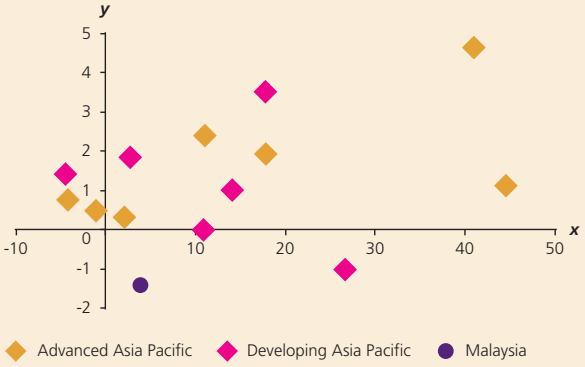
## Malaysian Corporate Leverage and Its Systemic Implications

The capital structure and financial condition of corporations have important effects on macroeconomic and financial stability outcomes. One of the ways in which a firm maximises its value is by maintaining an optimal mix of debt and equity (leverage profile) to finance assets that generate cash flows for the firm[1]. A variety of factors influence a firm's leverage decisions, including accessibility, cost and the diversity of funding sources. Such decisions, in turn, can positively affect a company's competitiveness and growth potential, leading to innovation and productive investments in an economy. However, a rapid and significant increase in corporate leverage can also increase financial stability risks, particularly where it is accompanied by prolonged low interest rates, compressed risk premiums and a rising share of foreign currency borrowings. Higher debt burdens as a result of changes in borrowing costs and variability in exchange rates could increase the propensity to default by more vulnerable firms, inflicting credit losses and funding pressures on financial intermediaries. A broader contraction in credit flows to key economic sectors can, in turn, precipitate a severe economic slowdown.

Recent assessments by the BIS and the IMF have highlighted the risks arising from high and rising debt levels in some emerging economies. Corporate debt levels in many Asia Pacific economies have increased relative to 2003-2007 averages, with corporate bond issuances surpassing levels recorded prior to the Global Financial Crisis (GFC) as borrowing costs dipped to multi-year lows in line with global and local interest rates (Chart 1). This may complicate adjustments by businesses in an environment of slower growth and tighter funding conditions. The adjustments are likely to be more difficult in economies where the markets judge that policy responses have been insufficient to address macroeconomic and financial vulnerabilities, and where firms are more dependent on external financing, in particular from foreign capital flows.

**Chart 1**

**Non-financial Corporate Credit-to-GDP and Debt Issuances-to-GDP Ratios**




Note: ***x***: Ppt change in corporate credit-to-GDP (2003-07 average vis-à-vis 2013)
***y***: Ppt change in corporate debt issuances-to-GDP (2007 vis-à-vis 2013)

Source: International Monetary Fund and internal estimates

Against this setting, this article examines: (i) the domestic and external financing determinants of Malaysian corporate sector leverage, comparing conditions before and after the GFC; and (ii) the susceptibility of corporations to shocks as global liquidity levels recede and funding conditions tighten. Additional insights are provided on sector- and institution-specific dynamics that explain the profile of Malaysian corporate leverage. In the final part of the article, results of stress tests conducted by the Bank on a sample of large corporates and the corresponding contagion impact on the financial system are presented.

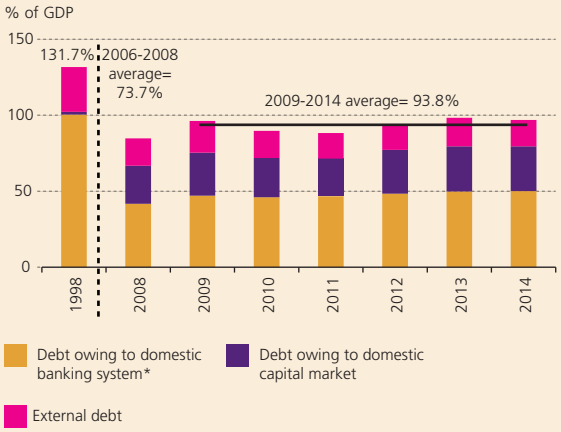
[1] Panel estimations in this article therefore employed debt-to-asset ratio as the primary measure of a company's leverage burden relative to its total (book) asset value. Rajan and Zingales (1995) suggest this as the more appropriate definition of leverage as this is viewed as a proxy of residual value for shareholders in the case of liquidation. Other measures such as debt-to-equity and debt-to-sales are used as robustness tests.

