	2.1	2.1	8.2	8.6
<i>of which: Composite (Takaful)</i>	8	12	12,446	16,948	0.4	0.5	1.7	1.9
Pensions & Provident Fund:	3	3	443,558	563,428	15.7	16.0	62.2	63.9
<i>of which: Employees Provident Fund (EPF)</i>	1	1	374,543	476,526	13.3	13.5	52.5	54.1
<i>of which: Government Pension Fund</i>	2	2	69,015	86,902	2.4	2.5	9.7	9.9
Fund Management 3/	85	82	315,023	423,576	11.2	12.0	44.2	48.1
Other Non-Bank Financial Institutions:	7,243	9,101	85,938	99,704	3.0	2.8	12.1	11.3
Cooperatives industry 4/	7215	9073	14,362	20,322	0.5	0.6	2.0	2.3
Leasing and factoring companies	23	23	5,010	5,006	0.2	0.1	0.7	0.6
Building Housing Credit Institutions	3	3	32,662	40,840	1.2	1.2	4.6	4.6
Cagamas	1	1	32,894	32,138	1.2	0.9	4.6	3.6
Danajamin Nasional Berhad 5/	1	1	1,010	1,398	0.0	0.0	0.1	0.2
Total Financial System Assets			2,820,704	3,523,759	100.0	100.0	395.7	399.9

Source: Bank Negara Malaysia, Companies' Annual Reports

1/ Refers to Bank Pembangunan Malaysia Berhad, Bank Kerjasama Rakyat Malaysia Berhad, Bank Simpanan Nasional, Export-Import Bank of Malaysia Berhad, Bank Pertanian Malaysia Berhad (Agrobank) and Bank Perusahaan Kecil & Sederhana Malaysia Berhad (SME Bank).

2/ Comprise Malaysian Industrial Development Finance Berhad, Sabah Development Bank Berhad, Borneo Development Corporation (Sabah) Sendirian Berhad,

3/ Refers to Asset Under Management (AUM).

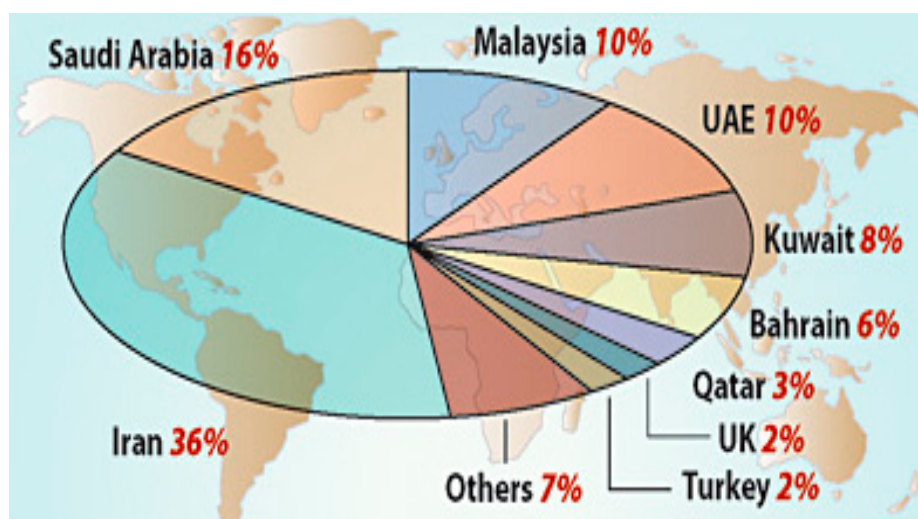
4/ Excludes Bank Kerjasama Rakyat which is classified under "DFIs regulated under DFI Act 2002".

5/ A financial guarantee insurer.

Appendix 2. Islamic Banking in Malaysia⁶⁴

Malaysia's Islamic finance industry has been in existence for over 30 years. As at end-June 2011, the nation's Islamic banking assets reached MYR297 billion (USD99 billion), registering a CAGR of nearly 20 percent since 2007.⁶⁵ According to “The Banker”, Malaysia commands a share of 10 percent of global Islamic banking assets, ranking third after Iran and Saudi Arabia.

Figure 1. Share of Global Islamic Banking Assets, 2009



Source: The Banker.

