

## ASSESSING THE RESILIENCE OF FINANCIAL INSTITUTIONS

Stress testing is an integral component of the Bank's financial stability framework, used to assess and manage risks to financial stability. The Bank typically performs a multi-year, top-down solvency stress test exercise in addition to regular supervisory stress tests. These exercises aim to assess the potential impact of financial and macroeconomic strains under two hypothetical adverse scenarios on the resilience of individual financial institutions and the broader financial system. The adverse scenarios are designed to capture extreme shocks that are plausible but have a low probability of occurring.

In the BNM Financial Stability Review for First Half 2020, the actual severe economic fallout from the COVID-19 pandemic prompted the Bank to shift the focus of its top-down, scenario-based stress tests towards assessing the ability of banks to withstand the unfolding stress based on assumptions around a likely recovery path at the time. This was supplemented with additional sensitivity analyses performed under a bottom-up approach to provide more granular assessments of resilience based on the specific risk profile of individual banks. As reported, the stress tests<sup>22</sup> affirmed the resilience of banks.

The prospects of an economic recovery are clearer now than before, but considerable uncertainty remains. The Bank's latest top-down macro solvency stress test therefore seeks to further stress the resilience of financial institutions in the event the economic recovery path turns out significantly weaker than anticipated. Two hypothetical adverse scenarios are applied, with the horizon of the test extended until the end of 2022. The first adverse scenario (AS1) assumes a sharp economic downturn in the first quarter of 2021 of similar magnitude to the downturn experienced in the second quarter of 2020, before recovering at a gradual pace akin to a V-shape. Under this scenario, the initial recovery, driven by pent-up demand, is unevenly distributed across industries before gradually normalising across all sectors by 2022. Simultaneously, broad success with vaccination efforts in most countries

results in global GDP returning to pre-pandemic levels by the third quarter of 2021, further bolstering domestic economic recovery. The second adverse scenario (AS2) assumes a much sharper economic contraction in the first quarter of 2021 surpassing the deepest slump experienced in the crisis thus far. In AS2, the recovery is assumed to be sluggish and L-shaped, with GDP recording negative growth in 2021 and remaining below pre-pandemic levels even by end-2022. This scenario assumes an ineffective vaccine and a marginal contraction in global growth in 2021, which will adversely impact Malaysian exports, investment and consumption. Given extended lockdown restrictions, domestic demand suffers a prolonged slump, with labour market conditions continuing to worsen throughout 2021. Both AS1 and AS2 assume sovereign rating downgrades in 2021. The economic scenarios used in this stress test do not represent the Bank's actual expectations for the trajectory of the economy, but rather, have been developed for the specific purpose of testing the ability of financial institutions to withstand more severe and prolonged economic shocks even as economic prospects are expected to continue to improve.

The latest banking system stress test broadly follows the enhanced methodology set out in the BNM Financial Stability Review for First Half 2020, with some key enhancements to selected assumptions (Table 2.1). Notably, the test continues to assume no further repayment assistance to household borrowers after the first quarter of 2021. Any rescheduling and restructuring (R&R) of business loans is assumed to end after the second quarter of 2021.

