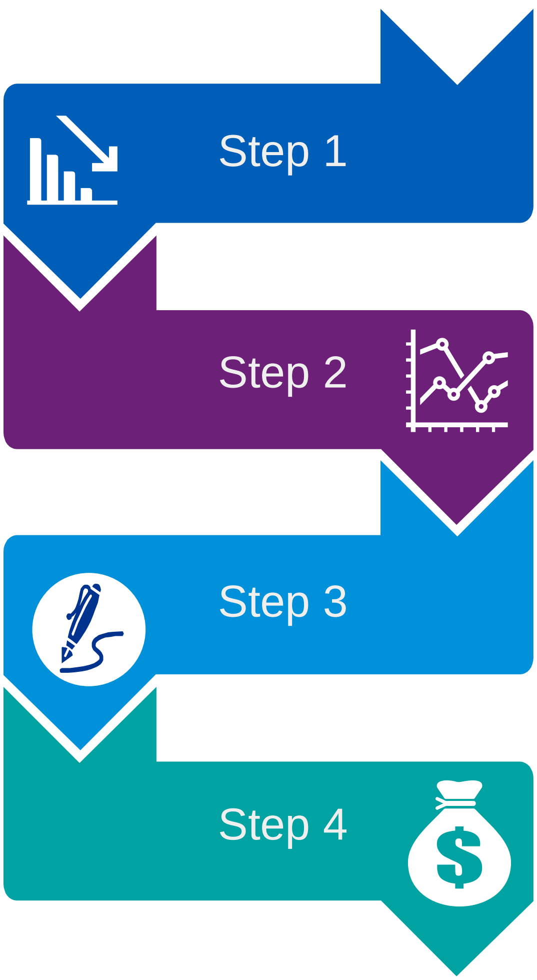
Stress testing loan portfolios in times of crisis

Credit risk trends facing the Financial Services industry in 2020
Paper 2, February 2020

Loan portfolios may be abruptly impacted due to the coronavirus outbreak, which could lead to correlated increases in default risk, higher provision rates, and an overall increase in credit risk. Although specific guidance on targeted stress tests due to the outbreak has not been issued by the regulator[1], we would recommend banks to run targeted stress tests to identify vulnerable credit, sectors and supply chains, and then take proactive action.

Quickly identify vulnerable credit and sectors



Stress loan portfolios

- Design scenarios (i.e. travel bans, supply chain shocks, retail shocks)
- Stress underlying cashflow and debt service ratios for all obligors
- Transmit impact to loan level probability of default (PD)
- Calculate expected loss and RWA for each loan
- Re-run simulation based on a range of scenarios and aggregate results

Simulate impact on IFRS 9 loan loss provisions

- Simulate stage transfers due to increases in credit risk
- Input updated macroeconomic forecasts into IFRS 9 models
- Update PDs and loss given default (LGD) based on simulation results
- Calculate IFRS 9 ECL for each loan

Identify vulnerable credit and sectors

- Individually assess any loans where obligors appear highly vulnerable to hemorrhage cash as per the stress test results
- Sector analysis reviewing aggregated impact on RWA and IFRS 9
- Contagion impact and supply chain analysis for large corporates that appear more vulnerable, potentially leveraging new BELR analytics
- Review collateral and guarantees in place

