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# Hedge Funds and Systemic Risk

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## Summary

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Hedge funds are a dynamic part of the global financial system. Their managers engage in innovative investment strategies that can improve the performance of financial markets and facilitate the flow of capital from savers to users. Although hedge funds play a useful role in the financial system, there is concern that they can contribute to financial instability. The collapse of Long-Term Capital Management (LTCM) in 1998 raised awareness that hedge funds could be a source of risk to the financial system. Hedge funds also invested heavily in many of the financial instruments at the heart of the financial crisis of 2007–2008, and it is appropriate to ask whether they contributed to the crisis.

This report explores the extent to which hedge funds create or contribute to systemic risk. By *systemic risk*, we mean the risk of a major and rapid disruption in one or more of the core functions of the financial system caused by the initial failure of one or more financial firms or a segment of the financial system. To do this, we explore the role hedge funds played in the financial crisis. We also examine the consequences of the 1998 failure of LTCM, a large hedge fund. In addition, we examine whether and how the recent financial-reform legislation, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, addresses the potential systemic risks posed by hedge funds.

The analysis is based on review of relevant literature; interviews with 45 people, including hedge fund managers, hedge fund lawyers, investors, regulators, staff of industry associations, congressional staff, researchers, and policy analysts; and analysis of data provided by a leading firm that compiles statistics on hedge fund operations and performance.

## Overview of the Hedge Fund Industry

Generally speaking, hedge funds are investment pools that can solicit funds from large institutions and wealthy investors but not from the general public. As a result, they face fewer restrictions than funds that are marketed to the general public, such as mutual funds. Unlike mutual funds, hedge funds can use leverage without limit, can engage in short sales,<sup>1</sup> can impose restrictions on investor withdrawals, are free to pursue any investment strategy they choose, and are exempt from many reporting and other regulatory oversight requirements. Salient characteristics of the industry follow:

- The investor assets managed by the hedge fund industry (assets under management, or AUM) have grown rapidly in the past 15 years but are still not large compared with mutual funds (one-tenth as large) or banks (one-sixth as large). Hedge funds do, however, account for a substantial share of the trading volume in many markets.
- The sources of hedge fund capital are diverse, with a least one-third coming from pension funds, endowments, and foundations. Hedge fund returns thus do not benefit just wealthy individuals but individuals across the economic spectrum.
- A sizable proportion of the AUM industry-wide is invested in a relatively small percentage of funds: More than 70 percent of AUM is invested in less than 10 percent of the approximately

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<sup>1</sup> A short seller essentially sells a security first and buys it back later. Long investors do the reverse.

10,000 funds worldwide.<sup>2</sup> That said, the industry is not considered concentrated according to standard measures of industry concentration.

- Even though short sales are a central part of many hedge fund investment strategies, hedge funds take both long and short positions. In fact, a much higher percentage of AUM is in funds that invest only long or have a long bias than in funds with a short bias.

Hedge funds can, in principle, contribute to systemic risk through a credit channel and a market channel. Systemic risk can arise through the credit channel when hedge fund losses result in default to creditors and the financial institutions with which they do business and these losses go on to cause broader problems in the financial system. Systemic risk through the market channel can arise when hedge funds drive unsustainable increases in asset prices during financial booms or contribute to price declines that overshoot long-run market equilibrium in financial crises.

## **Hedge Fund Contributions to the Financial Crisis**

Our assessment is that hedge funds were not a primary cause of the financial crisis, although some aspects of their operations contributed to the crisis. The roles played by credit-rating agencies, mortgage lenders, and inadequately backed credit default swaps (CDSs) were far more important. In this section, we summarize our findings on hedge fund contributions through the credit and market channels.

### **Contributions to the Financial Crisis Through the Credit Channel**

Hedge funds suffered substantial losses during the financial crisis, and approximately 18 percent of funds (in number) were liquidated in 2008.<sup>3</sup> However, there is little indication that hedge fund losses led

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<sup>2</sup> Data provided to the authors by eVestment|HFN.

<sup>3</sup> Data provided to the authors by eVestment|HFN.

to significant losses at prime brokers and other creditors.<sup>4</sup> It appears that prime brokers and other hedge fund creditors required adequate margin and collateral to protect themselves against hedge fund losses.