Malaysia has gradually developed a dual banking system where full-fledged Islamic banking system operates in parallel with a full-fledged conventional system. In addition to the two systems operating side-by-side, they also utilize similar sets of banking infrastructure, thereby reaping benefits such as:

- *Economies of scope:* The utilization of common platform allows cost savings and therefore accelerates the implementation of Islamic banking at the lowest cost and within the shortest time frame.
- *Wider range of Islamic banking products:* In a dual system, Islamic banks need to provide all services which are provided by conventional banks; otherwise Muslim and non-Muslim clients will shift back to the conventional system. Therefore, Islamic banks in a dual system operate in a competitive and dynamic environment with more sophisticated and wider range of products and services.

⁶⁴ Refer to Technical Note on Islamic Finance for further details.

⁶⁵ Globally, there are over 300 Islamic financial institutions and the global Islamic Finance industry is experiencing average growth of 15–20 percent annually, according to the Asian Banker Research Group. McKinsey projects global Islamic banking assets and assets under management to have reached USD1 trillion by 2010.

Table 1. Types of Islamic Banking Model

Islamic Banking Model	Features	Countries
i) Islamic-Only banking system	Only Islamic banks	Iran, Pakistan, Sudan
ii) Dual system	Islamic banking system operating parallel with the conventional system	Malaysia, Indonesia
iii) "Conventional Plus" system	Predominantly conventional banks with a few Islamic banking institutions operating on the fringe of the banking system)	Some of the countries in this category are Saudi Arabia, Bahrain, Bangladesh, Brunei, Egypt, Guinea, Singapore
iv) "Conventional-only" system	Only Conventional banks	Some countries include: Turkey, Albania, Algeria, Azerbaijan, Benin, Burkina Faso, Chad, Cameroon, Comoros, Djibouti, Gabon and Gambia.

Source: International Islamic Banking Conference— Developing an Islamic Banking System

The development of Islamic banking in Malaysia is phased gradually over three stages:

- *Initial period of familiarization (1983–1992)*: In this exploratory stage, the first Islamic Bank, Bank Islam Malaysia Berhad (BIMB), was set up on July 1, 1983 following the enactment of the Islamic Banking Act (IBA). IBA which came into effect on April 7, 1983 provides BNM with the authority to supervise and regulate Islamic banks similar to other licensed banks. At the same time, the Government Investment Act 1983 was also enacted to empower the Government of Malaysia to issue Government Investment Issue (GII)⁶⁶ regarded as liquid assets, thus enabling Islamic banks to meet the prescribed liquidity requirements as well as to invest their surplus funds.
- *Mainstream acceptance (1993–2002)*: After more than a decade in operations, BIMB has proved to be a viable banking institution with its activity expanding rapidly with a network of 80 branches and the bank was listed on the Main Board of the Kuala Lumpur Stock Exchange on January 17, 1992. This precipitated the domestic financial system to use and apply Islamic financial principles and Islamic finance was no longer the sole domain of Bank Islam Malaysia. A dual banking system in Malaysia was developed, both equally comprehensive and viable. On March 4, 1993, BNM introduced the Interest-free Banking Scheme which spearheaded the development of more than 40 Islamic financial products and services using various Islamic concepts such as Mudharabah, Musyarakah, Murabahah, Bai' Bithaman Ajil (Bai' Muajjal), Ijarah, Qardhul Hasan, Istisna' and Ijarah Thumma Al-Bai'. On January 4, 1994, the

⁶⁶ GIIs are government securities (bonds) issued based on Syariah principles.

Islamic Interbank Money Market (IIMM) was introduced to link the institutions and the instruments.⁶⁷

- *Islamic finance as a tool of competitive advantage (2000 - Current):* Capital market and the private sector to play a prominent role in the innovation and development of Islamic finance as catalyst for growth. The government's role would be to facilitate and to provide a conducive environment. Presently, development strategies are focused on developing the players, infrastructure and expertise and reinforcing the country's position as a leading international centre for Islamic finance.

As part of the effort to streamline and harmonize Shariah interpretations, the Shariah Advisory Council (SAC) of Bank Negara Malaysia was established on May 1, 1997 with the primary objectives as follows:

- As the sole authoritative body to advise BNM on Islamic banking and takaful (insurance) operations;
- To co-ordinate Shariah issues with respect to Islamic banking and finance; and
- To evaluate Shariah aspects of new products/schemes submitted by the banking institutions and takaful companies.