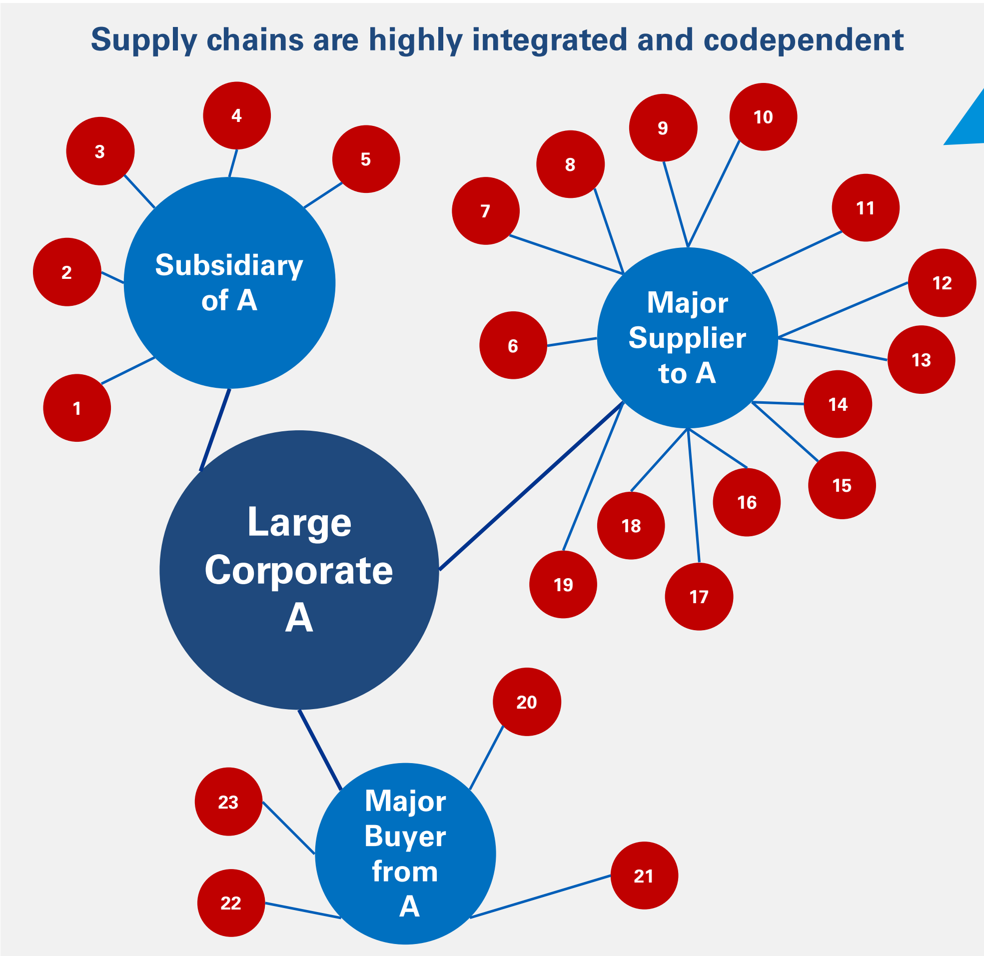
Take early action preventative measures

- Proactively target customers and sectors that have shown to be weaker as per the stress test results
- Further refine relief measures based on target groups

[1] HKMA, Circular on measures to relieve impact of the novel coronavirus
https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2020/20200206e1.pdf

Impact on supply chains could be highly correlated and severe

Disruptions to supply chains could last for many months according to some experts. It is important that the stress tests assist banks to identify vulnerable obligors that might be linked up to and reliant upon an entire supply chain ecosystem. The new HKMA requirements on **Bank Exposure Limit Rules** (BELR) requires banks to conduct detailed analytics on supply chains (top suppliers and buyers) for larger corporates. These analytics can be leveraged in the stress tests to identify which obligors in a given supply chain the bank has exposure to and how severe the impact might be. Other stress models that look at contagion within industries/supply chains over multi-period stress events can be leveraged (i.e. Davis and Lo).



First Order Impacts | Second Order Impacts | Third Order Impacts

First order impacts

- The first order impacts from the stress test will identify larger corporates (or sectors) that may be more vulnerable
- Review and conduct more thorough analysis on these obligors (or sectors) to understand the exposure profile

Second order impacts

- Conduct a thorough analysis on all large subsidiaries, suppliers, and buyers related to 'A'
- Review which of these entities the bank has direct or indirect exposure to

Third order impacts

- Analyse suppliers and buyers to second order entities to get a complete picture of potential contagion
- Identify those 3rd order entities that are major suppliers or buyers in the supply chain that the bank may have exposure to

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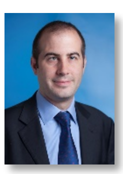

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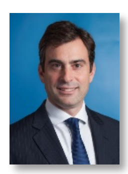

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