## Determinants of Corporate Leverage

In Malaysia, the increase in non-financial corporate sector[2] debt levels has been relatively modest, growing broadly in line with domestic economic expansion (see Chapter 1 – Chart 1.28). Corporate leverage levels remain relatively stable within historical averages both prior to and after the GFC, and below levels recorded prior to the Asian Financial Crisis (AFC) (Chart 2). Funding of Malaysian corporations is predominantly (82%) sourced from the domestic banks and capital markets and denominated in ringgit. Following the rapid development of the domestic corporate bond and sukuk markets since the AFC[3], corporate financing has also been more evenly distributed between domestic banks and the capital market (Chart 3). Benefitting from more efficient financing costs and the ability to access longer term funding as a result of the broad investor base, liquid capital markets and a conducive regulatory framework, domestic corporations have increasingly tapped into the Malaysian corporate bond and sukuk markets to meet financing needs. In particular, the sukuk market has experienced solid increases in non-sovereign issuances since 2000, in line with the rising contribution of private sector investments to GDP. This has reduced concentrations in bank and external financing observed prior to the AFC.

**Chart 2**

### Corporate Debt-to-GDP Ratios

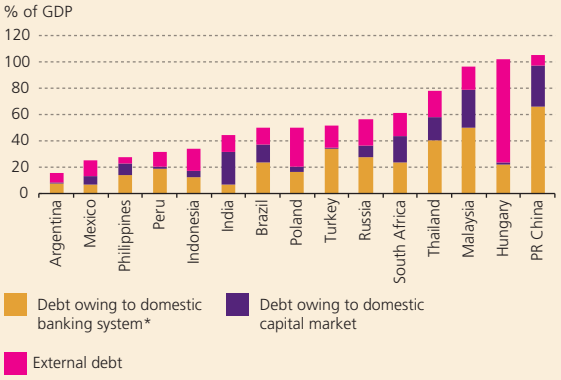



Note: * For Malaysia, this includes debt owing to locally-incorporated foreign banks

Source: Bank Negara Malaysia

**Chart 3**

### Cross-country Comparison of Corporate Debt and Funding Sources




Note: * For Malaysia, this includes debt owing to locally-incorporated foreign banks
Data as at end-2014 for Malaysia, whereas data for other sampled countries are based on the IMF Global Financial Stability Report April 2014

Source: International Monetary Fund and internal estimates

Panel data estimations using firm-level data (consolidated at the group level)[4] covering 130 firms (representing more than half of the market capitalisation of the domestic equity market, excluding financial institutions) between 2004-2013 were used to establish key determinants of corporate leverage in Malaysia. Three clusters of potential explanatory factors of debt accumulation (firm-specific characteristics, domestic macroeconomic factors and external factors)[5] were regressed against the debt-to-asset ratios of firms using a dynamic

[2] Includes government-linked companies.

[3] Malaysia's past experience in resolving corporate sector fragilities and the adverse feedback loop to the banking and real sectors during AFC prompted multi-pronged efforts to develop domestic capital markets and reduce reliance on funding from banks and volatile foreign capital inflows. These efforts included the establishment of the National Bond Market Committee in 1999 and initiatives to develop an effective benchmark yield curve, widen issuer and investor base, and deepen secondary market liquidity.

[4] Data is based on consolidated financial statements of the parent and its domestic and overseas subsidiaries, including the equity accounting of interest in associates.

