Investment portfolio stress-testing

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Jul 07, 2020

Recent events have demonstrated to advisers, clients, and wealth managers that risk remains ever-present. Beyond the challenges and implications of Brexit negotiations, the COVID-19 pandemic also hit share prices hard.

These events may leave advisers asking how such risks can be managed and discussed with clients. One approach is to stress-test investment portfolios. This article introduces portfolio stress-testing, explaining what it is and outlining how to implement it.

Assessing portfolio risk can be challenging

Extreme market moves can negatively impact portfolios in ways which may not be captured by conventional risk measures. Worse, if diversification breaks down, portfolio values may not be protected. With guidance, you may be able to determine the impact on your portfolios and arrange restructuring to limit the downside.

However, meaningfully assessing portfolio risks is challenging, particularly under severe market conditions. With on-going Brexit negotiations and fears of a COVID-19 pandemic 'second wave', advisers are likely to be concerned. For these circumstances, it may be worthwhile stress-testing portfolios against significant historical market events, or scenarios reflecting concerns.

Essentially, portfolio stress-testing helps identify and quantify risks and can show how portfolios might respond to specific market outcomes or other concerns.

What is portfolio stress-testing?

Stress-testing is a risk management tool. It examines potential portfolio downside risks or helps estimate responses under poor conditions. However, it is not guaranteed to identify the actual impacts of future events.

Stress-tests are designed to determine likely portfolio responses to adverse developments, identifying weak points to enable preventative action. They typically focus on key risks, such as credit, market and liquidity risk, with results quantified in monetary terms.

By identifying potential problems, stress-testing helps provide reassurance if no issues are detected. But it does not show how to address identified issues, or whether the selected tests capture all areas of weakness. An investment manager can add value by interpreting the results and taking action to restructure the portfolio if necessary.

How is it done?

Stress-testing includes several approaches. Two principal methods are historical or artificial stress-testing [1]. Past events can provide ideas; however, practitioners can imagine any damaging situation for investigation. Historical scenarios are re-enactments of market events while artificial scenarios are invented to capture specific concerns.

The Brexit referendum is an example where a currency devaluation scenario could have been considered, with the response based on historical currency devaluations. However, unique Brexit factors require an artificial scenario, since Brexit has never occurred before, leaving no historical data to base it on. As Brexit negotiations continue, the markets' referendum response may give a foretaste of reaction as the UK's departure date approaches.

The COVID-19 pandemic provides another example. Market reaction to historic epidemics (for example, SARS in 2002-2003 [2], swine 'flu in 2009 [3], and MERS on 2012-2013 [4]) could suggest some historical scenarios. However, the COVID-19 lockdowns imposed by national governments created a significant new dimension. Travel restrictions, combined with climate concerns, meant that fossil fuel companies were particularly badly hit. For example, the market capitalisations of nine major CO_2-emitting firms fell by between 10% and 66% from the end of 2019 to 18th March 2020 [5].

Historical versus artificial stress-testing

Historical stress-testing's strength is that assets behaved that way sometime in the past, adding credibility. Although, if markets have changed since the period of the historical scenario (perhaps regulatory changes), that response may no longer be possible. Also, past events can be 'messy', making it hard to isolate individual aspects.

Artificial tests may lack credibility: is the proposed scenario possible? How can one include all responses, direct and indirect, to portfolio assets? However, they can address anticipated market changes, perhaps regulatory developments or new currencies, or isolate specific concerns.

Other types of tests explore diversification, liquidity or shock-specific factors, or estimate worst outcomes.

Implementing portfolio stress-testing

Any set of potential market concerns could form the basis for a stress-test. However, experience and judgment are required to create a useful test. Assumptions should be broadly 'unlikely but plausible' [6]. Stakeholder involvement also matters. Portfolio managers can identify issues of concern and the severity of scenarios and stress-testing can support the quality of their investment decisions. After all, more robust investment outcomes should enhance their reputation. Scenarios should also be periodically reviewed and adjusted to maintain their usefulness, establishing good discipline, and learn from experience.

Advisers can consider test outcomes against portfolio objectives. If a stressed scenario has little impact, it reassures that the event may matter less than feared. Conversely, if results suggest the portfolio may be severely impacted, it can be restructured to make it more resilient.

How this helps advisers

A programme of stress-testing, with documented scenarios, methods, and outcomes, makes clear that managers and advisers are actively protecting portfolio values against extreme market events. Managers can demonstrate that they are working hard to protect client portfolios, and financial advisers be reassured that robust investment processes are in place.

Notes

[1] Q. G. Rayer, "Dissecting portfolio stress-testing," *The Review of Financial Markets,* vol. 7, pp. 2-7, 2015

[2] World Health Organisation, "Summary of probable SARS cases with onset of illness from 1 November 2002 to 31 July 2003," WHO, 31 December 2003. [Online]. Available: https://www.who.int/csr/sars/country/table2004_04_21/en/. [Accessed 29 June 2020]

[3] World Health Organisation, "WHO recommendations for the post-pandemic period," WHO, 10 August 2010. [Online]. Available: https://www.who.int/csr/disease/swineflu/notes/briefing_20100810/en/. [Accessed 29 June 2020]

[4] World Health Organisation, "Middle East respiratory syndrome coronavirus (MERS-CoV)," WHO, November 2019. [Online]. Available: https://www.who.int/emergencies/mers-cov/en/. [Accessed 29 June 2020]

[5] Macrotrends, "Stocks," 29 June 2020. [Online]. Available: https://www.macrotrends.net

[6] M. Crouhy, D. Galai and R. Mark, The essentials of risk management, 2nd ed., New York: McGraw-Hill Education, 2014.

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This article may be cited as: Q G Rayer (2020), Investment portfolio stress-testing, EMBARK platform article, https://embarkgroup.co.uk/insights/investment-portfolio-stress-testing/, 3 pages, 7 July 2020.