

# Executive Briefing

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## Parsing the financial crisis: First evidence of a lost decade

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FROM SMU COX SCHOOL OF BUSINESS

Many financial experts classify this recent financial crisis as the most severe since the Great Depression. New research by Finance Professor Kumar Venkataraman of SMU Cox and co-authors analyzes the trading difficulties for institutional investors, market behavior and liquidity during the 2007-2008 period of the financial crisis. This first documented evidence of what occurred in the markets focuses on the large institutional investors like mutual funds and pension funds, comprising about 70% of the market. How they managed during the crisis impacts a large swathe of U.S. investors, their 401(k)s, pensions, and mutual fund investments.

### Portfolio double whammy

"For an average investor in mutual funds, who is saving for retirement, these trading costs of mutual funds are similar to brokerage commissions, notes Venkataraman. "It's something that you have to pay to get the job done. These costs matter because they are large and will impact the wealth available at retirement." The research shows that because liquidity dried up during the crisis, the average institution paid two to three times the pre-crisis costs to get trades executed. The average cost to complete an institutional trade increased from .12% pre-crisis to about .35% during the peak of the crisis. Small cap stock liquidity declined even more sharply. Trading costs for small stocks increased from 0.18% pre-crisis to 0.76% during the peak. He adds, "Over the last decade, we observed a very secular decline in trading costs because of electronic trading, technological improvements, transparency, and competition among exchanges. But in 2008, these long-term trends were reversed."

Investors unknowingly took a double hit. Not only did investors take the hit from declining stock values but also their portfolio's were hit from the higher costs of trading, further compounding the agony. Market downturns are characterized by a decline in both asset prices and liquidity. For this reason, institutions need to be concerned not only about asset price declines, but also their ability to liquidate portfolios at low cost during a downturn. The flight-to-quality effect causes a greater gap in the ease of trading between low-margin and high-margin securities in a downturn. To meet liquidity demands during a downturn, investors can choose to sell those securities that are easier and less costly, that is whose liquidity is less sensitive to market declines. Owning an asset with low sensitivity (or low liquidity beta) acts as a liquidity hedge (i.e., an insurance policy) during a downturn, such as a large cap stock like GE. In general, selling was several times more expensive than buying during the crisis.

Trading problems for institutions are severe during a financial crisis. In a market decline, institutions are more likely to experience a fire sale of assets in order to meet margin calls from brokers and redemption requests from fund investors, i.e., abnormal selling pressure. Even under normal market conditions, institutions must purchase liquidity from a dealer or employ complex trading strategies to execute their large orders. So when risk aversion sets in during a crisis, more selling occurs and less buying, so there can be an excess supply in the broker's orders. Several

prime brokers sustained large losses like Bear Stearns, Merrill Lynch and Citi, and faced capital declines that impaired their ability to make markets for stocks to trade in.

### **Some fared worse**

Other measurable effects occurred during the crisis. Some securities can experience larger declines in liquidity during a down market. Less liquid stocks decline more severely than others. In the crisis study period, small cap stocks were harder to trade and experienced greater declines relative to large cap stocks. Trading costs for small cap stocks increased from 0.18% pre-crisis to over 0.76% in November 2008. The study examines large proprietary (non-public) data of institutional investor transactions that can track order-splitting strategies and can therefore measure the true cost of trade executions for institutional investors. (This is a big deal because an analysis using bid-ask spreads or trade prints alone cannot measure institutional trading costs.)

A striking result relates to how institutions responded to the liquidity decline during the crisis. The study documents that institutions with an urgent need to raise cash tilted their selling toward more liquid stocks. Specifically, large cap stocks experienced an 8% increase in selling activity while small cap stocks selling activity dropped by over 40% during the height of the financial crisis. In other words, there was a "flight-to-quality" effect and large cap stocks served the role of an insurance policy when things got bad.

The results suggest that institutional trading costs are less predictable when funding liquidity is scarce. During shocks such as the Lehman Brothers collapse, trading costs and the risks surrounding executing trades increased. The increase in trading costs in 2007-2008 is borne almost entirely by high-cost institutions, those that trade in the least cost-effective manner. In the study's proprietary database analysis, low-cost institutions actually improve their execution costs in the liquidity shock period.

Thus, the difference in trading costs across institutions stems from how institutions trade rather than what they trade. Some institutions were able to insulate themselves, indeed even get a premium for liquidity provision during the financial crisis.

Playing it back, the availability of cheap credit and decline in lending standards led to a boom in housing prices. Leading up to the crisis, financial institutions increasingly financed their asset holdings with short-term maturity instruments, exposing them to funding shocks when they couldn't roll them over. The crisis in the funding market spilled over to the equity market when institutions sold equities to raise cash.