[5] Regressors include cash balances, total assets, current ratio, short-term debt, firm growth, tangibility and profitability, terms of trade, inflation, portfolio investments, private debt securities (PDS) spread and stock outstanding, loans to domestic businesses, credit-to-GDP ratio, size of banking sector, GDP growth, money supply (M2), gross fixed capital formation, cross-border bank loans, average lending rate, outstanding global bonds, MYR-USD spot rate, Brent crude prices, Merrill Option Volatility Estimate (MOVE) index, Chicago Board Options Exchange Volatility Index (VIX) and global liquidity conditions.

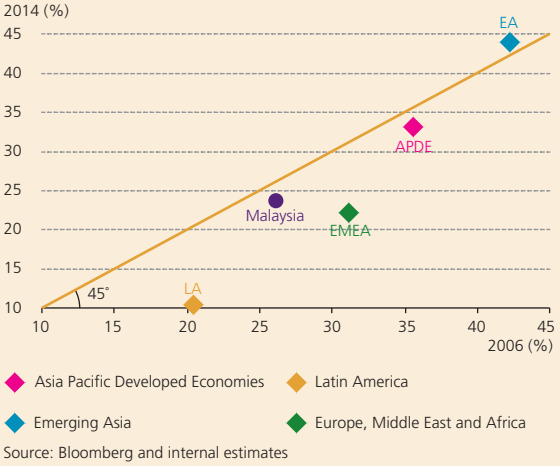
panel regression model[6]. The panel dataset was further divided into two subsample periods, to capture the dynamics of factors influencing corporate indebtedness pre- and post-GFC. The final estimations demonstrated that the increase in Malaysian corporate leverage for the entire sample period was largely driven by firm-related and domestic macroeconomic factors, with only a diminutive influence from global interest rates and risk appetite, and the credit and liquidity conditions of international markets[7] (Table 1).

**Decomposing Corporate Leverage in Malaysia**

Steady issuances of medium-term debt in Malaysia, particularly between 2012 and 2013, have led to a lengthening of the average maturity of outstanding domestic corporate debt to 5.6 years in 2014 from 3 years in 2006 (Chart 4). The higher composition of medium- to long-term funding renders Malaysian corporations less susceptible to rollover and funding risks which have been more pronounced in jurisdictions which experienced spikes in short-term debt funding in recent periods.

**Chart 4**

**Short-term Debt over Total Debt[8]**




Source: Bloomberg and internal estimates

While banks remained as an important funding provider for most Malaysian firms, firms in capital intensive industries - namely the utilities, infrastructure, oil and gas, telecommunication and transportation sectors - rely more on market-based financing due to the larger and longer-term funding required in particular for projects and investments with long gestation periods. These sectors accounted for approximately 60% of total outstanding debt securities issued in Malaysia. Conversely, bank borrowings account for a larger share of financing by firms in the manufacturing, wholesale and retail trade and property-related sectors where capital expenditure requirements are comparatively lower and firms tend to be more widely dispersed in terms of size. Total bank borrowings outstanding of these sectors accounted for 60% of total domestic business loans. The average maturity of such loans of 8.4 years in 2014 (2012: 7.8 years) suggests that funds raised continue to be mainly used for business investments. More than half (53%) of bank borrowings are for working capital, while about 29.5% is channelled into real-estate, including the purchase of land and commercial property for development and business use, and to fund construction-related activities.

[6] To capture the dynamic adjustments in leverage, a dynamic panel model using Arellano Bond one-step Generalised Method of Moments (GMM) estimator was used. Although the two-step GMM estimator is more efficient, the standard errors are downward biased and tend to underestimate the true value of the standard deviation of the estimates (see Arellano and Bond, 1991 and Soto, 2009).

[7] The coefficient estimates for external factor variables, pre- and post-GFC, are mostly statistically insignificant or with near zero coefficients.

[8] Sample countries are not intended to be exhaustive, and are grouped as follows: (1) APDE - Australia, Japan, Hong Kong SAR and South Korea, (2) EA - PR China, India, Thailand, Indonesia, and the Philippines, (3) EMEA - Russia, Poland, Turkey, and South Africa, and (4) LA - Argentina, Brazil, Chile, Colombia and Mexico.

