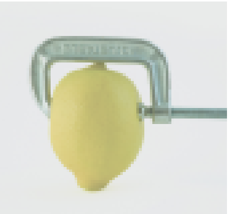


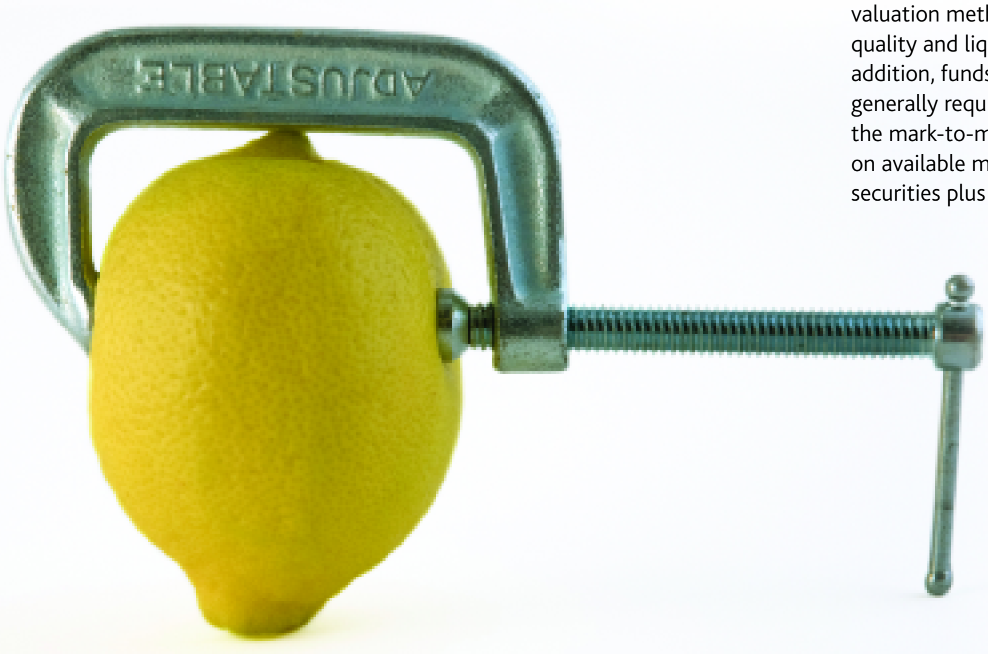
Why stress is a good thing

MARK STOCKLEY CONSIDERS THE IMPORTANCE OF STRESS TESTING FOR MONEY MARKET FUNDS.

Today stress testing is an integral component of global banking regulators' assessment of the strength of the broad financial services industry as well as that of individual banks. One of the most notable applications in recent years took place in mid-2009, shortly after the height of the 2007–2009 credit crisis, when the US Federal Reserve conducted stress tests of the leading US banks to assess their levels of capital and ability to withstand further shocks in the economy. More recently in 2011 the European Banking Authority performed stress tests on a number of banks in the EU to assess their resilience in the face of deterioration in key macroeconomic variables.

While stress testing has proved important and topical for the global banking industry, it has also increased in visibility and importance for the global money market fund (MMF) industry. However, for many of the world's leading asset management firms, stress testing is not a new concept but an established practice within the risk management framework supporting their money market funds.

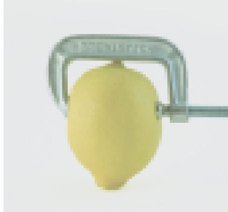
This article discusses the importance of stress testing to the MMF industry, highlights a number of the key risks that stress testing helps to mitigate and briefly describes a number of the reports and practices implemented by the BlackRock cash management business.



WHY IS STRESS TESTING IMPORTANT FOR MONEY MARKET FUNDS? One of the defining features of MMFs managed according to Rule 2a-7 in the US and the majority of funds following the IMMFA code of practice in Europe is their stable or constant net asset value (NAV) per share. This feature allows investors – whether corporations, governments, financial institutions or individuals – to receive the benefits that such funds can provide (eg. principal stability, liquidity, underlying security diversification, exposure to asset management expertise and resources, and accounting simplicity) while investing in a vehicle which has a primary goal of NAV stability.

To maintain a constant NAV, funds value portfolio securities at their acquisition cost adjusted for amortisation of premium or accretion of discount. This is known as amortised cost accounting. MMFs are permitted to use this valuation method due to the short-dated, diversified, high-quality and liquid nature of their underlying investments. In addition, funds that use the amortised cost method are generally required to calculate a separate NAV – often called the mark-to-market (MTM) or shadow NAV – which is based on available market quotations for the funds' portfolio securities plus undistributed realised gains and losses. There are typically very small daily market price movements that affect the securities in a fund's portfolio.