### **Contributions to the Financial Crisis Through the Market Channel** ***Buildup of the Housing Bubble***

Hedge funds were on both sides of the subprime-mortgage market. On the one hand, hedge funds invested in the mortgage-backed securities (MBSs) and collateralized debt obligations (CDOs) that contributed to the buildup of the housing bubble. Conversely, by shorting subprime mortgages and banks that were heavily exposed to subprime debt, hedge funds called attention to the growing bubble. They also provided funds to this market at the trough of the crash, possibly limiting further declines. In light of these opposing factors, no strong case can be made that hedge funds were a significant contributor to the financial crisis through the buildup of the housing bubble. Other factors, such as the behavior of credit-rating agencies, the availability of inadequately backed CDSs, and careless lending practices appear to be far more important.

### ***Hedge Fund Deleveraging***

In reaction to substantial losses in MBSs, Wall Street banks began to reduce the credit available to some highly leveraged hedge funds in the summer of 2008. At the same time, hedge funds faced unprecedented withdrawals by their investors. These forces created pressures on hedge funds to sell assets during the peak of the financial crisis, potentially contributing to the rapid decline in asset prices. Rapid declines in asset prices can create self-reinforcing cycles of margin calls, additional asset liquidations, and further price declines.

The pernicious effects of deleveraging are magnified by lack of liquidity and leverage. The evaporation of liquidity in many markets during the financial crisis caught many hedge fund managers by surprise and demonstrates how assumptions about liquidity can quickly

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<sup>4</sup> A prime broker is an institution (or part of an institution) that offers various settlement, custody, and financing services to hedge funds and other specialized investment or dealing operations.

break down. Data are not available, however, to determine the extent to which hedge funds were forced to sell in illiquid markets, further deepening the financial crisis.

Even though some hedge funds are highly leveraged, hedge fund leverage does not stand out as a central contributor to the financial crisis. Hedge fund leverage started to decrease prior to the first signs of the financial crisis in mid-2007, even as the leverage of investment banks, commercial banks, and the financial sector as a whole continued to increase. At the peak of the crisis in late 2008, investment banks had the highest leverage.

No strong conclusions can be made about the extent to which hedge fund deleveraging contributed to the financial crisis. There is evidence that hedge funds contributed to downward price pressure and withdrew liquidity in some markets, but it is hard to assess whether the effects were substantial. What is more, investor inflows into funds that invest primarily in mortgage-related securities suggest that hedge funds also injected liquidity into some markets.

### ***Short Selling***

Short selling is a central part of many hedge fund investment strategies, and hedge fund shorting has been blamed for contributing to the financial crisis. The U.S. Securities and Exchange Commission's (SEC's) ban on shorting financial stocks between September 19 and October 8, 2008, indicates that at least some in government were concerned about the impact of short selling. Although some studies identify short selling as a significant contributor to the financial crisis, the bulk of research does not conclude that short selling played a major role. The banks' financial problems were much more directly related to their exposure to toxic mortgage assets and investor realization of the extent of this exposure than to the short selling of their stocks by hedge funds.

### ***Hedge Fund Runs on Prime Brokers***

During 2008, hedge fund managers withdrew tens of billions of dollars in assets from prime brokers and their parent investment banks. These withdrawals were essentially a run on the bank, analogous to bank runs by individual depositors during the Great Depression, and contributed to the financial crisis. Even though hedge fund withdrawals arguably weakened some prime brokers and their parent organizations, there were valid reasons for the withdrawals. Hedge funds were concerned that their assets could be frozen if the banks that held them declared bankruptcy. Such a worst-case scenario did indeed occur in the September 2008 bankruptcy of Lehman Brothers Holdings.

## **Potential Contributions to Systemic Risk and Regulatory Responses**

Although hedge funds did not play a pivotal role in the financial crisis, examination of the crisis reveals ways in which they can potentially contribute to systemic risk. Similarly, review of the LTCM episode illuminates potential threats to financial-system stability. From our analysis, we identify six areas of concern regarding hedge funds' potential contribution to systemic risk:

- lack of information on hedge funds
- lack of appropriate margin in derivatives trades
- runs on prime brokers
- short selling
- compromised risk-management incentives
- lack of portfolio liquidity and excessive leverage.

We also examine the extent to which Dodd-Frank and other recent regulations allay these concerns.