**Table 1**

**Key Determinants of Corporate Leverage in Malaysia**

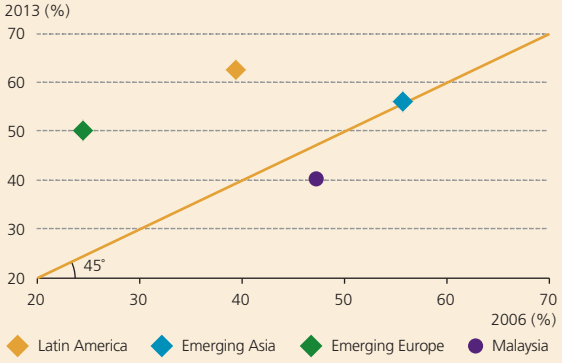
| | Determinant | Relationship | Observed sector- or firm-specific behaviour |
|---|---|---|---|
| Firm-specific characteristics | Debt-to-asset ratio (up to 2 lags) | Positive, significant at 1% and 10% level | • Corporations adjust leverage gradually to exogenous shocks, reflective of the dynamism in the capital structure decision by Malaysian corporations. |
| | Profitability | Negative, significant at 1% | • Profitable firms with sufficient retained earnings are able to reduce reliance on debt financing and utilise more cost-effective internal funds. |
| | Cash balances | Negative, significant at 10% | • Consistent with the pecking order theory, Malaysian firms prefer internal funds over raising debt and equity in order to maintain financing flexibility, minimise information flow to capital markets and competitors, and prevent ownership dilution[9]. |
| | Firm size (up to 4 quarterly lags) | Positive, significant at 1% to 10% level | • Larger firms with more diversified and consistent cash flows and access to a larger collateral pool are more likely to increase the use of debt. This is reinforced by better access to the capital market or bank financing at more favourable borrowing costs due to improved creditworthiness. |
| | Short-term debt | Positive, significant at 1% | • Most corporations are inclined to assume shorter-term debt as it is the cheapest method to temporarily adjust to optimal levels of debt.<br>• However, the near-zero coefficient suggests limited influence of short-term debt on Malaysian corporate leverage. This posits that Malaysian firms tend not to adjust to a target leverage level using short-term debt. |
| Domestic factors | Average lending rate (ALR) for new business loans | Negative, significant at 5% | • Lower lending rates typically induce greater appetite for risk taking and debt accumulation as the cost of borrowing is reduced more generally.<br>• However, the post-GFC ALR for new domestic business loans was, on average, only 0.6 ppts lower compared to pre-2008 level, providing marginal incentives for Malaysian firms to increase leverage. |
| | Real GDP growth | Negative, significant at 10% | • Firms' willingness and ability to issue additional debt to finance planned investments should rise in tandem with economic expansion.<br>• However in Malaysia, the inverse relationship is more dominant. Increasing domestic demand raises retained earnings of sampled firms (predominantly domestic-oriented) that are channelled into acquisition of assets or planned investments, and concomitantly, reduces the need for debt financing. Similarly, firms may delay investments or purchases of capital equipment to conserve cash balances amid periods of economic contraction. |
| | Change in M2-to-GDP ratio | Negative, significant at 5% | • A larger monetary base indicates greater availability of funds for financing. Nonetheless, M2 growth is negatively related to Malaysian corporate leverage at a very small quantum. This could be due to M2 capturing the level of official liquidity, as opposed to private liquidity[10]. |
| | Banking sector growth | Positive, significant at 5% | • Growing number and size of well-capitalised banks pre- and post-GFC provided uninterrupted access to financing to fund investment activities or working capital of Malaysian firms[11]. |
| External factors | Change in MYR-USD spot rate | Insignificant | • Firms which benefit from a stronger domestic currency can tactically increase external debt prior to an anticipated appreciation. The rising strength of ringgit post-GFC relative to major currencies should have induced higher external debt accumulation.<br>• However in Malaysia, such effects were more than offset by domestic macroeconomic factors and firm-specific capacity (asset growth, cash balances), given that the sampled firms are mostly reliant on domestic demand and funding sources. |
| | Change in (i) global bonds outstanding and (ii) cross-border bank loans | Insignificant | • Many emerging market corporations saw growing incentives to raise leverage amid compressed global interest rates and risk premiums, and stronger local currencies post-GFC (issuances of emerging market private sector debt between 2009-2012 more than doubled relative to preceding four years).<br>• However, only a fraction of the largest Malaysian firms capitalised on this environment as evidenced by the lack of explanatory power on leverage. |
| | Change in Brent crude oil prices | Insignificant | • In theory, rising oil prices and lower global risk aversion post-GFC should result in higher corporate leverage.<br>• However, the near-zero coefficient or statistical insignificance of such regressors indicate immaterial effects on debt accumulation of Malaysian firms, consistent with the more pronounced influence from domestically-driven factors. |
| | Merrill Option Volatility Estimate index | Insignificant | |