⁶⁷ The IIMM enabled Islamic banks and banks participating in the Interest-free Banking Scheme to match their funding requirements. Guidelines on IIMM were introduced by BNM on December 18, 1993 to facilitate proper implementation, covering aspects such as: (i) Interbank trading of Islamic financial instruments; and (ii) Mudharabah Interbank Investments ("MII").

Appendix 3. Data Envelopment Analysis (DEA) Methodology

The DEA methodology is based on information on inputs and outputs of individual entities to construct an efficiency frontier enveloping the data. The model chooses a benchmark entity, which lies on this frontier and measures the efficiency of other individual entities relative to the benchmark entity. Two alternative approaches are available in DEA to estimate the efficiency frontier. One is input-oriented, and the other is output-oriented. In the input-oriented model, the inputs are minimized and the outputs are kept at their current levels. In the output-oriented model, the outputs are maximized and the inputs are kept at their current level.

The Basic Input-Oriented DEA Problem

The basic input-oriented DEA problem can be described as follows. Assume there is data on K inputs and M outputs for each banks, indexed by $i=1, \dots, N$. Let x_{ij} denote input i of bank j ; and y_{ij} denote output i of bank j . Under the assumption of constant return to scale (CRS), the basic DEA problem to estimate the relative efficiency of each bank is given by:

$$\begin{aligned}
 & \min_{\theta_i, \lambda_j} \theta \\
 & \text{subject to} \\
 & \sum_{j=1}^N \lambda_j x_{ij} \leq \theta x_{i0} \quad i=1, \dots, K; \\
 & \sum_{j=1}^N \lambda_j y_{rj} \geq y_{r0} \quad r=1, \dots, M; \\
 & \sum_{j=1}^N \lambda_j = 1 \\
 & \lambda_j \geq 0 \quad j=1, \dots, N.
 \end{aligned}$$

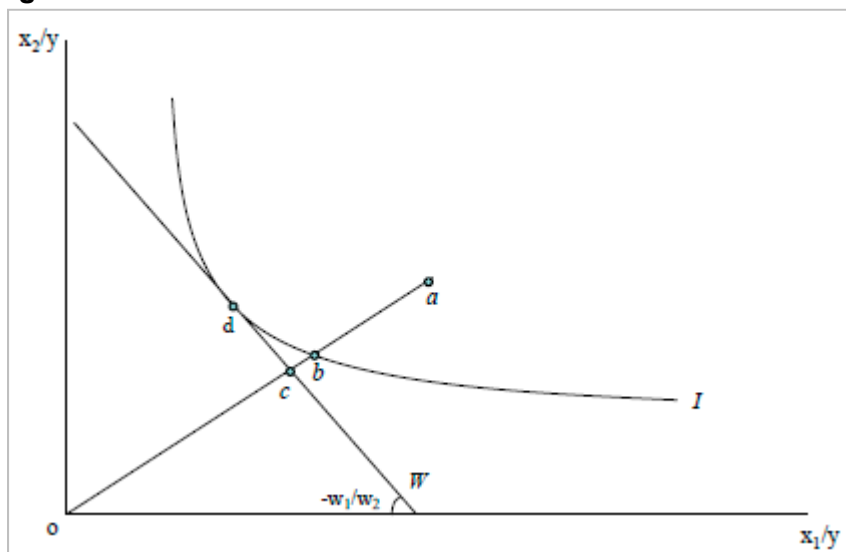
where bank with a subscript “zero” is one of the banks under evaluation, and x_{i0} and y_{r0} are the i -th input and r -th output of “zero”-bank respectively. θ_i is a bank-specific scalar that varies between zero and one and conveys the efficiency score of bank i (i.e. the distance between its input-output mix and the frontier, measured through a ray from the origin). Banks with $\theta_i = 1$ are benchmark institutions, and their input-output mix lies on the efficient frontier. The λ_j is a $N \times 1$ vector of bank-specific weights that conveys information on the benchmark comparators for bank i . For example, an efficient bank ($\theta_i = 1$) will be trivially its own benchmark, resulting in a λ_j with zeros everywhere except a “one” in the i th position. An inefficient bank will have $\theta_i < 1$.⁶⁸

⁶⁸ The basic output-oriented model is a dual problem to the input-oriented one. Instead of minimizing efficiency score of the inputs, the output-oriented model maximizes efficiency scores of the outputs.

