

# Managing risk: stress-testing investment portfolios

By Quintin Rayer | Jan 26, 2017



Risk is always a hot topic with our readers so we are delighted to share this informative article written by Dr Quintin Rayer, Head of Research at P1 Investment Management (P1), on the stress testing of investment portfolios. This is an important aspect of P1's investment approach, a discretionary manager you can find out more about at the end of this post.

## **Assessing portfolio risk in a meaningful way can be challenging**

Extreme market moves can negatively impact portfolios in ways which may not be captured by conventional risk measures. In addition, a breakdown in diversification may mean that portfolio values are not protected. With guidance, you may be able to determine the impact on your portfolios and arrange for appropriate restructuring to limit the downside.

However, assessing portfolio risks in a meaningful way is challenging, particularly under difficult market conditions. For these conditions, it may be worthwhile stress testing a portfolio against significant historical market events, or scenarios that reflect particular concerns.

Essentially, portfolio stress testing helps to identify and quantify risks and so can give some reassurance as to how portfolios might respond to specific market outcomes or other concerns.

## **So, what is portfolio stress-testing?**

Stress testing is a tool for risk management, looking at potential portfolio downside risk, or helping estimate responses under difficult conditions; although it is not guaranteed to identify the actual impacts of future events.

Stress tests are designed to determine the likely portfolio response to adverse developments, to identify weak points and to enable preventative action. A typical focus is on key risks, such as credit, market risk and liquidity, with results quantified in monetary terms.

Stress testing helps identify potential problems. It can reassure if no issues are detected, but not how to address those that have been identified, or even whether the selected tests identify all key areas of portfolio weakness. This is where an investment manager can add value in terms of interpreting the results and taking any appropriate action, restructuring the portfolio if necessary.

## **How is it done?**

Stress testing includes a range of approaches with two key methods being historical or artificial stress testing [1]. Historical 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 a particular concern.

Brexit is a good example where a currency devaluation scenario could have been considered before the referendum, with response based on previous currency devaluations – a historical scenario. However, if unique Brexit factors are considered, this necessitates an artificial scenario, since Brexit has never occurred before, so there is no historical data to base it on.

## **Historical vs. artificial stress-testing**

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

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

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

### **Implementing portfolio stress-testing**

Any set of potential market concerns could be regarded as the basis for a stress-test. However, experience and judgment is required when creating a useful test, and the assumptions that are made should be broadly 'unlikely but plausible' [2].

Stakeholder involvement matters. Portfolio managers can identify issues of concern and the severity of scenarios and should see stress testing as supporting 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 to learn from experience.

Managers and advisers can consider test outcomes against portfolio objectives. If a stressed scenario has little impact, it reassures that the event may be of lesser concern than feared. Conversely, if testing suggests the portfolio may be badly impacted, it can be restructured to make it more resilient.

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. This helps demonstrate that managers are working hard to protect client portfolios and financial advisers can be reassured that robust investment processes are in place.

### **References**

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

[2] M. Crouhy, D. Galai and R. Mark, *The Essentials of Risk Management*, 2nd ed., New York: McGraw-Hill Education, 2014.

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