External borrowings of Malaysian corporations[12] increased at a modest annual rate of 4.2% between 2008 and 2014, averaging at 18% of GDP. This trend was underpinned by the continued cross-border expansion of larger firms, and to a smaller degree, the compression in corporate risk premiums globally. Approximately 41% of these external borrowings are in the form of long-dated debt securities, the bulk of which are issued by large home-grown conglomerates with operations in multiple jurisdictions. These larger firms are supported by centralised treasury management functions which are able to source financing more efficiently from both the domestic and global funding markets to take advantage of differential funding costs. Industry engagements confirm that the vast majority of such firms are able to leverage on enterprise-wide cash and risk management systems which allow for the better management of risks associated with higher external borrowings. Almost a quarter of such external borrowings are sourced from affiliates located abroad by multinational companies which also tend to be less sensitive to interest and exchange rate volatility. The bulk of corporate external borrowings are denominated in major currencies such as the US dollar (76.1%) and Singapore dollar (5.8%). Risks from currency mismatches are expected to be manageable based on information obtained by the Bank for approved external borrowings by domestic corporations, which showed that a significant portion is hedged with financial derivatives and foreign revenue streams from cross-border investments and operations.

Against the above factors, corporate leverage of Malaysian firms on aggregate has remained below the level observed prior to the GFC, in contrast to other emerging economies (Chart 5). Strong and relatively stable corporate earnings over the past years have allowed firms to sustainably increase debt levels to fund growing capital expenditure and investments. This has been

**Chart 5**

**Aggregate Debt-to-equity Ratios by Region**




Note: Data as at 3Q 2014 for Malaysia

Source: International Monetary Fund, Bloomberg and internal estimates

[9] Mat Nor and Sulong (2007) and Abdul Rahman and Ali (2006) showed that owner-managed firms are common among Malaysian companies. Ow-Yong and Guan (2000) posited that listed companies in Malaysia evolved from traditionally family owned firms, and some continue to be managed as such.

[10] Traditional monetary aggregates on a national level are unable to capture the full range of liquidity-creating instruments or the full impact of the activities of large cross-border financial intermediaries. See Chen et al. (2012), p5, and Adrian and Song Shin (2009).

[11] Growth in private debt securities (PDS) outstanding has no explanatory power on Malaysian corporate leverage. The propensity of Malaysian firms to increase leverage diminishes as the stock of outstanding PDS and sukuk rises. With a finite pool of foreign and domestic investors and relatively thinner trading liquidity for PDS, the dominance of private issuances in Malaysia over the past decade by large conglomerates has potentially crowded out funding by mid- and small-sized corporations in the capital market despite reducing borrowing costs and improved market access.