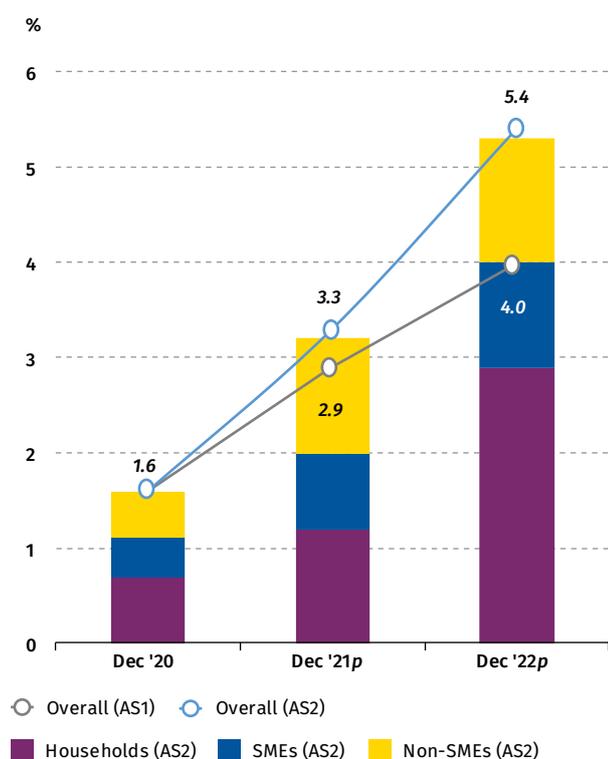
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### Financial institutions continue to remain resilient under simulated severe credit, income and funding shocks

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Under the two adverse scenarios described earlier, banks may see overall impairments rise to 4.0% under AS1 and 5.4% under AS2 by end-2022 (Chart 2.23), with businesses driving the larger share of new impairments in 2021 and households contributing the larger share in 2022. Despite the greater degree of economic stress assumed in this exercise, impairments by end-2021 are expected to be lower than the results in the previous exercise (AS1: 2.9%, AS2: 3.3%, previous: 4.1%). This is

<sup>22</sup> Refer to the information boxes on 'Key Features of the Enhanced Macro Solvency Simulation for Banks', 'Forecasting Business Impairments: Two-pronged Approach', and 'Forecasting Households' Time to Default' in the BNM Financial Stability Review for First Half 2020 for further details.

**Chart 2.23: Macro Stress Test: Banking System – Impaired Loans Ratio Under Adverse Scenarios 1 and 2**


P Projected

Source: Bank Negara Malaysia

primarily due to conservative assumptions applied previously in translating economic shocks into business impairments, where it was assumed all maturing bullet repayments in identified vulnerable business sectors would default. This has been updated to reflect the significantly better turnout for repayments that were observed, while retaining a substantial degree of conservatism in the revised assumptions used under AS2 (refer to the Information Box on 'Revised Assumptions of Maturing Bullet Business Loans' for further details).

In AS1, business impairments are driven by the default of both SMEs operating in vulnerable sectors and several non-SMEs. In AS2, higher impairments are mainly driven by SMEs as the prolonged weakness and sluggish recovery is expected to have a bigger impact on SMEs given their relatively thinner cash buffers and narrower profit margins (Diagram 2.5). For household borrowers under both AS1 and AS2, low-income household borrowers form the largest share of those projected to default, consistent with their lower financial buffers (Chart 2.25). Middle-income borrowers, however, drive the largest share of household impairments in value terms commensurate with the larger loan amounts when compared to lower-income defaulters.

**Table 2.1: Macro Stress Test: Key Changes in Banking System Stress Test Assumptions**

Aspect	Key Assumption Change
Credit risk models	<ul style="list-style-type: none"> <li>Revision of the share of maturing bullet business loans turning impaired, reflecting actual observations up to December 2020<sup>1</sup></li> <li>Revision of the definition of vulnerable business sectors<sup>2</sup></li> <li>Increase in the coverage of firms under the Cashflow Deficit Model to 798 non-financial corporate borrower groups<sup>3</sup></li> </ul>
Net interest income	<ul style="list-style-type: none"> <li>Incorporation of the impact of higher funding costs following sovereign rating downgrades</li> </ul>
Repayment assistance	<ul style="list-style-type: none"> <li>Revision of the share of business loans under repayment assistance to reflect actual experience up to December 2020</li> </ul>

Note:

<sup>1</sup> Share in previous exercise: 100%. Current share under AS1: 15%; AS2: 50%

<sup>2</sup> The following sectors are assumed as vulnerable under AS1: wholesale and retail, real estate, construction, transport and storage, and hotels and restaurants. Vulnerable sectors under AS2 include manufacturing and mining and quarrying sectors, in addition to those in AS1. The previous exercise assumed all sectors in AS2 as well as the primary agriculture sector as vulnerable