### **Lack of Information on Hedge Funds**

Following the LTCM collapse and during the financial crisis, regulators complained about the lack of transparency in hedge fund posi-

tions, leverage, and asset valuation and were frustrated by their inability to collect data on hedge funds. Without such information, it is not possible to identify building systemic risk in the hedge fund industry.

Dodd-Frank aggressively addresses gaps in the information available to regulators on hedge fund operations, investment strategies, and investment positions.<sup>5</sup> The legislation will also result in far more information being available on derivatives trades, trades that were at the heart of the financial crisis, and short sales. Although these provisions are far reaching, limitations on the new information requirements remain. Foreign hedge fund advisers are exempt, which could make it difficult to assess the overall systemic risk posed by hedge funds. Many foreign jurisdictions are imposing reporting requirements similar to those in the United States, and the resulting information may improve understanding about the systemic risk posed by hedge funds globally as long as the information is comparable and shared among regulators.

Although the new information on hedge funds may be of substantial value to systemic-risk regulators, it comes at a cost. Those we interviewed believed that complying with the reporting requirements would be costly, although the demands on smaller firms are much less than on larger firms. The reporting requirements thus do not appear to create significant entry barriers. Industry participants with whom we spoke are also concerned that information provided to regulators might be publicly released, revealing the secrets of their strategies. Failure to protect sensitive information can reduce the incentives for funds to enter or remain in the business, limiting the benefits that they provide to the financial system.

### **Lack of Appropriate Margin in Derivatives Trades**

The LTCM experience illustrates the importance of imposing appropriate margin requirements on derivatives trades. Had the derivatives trades been centrally cleared by an organization that enforced appropriate margin requirements, the LTCM debacle might never have occurred. Increased market discipline following LTCM's failure

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<sup>5</sup> We use *address* to mean that an effort is being made to tackle or solve a problem. We do not use it to signal that the problem has been fixed or even lessened by the regulatory reform.

appears to have resulted in more-sensible margin requirements, but, absent regulation, the possibility remains that counterparties might once again become lax in the imposition of margin requirements.

Dodd-Frank overhauls the derivatives market, giving regulators the authority to impose margin and other requirements that will cover the risk of default. Absent the exemptions of major categories of derivatives in the rulemaking process, the reforms should help prevent the buildup of highly leveraged positions that can lead to the rapid failure of a large fund.

### **Runs on Prime Brokers**

Hedge fund runs on investment banks were a contributing factor in the financial crisis, illustrating the vulnerability of prime brokers to withdrawals by their hedge fund customers and the importance of maintaining sufficient cash and liquid assets to weather them. One might argue that the solution is for banks to maintain strong balance sheets, but economic modeling has shown how banks can be subject to runs even if many depositors know that negative information about the bank is inaccurate. There is thus a public interest in reducing incentives for hedge funds to withdraw assets from prime brokers at the first hint of trouble. The crisis demonstrates the importance of segregating hedge fund assets from assets of the prime broker's parent organization. Without such segregation, even a remote possibility of insolvency can lead to hedge fund withdrawals, increasing the probability of insolvency in a self-reinforcing cycle.

The reforms go a long way in addressing factors that can lead to hedge fund runs on prime brokers. Dodd-Frank contains provisions that protect the margin that hedge funds post with prime brokers on their derivatives positions. A prime broker must segregate these assets from its own account for certain types of swaps and give a party the option of segregating the assets for others. These new provisions should reduce the incentives for hedge funds to withdraw funds from their prime brokers at the first sign of trouble. However, the hedge funds will still have the option to deposit funds in nonsegregated accounts at foreign subsidiaries of U.S. banks. The potential remains that hedge fund runs at these subsidiaries will weaken the parent organization.

## Short Selling

Although there is little evidence that short selling by hedge funds was a significant contributor to the financial crisis, some academic researchers and industry participants remain concerned about opportunistic short selling. Concern remains that short selling by a large hedge fund or multiple hedge funds can result in an unjustified fall in stock prices or can cause a decline in the real value of the firm. The decline might be so rapid that there is no opportunity for the firm to dispel rumors about its financial health or for investors to provide additional capital before the firm collapses. Such collapses can pose a risk to the financial system and reduce the level of economic activity.