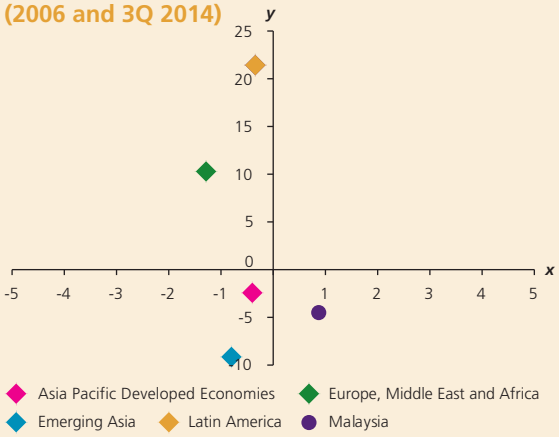
[12] Data on external borrowings are compiled in accordance with the IMF's Balance of Payments Manual, Fifth Edition and the External Debt Statistics: Guide for Compilers and Users (2003). Gross external debt, at any given time, is the outstanding amount of those current, not contingent, liabilities that require payment(s) of interest and/or principal by the debtor at some point(s) in the future and that are owed to non-residents by residents of an economy.

supported by improved debt servicing capacity observed at the aggregate and individual firm levels (Chart 6 and Chart 7).

By disaggregating corporate sector averages, the share of Malaysian corporate debt that represents potential "vulnerable debt" based on the individual borrowing firm's leverage and financial indicators is low in comparison with regional peers (Chart 8, Chart 9 and Chart 10)[13,14,15]. More leveraged domestic firms generally registered higher return on asset (ROA) and interest coverage ratios (ICR),

**Chart 6**

**Leverage Ratio and Debt Servicing Capacity (2006 and 3Q 2014)**

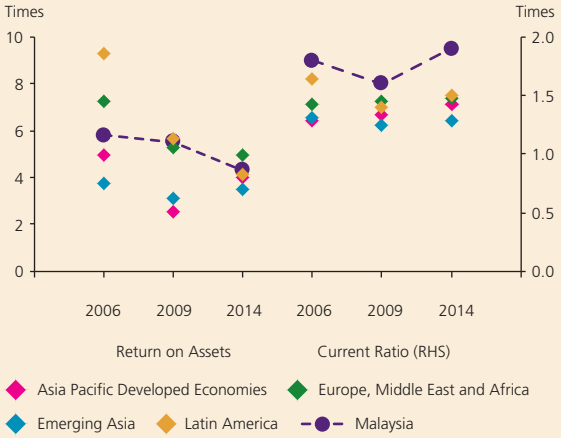



Note: ***x***: Ppt change in interest coverage ratio (2006 vis-à-vis 2014)
***y***: Ppt change in leverage ratio (2006 vis-à-vis 2014)

Source: International Monetary Fund and internal estimates

**Chart 7**

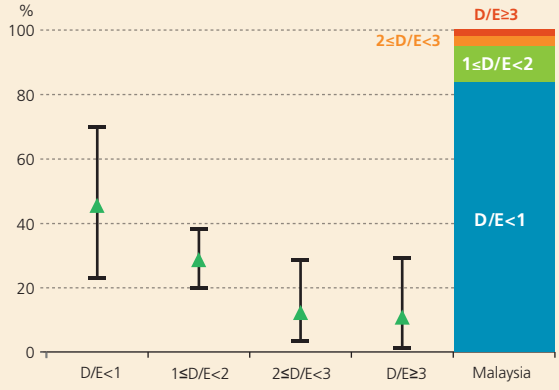
**Profitability and Liquidity Ratio (2006, 2009 and 3Q 2014)**