<sup>3</sup> These 798 non-financial corporate borrower groups cover about 70% of bank loans to non-SMEs (Previous exercise: 100 non-financial corporate borrower groups)

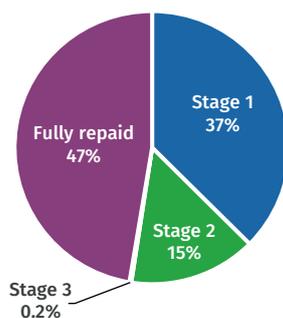
Source: Bank Negara Malaysia

## Revised Assumptions of Maturing Bullet Business Loans

In the previous exercise, the sectoral profiling model<sup>23</sup> was used to project impairments for businesses where firm-level financial data were not readily available. One of the key assumptions of the sectoral profiling model was that firms in vulnerable business sectors would default immediately on all their maturing bullet loans<sup>24</sup> as and when they become due. This assumption was premised on the large and immediate nature of bullet loan repayments, and limited visibility over the financial capacity of businesses in vulnerable sectors to meet such payments given the pandemic. Coupled with the high degree of uncertainty then, this highly conservative approach allowed the Bank to assess if banks could withstand harsher realisations of given economic shocks. Based on this assumption, maturing bullet business loans over the stress test horizon contributed 35% of new banking system impairments, or 28% of the increase in total credit costs to banks in the previous exercise.

With greater visibility over the actual repayment behaviour following the end of the blanket automatic loan moratorium, the Bank has refined this assumption based on observable data. Post-automatic moratorium, 47% of maturing bullet loans were fully repaid by December 2020. The remaining maturing bullet loans yet to be fully repaid had received some form of repayment assistance, with the bulk of these loans continuing to perform based on revised repayment terms. Only 15% of the total original maturing bullet repayments were assessed by banks (and reviewed by auditors) to exhibit signs of a significant increase in credit risk, while a very small portion (0.2%) of maturing bullet loans have turned impaired (Chart 2.24). Reflecting these observations, the updated stress test assumes that 15% of outstanding bullet loans of firms operating in identified vulnerable segments maturing during the stress test horizon will turn impaired under AS1. Under AS2, a considerable degree of conservatism has been maintained, reflecting lingering uncertainties over repayment behaviour. In this scenario, 50% of outstanding maturing bullet loans of firms operating in vulnerable sectors are assumed to turn impaired.

**Chart 2.24: Macro Stress Test: Business Sector – Profile of Vulnerable Sectors’ Maturing Bullet Loans Post-automatic Moratorium**



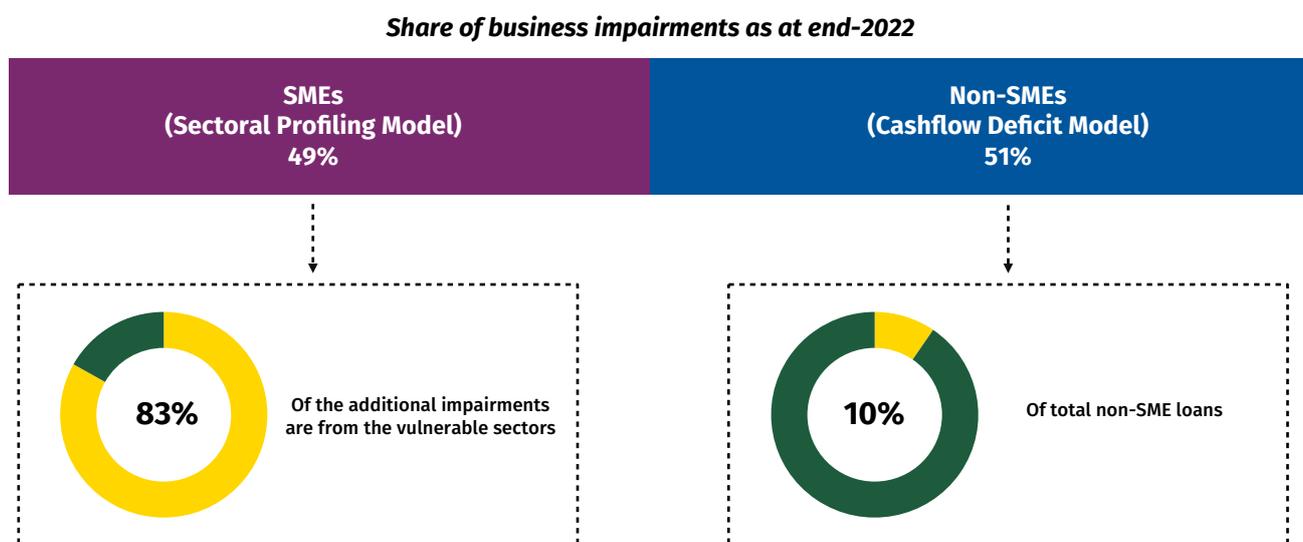
Note: Figures may not add up due to rounding