Shortly before the financial crisis, the SEC rescinded a rule that had restricted short selling in a declining market. The so-called *uptick rule* had been in place since 1937.<sup>6</sup> Following the financial crisis, the SEC reinstated a modified version of the rule. The modified approach contains a circuit breaker that is tripped if a stock price declines by 10 percent or more and a modified uptick rule that remains in place for one to two days.<sup>7</sup> The SEC has also strengthened prohibitions against naked short selling and is implementing provisions in Dodd-Frank that require public disclosure of short sales by securities on a monthly basis.<sup>8</sup>

The new restrictions on short sales limit a short seller's ability to push down prices in a declining market. However, it remains to be seen whether the 10-percent trigger and modified uptick rule are stringent enough to make much of a difference. For example, a 10-percent trigger would not have stopped what some analysts consider to be a bear raid on Citigroup in the fall of 2007. Public disclosure of short sales might make it easier to detect and deter opportunistic short selling; however, public disclosure may make hedge funds less likely to engage in short selling and reduce the benefits that they can provide to investors and financial markets. Careful analysis of the costs and benefits of the new regulations on short sales is warranted.

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<sup>6</sup> SEC, 2012, p. 15.

<sup>7</sup> SEC, 2012, p. 56.

<sup>8</sup> In a naked short sale, the short seller agrees to sell a stock without first borrowing it.

**Compromised Risk-Management Incentives**

The failure of the Bear Stearns Companies hedge funds in the period leading up to the financial crisis caused substantial losses to the parent investment bank, which was subsequently taken over by Morgan Stanley with the help of federal regulators. This sequence of events raises concerns about embedding hedge funds within larger financial institutions. In the case of Bear Stearns, reputational concerns led it to bail out the hedge funds, creating additional strain on a systemically important institution. The Bear Stearns experience more generally underscores the dangers of hedge funds that are directly or indirectly subsidized by taxpayers. Such subsidies might be due to the parent organization's access to the Federal Reserve discount window and can result if regulators rescue a fund or if a parent organization is deemed too big to fail. In such situations, hedge fund managers no longer bear the full consequences of their investment decisions, and inadequate risk management can result in the buildup of systemic risk.

Dodd-Frank limits bank investments in hedge funds (the part of the act that is referred to as the Volcker Rule). The restrictions are significant: We estimate that JPMorgan Chase, the largest U.S. bank by asset size, would be able to invest only \$3.24 billion in hedge funds, far less than the \$26 billion in AUM that was managed by JPMorgan Chase hedge funds in 2011. By limiting the stakes that banks can hold in hedge funds, Dodd-Frank addresses one way in which hedge fund managers may not bear the full cost of risk taking. Banks will be limited in how much taxpayer-subsidized capital they can invest in hedge funds, and hedge fund managers may think it less likely that they would be bailed out by taxpayer-subsidized banks.

**Lack of Portfolio Liquidity and Excessive Leverage**

Although it is difficult to come to strong conclusions about the extent to which hedge fund deleveraging contributed to the financial crisis, the potential remains for hedge fund deleveraging to cause weakness in the financial system.

High leverage does not appear currently to be a problem across the hedge fund industry, but that does not mean that it cannot increase rapidly in the future. Perhaps of greater concern than high leverage is

the potential for decreased liquidity of hedge fund investments. The financial crisis caused both hedge fund managers and investors to reassess assumptions made about the liquidity of their investments. Recent academic research suggests that it is increasingly important to pay attention to the liquidity of hedge fund investments, and regulators should realize that, even if no one hedge fund may be large enough to pose a systemic risk to the financial system, negative shocks can cause hedge funds as a group to unwind their positions at the same time, with ramifications cascading through the economy. Thus, it may not be enough to pay attention to only the largest hedge funds when considering systemic risk. The consequence for regulators is that the financial condition of the entire hedge fund industry, not just of the largest funds, is relevant.

Prior to Dodd-Frank, there was no direct regulation of hedge fund leverage and liquidity. Rather, control of leverage and liquidity relied on market discipline and indirect regulation through banks and prime brokers that were, in turn, overseen by regulators. The LTCM experience demonstrates that the oversight of hedge funds by prime brokers and other counterparties can break down, while the track record in the ensuing years illustrates that this type of indirect regulation can work. However, there is no guarantee that market discipline and indirect regulation will remain strong. Once memory of LTCM and the financial crisis recedes, oversight by prime brokers and other creditors might weaken.