### **Crisis primer**

The first signs of the crisis were observed in the summer of 2007. In August 2007, the high correlation in trading strategies among the quant-funds caused the U.S. equity market to decline by almost 8% within a week, the "quant event." During the rest of 2007 and leading into early 2008, financial institutions continued to take large losses on structured products, triggering a large sell-off in equity markets worldwide.

The first major collapse of a large institution occurred in March 2008 when the investment bank, Bear Stearns, was acquired by J.P. Morgan in a government orchestrated bailout. Bear Stearns was the smallest, most levered investment bank with large mortgage-backed exposure. During the summer of 2008, several large financial institutions, including IndyMac, a large private mortgage broker, Fannie

Mae, and Freddie Mac, were taken over by the Federal Deposit Insurance Corporation (FDIC) or were rescued by government guarantees.

The global financial system teetered on the brink of collapse in the last few months of 2008. (A significant event during these months was the bankruptcy filing by Lehman Brothers, a large investment bank.) More uncertainty ensued with a lack of clear government policy.

Two key factors contributed to the crisis of 2007-08: excess borrowing and the maturity

mismatch on the balance sheet of financial institutions. A shock to an institution's funding liquidity — the ability to raise funds by posting an asset as collateral — can cause a decline in market liquidity, the ability to raise funds by selling the asset. The process of de-leveraging in response to a funding shock can cause a number of institutions to sell similar securities at the same time, which can cause a decline in security value, and force further fire sales to meet new margin calls, leading to a liquidity spiral.

### **A lost decade**

The U.S. has experienced a lost decade in market quality. Because of the financial crisis, liquidity —the ease with which an investor can trade into and out of a stock—has suffered. Venkataraman says, "We looked at the cost of executing large bloc trades in 2008, and the cost increased significantly. In other words, liquidity froze up, dried up, and institutional investors had to pay a big mark up." For this reason, the cost of implementing a trade in 2008 was similar to that of 1999. Over the last decade, a number of regulatory reforms were implemented, such as Decimalization, Regulation NMS, and Regulation Fair Disclosure, coupled with technological advances in trading, that decreased the cost of executing trades by 50%. However, the liquidity improvements achieved over the last decade are eroded.

How institutions trade, stocks behave, and liquidity configures and re-configures matters. Institutions are more concerned about liquidity risk than retail investors. They move large sums of investor money across markets and therefore have to be extremely mindful of trading at the least cost, a fiduciary duty to their clients. Venkataraman believes that execution costs, the cost of implementing trades, should also be disclosed to investors as their numbers are large and meaningful.

While liquidity is likely better in 2009, than in 2008, Venkataraman says it still isn't close to pre-crisis levels. "Intermediaries who provide liquidity in financial markets need credit; credit is still in short supply."

### **Traders rise, fall and credit**

In the crisis, the research shows that trader skill mattered a great deal. Recent regulatory reforms to improve market structure were geared toward protecting naïve traders. "Smart traders know where to find the best execution within a market," says Venkataraman. "Naïve traders don't have that skill. Technology and regulation have forced stronger integration of trading markets, so that transaction costs of skilled and unskilled traders have converged." But during the crisis, when liquidity vanished, skill became important. Technology couldn't protect you, adds Venkataraman. "It became harder to find the other side, to locate a counterparty. So really good traders know how to handle this. They made calls to colleagues to find out about what was trading where."

Aside from secondary markets, for getting in and out of GE stock to raise cash, the relationship between credit in the market and liquidity are reinforced. The

intermediaries like Lehman Bros. Goldman Sachs and broker/dealers provide liquidity based on borrowed money to hold an inventory of shares. When credit declined for these intermediaries, there's a shock to their funding (as measured by VIX and the TED spread). In such a decline, if funding is not available, then liquidity in secondary markets also declines. "Credit is lubricant necessary to keep markets running smoothly," affirms Venkataraman. "Our evidence suggests that secondary markets also feel the brunt of a lack of credit available to traders."

This early research using the financial crisis as its laboratory supports numerous academic theories. With mounting opinion pieces and commentary over the year, hard evidence finally speaks.

The paper, "Market crashes and institutional trading: Evidence from U.S. equities during the financial crisis of 2007-08," by Kumar Venkataraman of Southern Methodist University's Cox School of Business, Amber Anand of Syracuse University, Paul Irvine of University of Georgia, and Andy Puckett of University of Tennessee, is under review.

*Written by Jennifer Warren.*

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