Source: Bank Negara Malaysia

<sup>23</sup> Refer to the Information Box on 'Forecasting Business Impairments: Two-pronged Approach' in the BNM Financial Stability Review for First Half 2020 for further details.

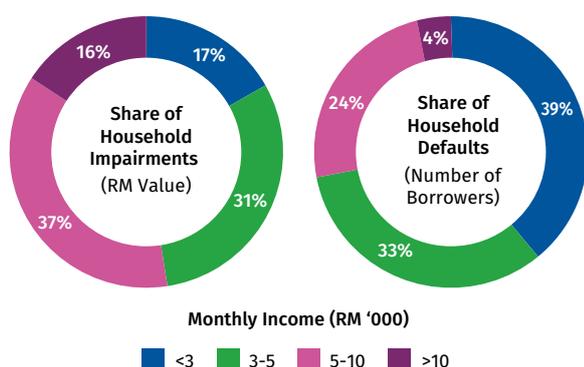
<sup>24</sup> Revolving credits are excluded as historical experience indicates that these exposures are typically rolled over.

Diagram 2.5: Macro Stress Test: Business Sector – Impairment Profile Under Adverse Scenario 2



Source: Bank Negara Malaysia

Chart 2.25: Macro Stress Test: Household Sector – Impairment Profile Under Adverse Scenario 2



Note: Figures may not add up due to rounding

Source: Bank Negara Malaysia

Credit costs under the stress scenarios are projected to amount to RM19.3 billion and RM26.2 billion (or 1% and 1.5% of total loans) for AS1 and AS2, respectively, over the two-year horizon (Chart 2.26). Banks are expected to be adequately buffered against potential credit losses, having already bolstered provisions significantly in 2020 based on banks' internal stress tests (refer to the Banking Sector section in this chapter for further information). Banks are also projected to experience lower net interest income due to higher funding costs following sovereign