Additional restrictions to the basic model can be used to relax the CRS assumption and compute scale effects. The CRS assumption is only appropriate when banks are operating at the optimal scale, which may be too restrictive in reality. A subtle modification of the model allows us to compute efficiency under variable returns to scale (VRS) and disentangle technical efficiency from scale efficiency. This requires the addition of the convexity constraint, $\sum \lambda_i = 1$, where $\mathbf{1}$ is a $n \times 1$ vector of ones. The VRS model produces a convex hull of intersecting planes that envelope the data more tightly than the CRS model and thus tends to produce generally higher estimates of efficiency.

The concept of *total cost efficiency* consists of *technical efficiency* and *allocative efficiency*. Its measurement can be illustrated with the help of Figure I.1.

Figure I.1. An Illustration of Technical and Allocative Efficiency



Technical efficiency can be measured as follows. Consider a firm producing a single output y with two inputs x_1 and x_2 with the input-output combination represented by point a . To facilitate the presentation, assume further that the technology is CRA, represented by isoquant I . Clearly, the input-output mix given by point a is inefficient, as it lies inside the production frontier entailed by the isoquant. A measure of the technical inefficiency can be given by the distance ab , which measures the amount by which the two inputs could be proportionally reduced without affecting output. Alternatively, technical inefficiency can be normalized using the ratio ab/ao and represented by its complement $TE = 1 - ab/ao = bo/ao$. The resulting measure, which is commonly used, varies from zero to one, with a larger value indicating higher technical efficiency. In particular, a value of one indicates that a specific input-output combination lies on the efficient isoquant.

Allocative efficiency can be assessed if information on input prices is available. Suppose input prices in the example are given by w_1 and w_2 and represented by the isocost line W . At the relative input prices, the cost-minimizing input mix is given by point d . Therefore, the technical efficiency point b entails an excess cost equivalent to the distance bc , and the relative measure of this allocative inefficiency is given by the ratio $AE=co/bo$.

Thus, total cost efficiency (CE) can be defined as the product of technical and allocative efficiency:

$$CE = \frac{co}{ao} \equiv \frac{co}{bo} \times \frac{bo}{ao} = TE \times AE.$$

These three measures are bounded by zero and one, where higher values imply a higher efficiency. Further, they can be readily interpreted as percent deviations. For example, a value of economic efficiency score of 0.8 implies a gap of 0.2, or that the bank is 20 percent less efficient than its benchmark comparator.

DEA Approach in Assessing Efficiency among Bank-groups

This approach assumes that banks intermediate funds between depositors and borrowers at the lowest possible cost. The three inputs are deposits, number of employees and number of bank branches. Deposits affect bank profitability and bank branches are proxies for measuring banks' distribution network. The three outputs consist of loans, trading and investment securities and core operating profit defined as a sum of net interest income and net non-interest income, less general and administrative expenses. Loans and trading and investment securities represent a considerable part of banks' assets.

Output prices were estimated by dividing (i) interest income by the amount of loans; (ii) non-interest income by the amount of trading and investment securities; and (iii) and operating income by the interest and fee generating volume of transactions.

Input prices were estimated by dividing (i) interest expenses by the amount of total deposits, (ii) total personnel expenses by the number of employees, and (iii) other general and administrative expenses by the number of bank branches. For further details, see Sealey and Lindley (1977).

REFERENCES

- Buncic, D. et.al (2012), “*Macroprudential Stress Testing of Credit Risk A Practical Approach for Policy Makers*”, Washington, D.C.: The World Bank.
- Endut, N. and Toh, G.H. “*Household debt in Malaysia*”, BIS Papers No 46
- Lee, Yoong Hon et. al. (2011), “*Efficiency in the Malaysian Banking Industry*”, ASEAN Economic Bulletin Vol. 28, No. 1 (2011), pp. 16–44.
- Walter, I. (2006), “*Reputational Risk and Conflicts of Interest in Banking and Finance: The Evidence So Far.*”
- Zhang, Yanan et. al., (2010), “*Local Housing Market Cycle and Loss Given Default: Evidence from Sub-Prime Residential Mortgages*”, Washington, D.C.: International Monetary Fund.
- Zhu, J. (2009), “*Quantitative Models for Performance Evaluation and Benchmarking: Data Envelopment Analysis with Spreadsheets 2nd Edition.*” New York: Springer International Series in Operations Research and Management Science.