BANK FOR INTERNATIONAL SETTLEMENTS

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Stress testing – Executive summary

Stress tests are forward-looking exercises that aim to evaluate the impact of severe but plausible adverse scenarios on the resilience of financial firms. They involve the use of models and data at the firm or system-wide level and may rely on historical or hypothetical scenarios.

Stress test usage – financial firms

Stress tests are used by financial firms (eg banks and insurance companies) for risk management purposes. They complement a financial firm's other quantitative risk management tools by providing insights into its risk profile and alerting management to vulnerabilities in the case of exceptional events. Stress testing can also help in efforts to improve governance, data quality, quantitative analytical capabilities and risk management practices. It also fosters greater understanding of the relationship between capital, liquidity and risk. Some financial firms report headline results of a stress test in their annual reports to provide investors with a clearer picture of their financial situation.

Stress test usage – supervisory authorities

Supervisory authorities use stress tests to assess the prospective resilience of financial firms against a predefined set of risks. Central banks also conduct stress tests covering the whole or part of the financial sector to monitor risks at the system-wide level for financial stability purposes. In some cases, authorities may opt to disclose firm-level results, especially at times of heightened uncertainty around conditions in the financial system. Disclosure is less common in exercises conducted by supervisory agencies as part of a routine assessment of resilience.

Since the 2007–09 Great Financial Crisis (GFC), stress tests have become more sophisticated and more entrenched in financial firms' practices and supervisory requirements (eg see FSI Insights No 12 Stress-testing banks – a comparative analysis for an overview of the use of stress tests in banks). Firms have developed improved stress-testing models and assumptions to identify vulnerabilities, correlations between different types of risk and potential future risk exposures throughout a banking organisation.

Authorities may also conduct stress tests at times of high financial stress at the national or global level to assess the capacity of the financial sector and individual firms to continue operating during a crisis. This practice, which started during the GFC, was revived during the early months of the Covid-19 pandemic. As explained in FSI Briefs No 11 Stress-testing banks during the Covid-19 pandemic, authorities in the United States, the United Kingdom and the euro area adapted their regular supervisory stress tests to better track the specific risks of the pandemic.

Limitations

Although stress tests are valuable to firms and authorities, they have some important limitations. For instance, while stress tests can be used to identify exposures to specific events and scenarios, they do not predict the probability of such events or scenarios occurring.

Another limitation is the element of judgment required in choosing the scenarios and risks covered in the stress test. The GFC led many financial institutions and supervisory authorities to question whether stress tests before and during that period should have been more severe and whether they were appropriate given the rapidly changing circumstances.

Finally, the value of a stress test rests heavily on the quality of the data and the modelling approaches adopted for the exercise.

Microprudential and macroprudential perspectives

Stress testing can be operated at the portfolio level or that of an individual firm (ie the microprudential perspective) or at the system-wide level (ie the macroprudential perspective).

A portfolio or individual bank stress test helps to manage risks within a firm. It typically does not consider the behaviour of other financial firms but focuses solely on the resilience of one individual institution. It can be carried out either by the firm or the supervisor. A common question that such a stress test aims to answer is whether a bank has sufficient capital to withstand a given shock or, to put it another way, how severe must a shock be to deplete the bank's capital.

A macroprudential stress test is a tool designed to assess the system-wide resilience to shocks in the financial sector, which may include second-round effects emerging from linkages with the broader financial system or the economy. Information is gathered at firm level, but the analysis also provides information on common key risks and vulnerabilities across financial firms that could undermine the overall stability of the financial system. The International Monetary Fund and the World Bank started to run macro stress tests in the context of their Financial Sector Assessment Program in the late 1990s.

Guidance by global standard setters – banks and insurance companies

Global standard setters have provided guidance regarding stress tests for banks and insurance companies on account of the increasingly important role of these tools.

Concerning banks, in 2009, the Basel Committee on Banking Supervision (BCBS) issued Stress-testing principles. These were updated in 2018. In addition, and as a complement to the preparation of the principles, the BCBS conducted a survey on stress-testing practices. It surveyed 54 institutions across 24 countries (including 20 global systemically important banks) and sought direct input from supervisory authorities with responsibility for reviewing and assessing bank stress test processes. The report also included a taxonomy of stress testing-related concepts, which can help supervisors when designing their own stress-testing exercises.

The BCBS stress-testing principles provide guidance to banks and their supervisors on how best to design stress tests and make them part of a bank's risk management process. They are set at a high level so that they can be applied across banks and jurisdictions, while remaining relevant as stress-testing practices continue to evolve. The principles focus on the core elements of stress-testing frameworks. These include the objectives, governance, policies, processes, methodology, resources and documentation of stress tests.

Under Basel III, minimum capital requirements for some risks allow the use of advanced approaches based on banks' internal risk assessment systems and models. In this context, banks are required to use stress testing to supplement their models and to address cases that are not covered by the models' assumptions.

Concerning insurance companies, the International Association of Insurance Supervisors (IAIS) formalised the use of stress testing in the Insurance Core Principles (ICPs), which were updated to reflect lessons learned from the GFC. According to the IAIS ICPs, the key risks to consider in insurance stress tests include insurance risk (underwriting risks, catastrophe risks and the risk of deterioration of technical provisions) and investment, liquidity, operational, group and systemic risks.

This Executive Summary and related tutorials are also available in FSI Connect, the online learning tool of the Bank for International Settlements.