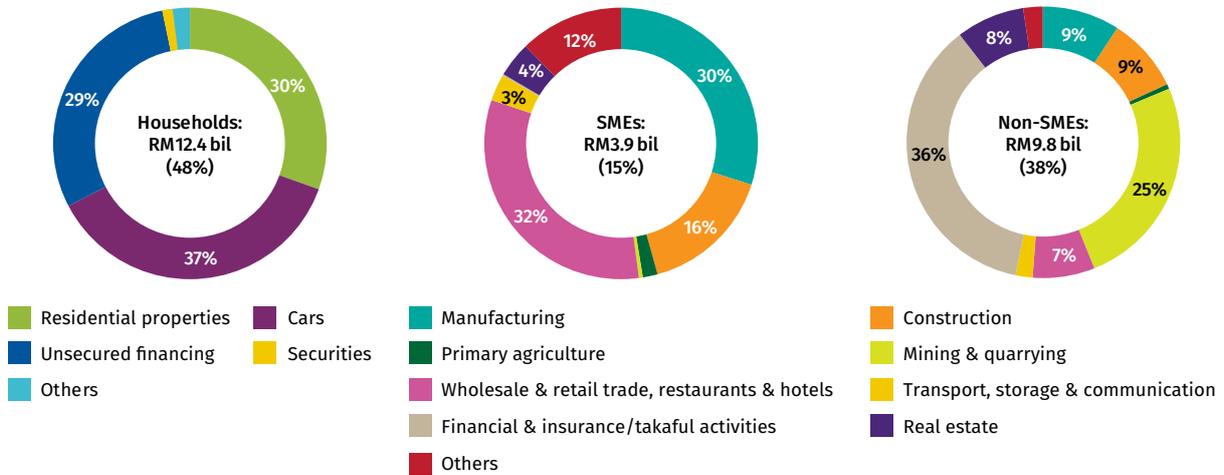
rating downgrades and weaker credit growth, although higher credit costs remain the main driver of the impact on banks' solvency positions. At the end of the stress test horizon, the banking system's capital ratio is projected to remain comfortably above the regulatory minimum, including the capital conservation buffers (Chart 2.27). Excess capital buffers are projected to decline by RM6.3 billion and RM9.8 billion under AS1 and AS2, respectively.

For insurers, the latest macro solvency stress test adopts the same adverse scenarios described earlier and additionally incorporates (i) COVID-19-related ex-gratia payments given to policyholders and higher claims for insurers without a pandemic exclusion clause, and (ii) a conservative increase in the general claims ratio by up to 17%.<sup>25</sup> Under both AS1 and AS2, the insurance sector is assessed to maintain aggregate CAR above the regulatory minimum (Chart 2.28), with capital buffers declining by RM11 billion under AS2. Market risk shocks remain the largest loss driver for life insurers under both scenarios. Meanwhile, general insurers are expected to see lower capitalisation, particularly in AS2, driven by higher claims for the motor and fire segments, and assumed reinsurance defaults (Chart 2.29). The solvency stress test exercise is supplemented with a liquidity assessment to gauge the ability of life insurers to honour expected short-term net outflows under stressed conditions,

<sup>25</sup> The average claims ratio during 2018-2019 was 59%. During the Asian Financial Crisis, the claims ratio was observed to rise by 17% to 69%.

Chart 2.26: Macro Stress Test: Banking System – Drivers of Cumulative Credit Losses Under Adverse Scenario 2

Cumulative credit losses (2021p + 2022p): RM26.2 bil

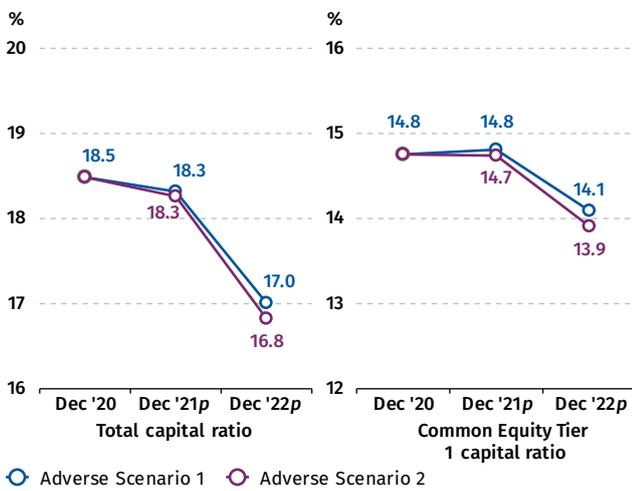


p Projected

Note: 1. (...) refers to % of overall cumulative credit costs  
2. Figures may not add up due to rounding