Source: Bloomberg and internal estimates

**Chart 8**

**Distribution of Potential Vulnerable Debt by Leverage Ratio**

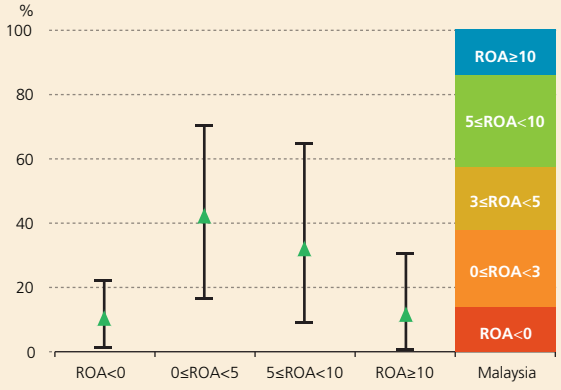



*D/E refers to debt-to-equity
Note: Data as at 3Q 2014 for Malaysia

Source: International Monetary Fund and internal estimates

**Chart 9**

**Distribution of Potential Vulnerable Debt by Profitability**



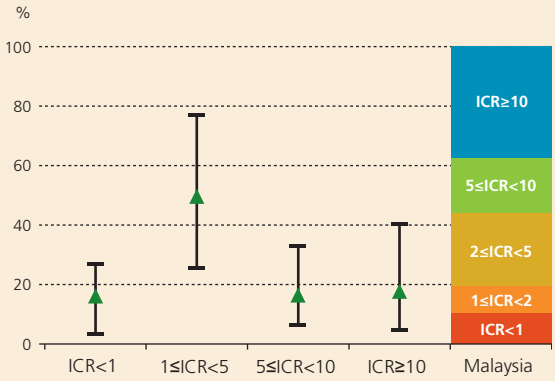

*ROA refers to return on assets
Note: Data as at 3Q 2014 for Malaysia

Source: International Monetary Fund and internal estimates

[13] Potential vulnerable debt of Malaysian corporates is represented by the bar, distributed by the amount of debt of borrowing firms that have financial ratios above or below specified thresholds. Riskier debt is represented in red and amber shades.
[14] Each line represents the composition range of sampled public listed companies across 13 regional countries, for each bucket of a particular financial ratio. The upper boundary and the lower boundary represents the maximum and minimum composition range recorded by these sampled firms. The green indicator represents the average composition range of each bucket.
[15] Countries in the sample consists of Asia Pacific nations including the Philippines, Hong Kong SAR, Singapore, Thailand, New Zealand, Vietnam, PR China, India, Japan, Indonesia, Australia, Chinese Taipei, and South Korea.

**Chart 10**

**Distribution of Potential Vulnerable Debt by Interest Coverage Ratio**




*ICR refers to interest coverage ratio
Note: Data as at 3Q 2014 for Malaysia

Source: International Monetary Fund and internal estimates

while also being supported by stable cash balances. More than 83% of domestic corporate debt is considered non-risky based on a debt-to-equity ratio of borrowing firms of less than 1, with a median debt-to-equity ratio below 1 (about 64% of sampled Asia Pacific countries recorded a median above 1). More than 42% of debt is taken by firms registering a ROA above 5%, providing substantial earnings buffers against potential shocks. The median ROA compared favourably to sampled countries and remained healthy at above 4%. In terms of debt servicing capacity, 80.5% of debt is owed by Malaysian firms that have sufficient earnings to cover more than two times interest expenses, providing flexibility to adjust to higher debt expenses or lower operating profits moving forward. The median ICR for Malaysian firms exceeded 5, higher than 84% of sampled Asia Pacific countries.

### Corporate Stress Tests

While the leverage profile of Malaysian corporations does not exhibit signs of excessiveness, the prevailing uncertainty in global financial and economic conditions has raised the spectre of growing corporate defaults with their attendant damaging feedback loops to the financial and real sectors. With this in mind, the Bank undertook stress tests which simulated four major shocks under two adverse scenarios on a set of non-financial corporations with total domestic exposures[16] exceeding RM2 billion[17] at each entity level. The contagion impact on the financial system from potential systemic risks transmitted through the asset- and liability-side exposures of these corporations with financial institutions was then assessed[18] (Table 2). Under conservative assumptions[19], the impact of cumulative earnings, foreign currency and funding shocks on the liquidity buffers, solvency and debt servicing capacity[20] of each sampled firm was simulated homogenously. A corporate entity which registered a post-shock cash over short-term obligations (CASTO) ratio of less than 1, and where the liability-to-asset ratio exceeds 1 is deemed as illiquid and insolvent respectively. An entity with a post-shock ICR of less than 2 times is assumed to default on all outstanding credit obligations.