MMFs managed according to Rule 2a-7 or stable NAV funds following the IMMFA code of practice follow similar rules: so long as the mark-to-market NAV is within 0.5% of the cost price of one share or the unit of a fund's reference currency (between 0.995 and 1.005) of the NAV calculated using the amortised cost method, a fund is permitted to continue using



amortised cost accounting and to conduct purchases and redemptions of its shares at 1.00 per share. In the event that the mark-to-market NAV deviates from the fund's amortised cost price per share by more than 0.5% of one share or unit per share (commonly referred to as "breaking the buck"), the fund is required to consider promptly what action should be taken, which may include suspending the use of amortised cost accounting.

At a broad level, mark-to-market NAV movements for MMFs are typically caused by changes in factors such as levels and direction of interest rates, prevailing economic conditions, credit conditions affecting individual issuers, and investor purchase and redemption activity within the fund. Stress testing is critical for MMFs in that it models their ability to maintain a stable NAV per share when faced with hypothetical changes in one or more of these factors.

HOW TESTING MITIGATES KEY RISKS Testing helps to monitor both the overall portfolio impact from changes at the macro or economy-wide level and the impact of specific market conditions or events on individual portfolio securities. It is typically conducted on a regular basis and modified as underlying market conditions change. The stress tests applied to MMFs typically monitor several key risks:

- **Interest rate risk**: the risk to a fund's NAV from interest rate changes or parallel and non-parallel shifts in the yield curve.
- **Spread risk**: the risk that narrowing or widening yield spreads versus an appropriate benchmark such as a specific US Treasury maturity (eg. one year) will have an NAV impact on the fund.
- **Liquidity risk**: the risk to a fund's NAV from experiencing significant redemptions and the fund's ability to withstand the impact of such outflows.
- **Credit risk**: the risk that potential downgrades or defaults on individual or multiple portfolio securities will have an NAV impact.
- **Combination events**: the risk that a combination of interest rate, liquidity and/or credit events will have an NAV impact.

HOW STRESS TESTING IS PERFORMED AT BLACKROCK
At BlackRock, the risk and quantitative analysis group is responsible for overseeing and implementing risk management activities and employs a range of activities to conduct and review stress test results. BlackRock's liquidity portfolio management group will then apply the intelligence produced by these reports to structure portfolios in meeting the funds' investment objectives.

The risk and quantitative analysis group uses historical (2007–2009), empirical (adjustments for economic indicators) and ad hoc data to conduct tests. Typically, two approaches are implemented: reverse stress tests and scenario sensitivity analysis. Reverse stress tests start from a known stress test result (eg. the fund's mark-to-market NAV dropping to 0.9950 or another designated level) and seek to determine what events could lead to such an outcome. The scenario sensitivity analysis demonstrates how the fund's mark-to-market NAV will be affected in the event of hypothetical or historical stress scenarios.

BLACKROCK'S STRESS TESTS Our stress tests are designed to provide all investment professionals with an understanding of each fund's ability to maintain a stable NAV during periods of volatility. As described above, the tests include scenarios related to redemptions, credit events, shifts in interest rates and widening of spreads. A client volatility analysis is also performed to evaluate the funds' ability to meet the daily liquidity needs of shareholders. Some of the tests we perform are:

- **Liquidity tripwire report**. This report provides a daily summary on the funds and analyses three scenarios required for a fund's MTM NAV per share to drop to 0.9950: the minimum size of a parallel shift in rates, the minimum size of spread widening, and the maximum level of redemptions a fund can meet before the threshold of 0.9950 is reached.
- **Cash redemption report**. The purpose of this report is to stress test the liquidity of a fund. The report, which is produced daily, calculates hypothetical extreme outflows based on historical cashflows from the previous three months. It also calculates the level of daily and weekly liquidity of a fund, and measures whether the amount of such liquidity is likely to be sufficient to meet anticipated liquidity requirements.
- **Stress scenarios report**. This report demonstrates the impact on a fund's MTM NAV per share under 14 hypothetical stress scenarios. It is produced on a monthly basis, or more frequently if conditions warrant. The scenarios utilised are based on the conditions used in the liquidity tripwire report: curve shift, spread widening and redemptions. This report assesses the impact on the fund's MTM NAV per share when subjected to different levels of shocks. Various factors are analysed concurrently.

A CRITICAL TOOL Stress testing is critical in managing the risks associated with money market funds. It allows asset managers to continually monitor and adjust their portfolios depending on existing and anticipated market conditions. Particularly importantly, it helps managers to construct portfolios that can withstand severe stress and thereby maintain their stable NAVs under both benign and troubled market conditions.

BlackRock has a proven track record of managing risk. While regulators and industry associations now respectively require or recommend the implementation of stress testing for MMFs, we have been a long-standing proponent and employer of stress testing for our cash portfolios globally. We believe the discipline associated with conducting stress tests is important for the industry and shareholders, and critically, for effectively managing risk.

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