Source: Bank Negara Malaysia

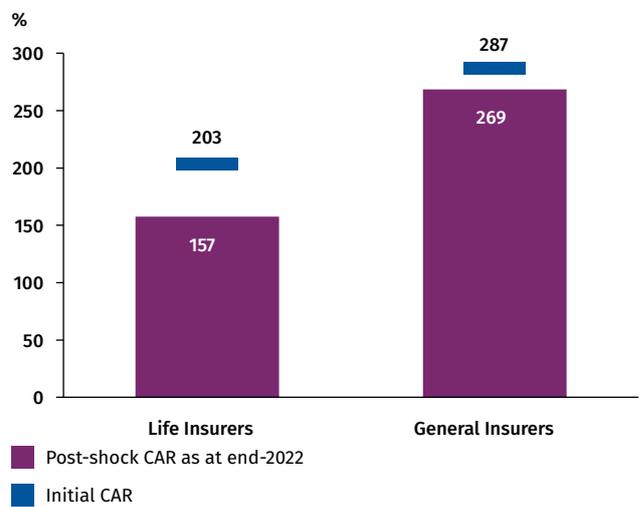
Chart 2.27: Macro Stress Test: Banking System – Capital Ratios Under Adverse Scenarios 1 and 2



p Projected

Source: Bank Negara Malaysia

Chart 2.28: Macro Stress Test: Insurance Sector - Capital Adequacy Ratio Under Adverse Scenario 2



Source: Bank Negara Malaysia

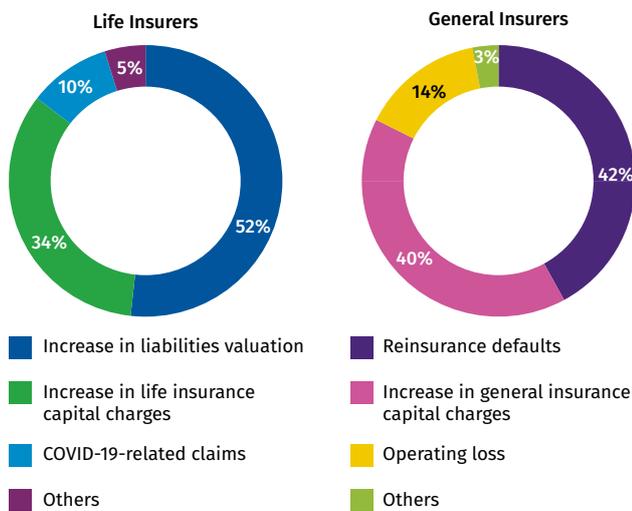
including potentially higher surrenders and COVID-19-related claims. The liquidity assessment affirmed that all life insurers have sufficient liquid assets<sup>26</sup> to fulfil these obligations.

While the overall financial system is expected to remain resilient under both simulated adverse

scenarios, heightened risk aversion by financial institutions given the uncertain and still-evolving pandemic situation could weigh on economic growth and recovery prospects. This in turn could increase risks to financial stability from more severe economic scarring. Such pro-cyclical behaviour could arise if banks are reluctant to draw down on their capital buffers despite the regulatory flexibilities accorded. The strong buffers of banks

<sup>26</sup> Refers to cash and deposits, and MGS.

**Chart 2.29: Macro Stress Test: Insurance Sector - Loss Drivers Under Adverse Scenario 2**



Note: Figures may not add up due to rounding

Source: Bank Negara Malaysia

remain important to mitigate this risk. Other factors that would reduce the resulting impact from the adverse economic shocks assumed under the stress tests include:

- Proactive management actions by financial institutions to shore up buffers through earnings retention strategies, new capital issuances, or capital injections from parent institution(s);
- Continued initiatives from financial institutions to offer short-term repayment assistance to viable borrowers, which would serve to rehabilitate and maximise the long-term viability of loans that are otherwise projected to turn impaired in the short term;
- Cures and recoveries by banks after loans turn impaired; and
- Additional policy interventions by the Bank, Government and/or other authorities to support the economy.