[16] Refers to the sum of borrowings with Malaysian banks and corporate debt securities issued in the domestic bond market.
[17] These non-financial corporations collectively accounted for approximately 40% of total exposures to domestic financial system, including all locally-issued private debt securities held by Malaysian banks, insurers, DFIs and takaful operators.
[18] Due to incomplete information on bilateral exposures among non-financial corporations, the stress test did not incorporate the effects of potential cross defaults within or outside a non-financial conglomerate.
[19] The stress test disregards the present balance sheet health or future profit-generating capacity of sampled corporations and any form of hedging on foreign currency mismatches and potential translation gains.
[20] As measured by the cash over short-term obligations (CASTO) ratio, liability-to-asset ratio, and ICR respectively.

**Table 2**

**Key Assumptions and Shock Parameters for Adverse Scenarios**

| | |
|---|---|
| **Key Assumptions and Shock Parameters for Sampled Corporations** | |
| Earnings shock | • Up to 50% decline in operating profit |
| Foreign currency shock | • Up to 3.5 standard deviations shock on the 6-month moving average of USD/RM rates over the past 20 years<br>- Discount any form of natural or financial hedging, or any foreign currency translation gains |
| Funding cost shock | • Up to 100 bps increase in borrowing costs of ringgit denominated bank loans |
| | • Up to 100 bps increase in the coupon rate for new corporate bond or sukuk issuance for the next 2 years<br>- Issuer's credit rating and tenure of new issuances assumed to be unchanged |
| **Simulated Contagion Effects on Banks and Insurance Companies** | |
| Liquidity risk shock | • Affected corporations (those with post-shock CASTO<1 and ICR<2 times) were assumed to withdraw 66% of deposits placements with banks within a month |
| Credit risk shock | • Average loss given default of 51% |
| Market risk shock | • Up to 100 bps increase in yields across different PDS ratings and tenures |
| | • Outstanding corporate bond and sukuk held by financial institutions were assumed to be classified as ``held-for-trading´´ and ``available-for-sale´´ |

The simulated earnings shocks recorded the highest impact on corporations' debt servicing capacity, reducing the aggregate ICR by 0.66 ppt to 1.32 ppts, and individual firm ICR by 33.5 ppts to 67.1 ppts under both adverse scenarios. The effects of higher debt servicing expenses for foreign currency denominated and floating rate ringgit borrowings were less pronounced, shrinking aggregate ICR by a narrow range of 0.03 ppt to 0.11 ppt. At the firm-level, the impact varied widely between 11.8 ppts and 41 ppts. Maintaining the credit profile of issuers and tenure of new (rolled-over) issuances constant, the higher PDS yields on the maturing corporate bonds – of which half is assumed to be replaced concurrently – had negligible impact on aggregate ICR (individual ICR of sampled corporations fell between 1.72 ppts and 5.74 ppts). In terms of the liquidity impact, CASTO ratios were less affected by the effects of higher interest expenses on ringgit variable rate loans (individual firm CASTO reduced between 0.13 ppt and 0.5 ppt), relative to outstanding non-ringgit debt (individual firm CASTO shrank between 1.06 ppts and 2.63 ppts). A cursory examination of firm-level financials suggests that the solvency positions of all sampled firms are estimated to remain intact across all simulated shocks, even when discounting the higher asset valuation effects arising from a weaker ringgit. This demonstrates that most Malaysian firms have adequate revenue generating assets to cover potentially higher foreign currency liabilities.

The direct contagion effects on the financial system arising from potential distressed corporations appear to be well contained. Cumulative asset-side shocks to the banking system from credit and market losses remained manageable at 16.8% of total banking system capital, driven primarily by the impact of earnings shock on sampled corporations. For insurers, the cumulative shocks eroded total capital available by a mere 1.1%. In terms of liability-side pressures, banks are estimated to experience erosions in the stock of liquidity buffers by up to 0.9 ppt and 0.4 ppt within the one-week and one-month maturity buckets respectively, as measured under the current Liquidity Framework. Even after simulating large withdrawals of deposits by affected sampled corporations, banks' aggregate liquefiable assets could still withstand an additional 15.9% in deposit outflows within the one-month horizon.

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