Dodd-Frank provides a framework for financial regulators to directly regulate hedge fund investment practices that contribute to systemic risk, including the establishment of leverage and liquidity requirements. Regulators have recently adopted criteria that will be used to designate hedge funds as systemically important nonbank financial companies (SINBFCs), which would then be regulated by the Federal Reserve Bank. It remains to be seen how many hedge funds will be so designated, but initial indications are that the number will be small or modest. Not many funds exceed the \$50 billion in total assets<sup>9</sup>

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<sup>9</sup> In contrast to the AUM measure used earlier to characterize the size of hedge funds, *total assets* reflects the overall positions of the fund. As a first approximation, it equals investor

that will be used in the first step in the screening process, and funds that pass the first screen may subsequently be dropped from consideration in later stages of the multistage designation process.<sup>10</sup>

It may well be appropriate that very few hedge funds be designated as SINBFCs. Indeed, a reasonable regulatory strategy is to induce large hedge funds to reduce their size so that they are not considered systemically important. However, two observations are worth making. First, the designation of only a small number of SINBFCs means that the oversight of hedge funds will rely on market discipline and indirect regulation. Market discipline can erode, and it is difficult to see how prime brokers could effectively monitor systemic risk in some dimensions. For example, a prime broker does not appear particularly well equipped to monitor the liquidity risks posed across the hedge fund industry because it is common practice for one hedge fund to use multiple prime brokers. Second, a firm-by-firm designation process does not address the risk of a large number of medium-sized firms following similar investment strategies. Dodd-Frank gives financial regulators a great deal of discretion in crafting regulations, so regulations could, in principle, be tailored to address industry-wide liquidity issues. However, there is no guarantee that such risks will be addressed.

Position limits authorized by the act can also reduce concentration and, in principle, increase the liquidity of hedge fund portfolios. There are reasons, however, that the effectiveness of position limits may be compromised. First, the U.S. Commodity Futures Trading Commission (CFTC) has a great deal of discretion in implementing these regulations, so their effectiveness will become apparent only over time. Second, the limits apply only to physical commodities, so they will not be able to address the illiquidity that can be created by large positions in markets for financial derivatives. Third, position limits may not be well suited to the systemic risks that result when large numbers of medium-sized hedge funds take similar positions. Finally, positions that are required for bona fide hedging are excluded from limit calculations. Although such an exemption is sensible, difficulty in determin-

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equity multiplied by fund leverage.

<sup>10</sup> FSOC, 2012.

ing when positions are for bona fide hedging and when they are not may compromise the efficacy of position limits.

In sum, it is not clear that the financial reforms will do much to change potential behaviors of hedge funds in terms of leverage and portfolio liquidity. First, although regulators will have a great deal more information about hedge fund strategies and positions, it might be unrealistic to expect regulators to effectively use it to reduce systemic risk. The time delays in reporting may be too great, and the hedge fund industry may move far too fast for regulators to have any impact. For example, would the regulatory apparatus be nimble enough to detect the rapid buildup of highly leveraged bets that occurred at LTCM? Second, few, if any, hedge funds will be subject to direct regulation under the new regime, leaving the oversight of hedge fund leverage and liquidity to prime brokers that are, in turn, overseen by the Federal Reserve. Such oversight may not result in any meaningful restraint, particularly as memories of the financial crisis fade. The potential thus remains for the buildup of highly leveraged, illiquid hedge fund portfolios and massive deleveraging when prime brokers or investors withdraw credit and capital in response to a financial shock.

## Conclusions

From our analysis, we conclude that hedge funds can contribute to systemic risk. Although they were not a primary cause of the financial crisis, some aspects of their operations contributed to the crisis. The collapse of LTCM also illustrates the risks they can pose to the stability of the financial system. Dodd-Frank and other reforms are addressing many aspects of hedge fund operations that can create systemic risk. The reforms appear to aggressively address the first three areas of concern identified in this summary (lack of information on hedge funds, lack of appropriate margin in derivatives trades, and runs on prime brokers). They make considerable progress in addressing the next two (short selling and compromised risk management incentives), although questions remain about the effectiveness and comprehensiveness of the

approach. The concern least well addressed is the potential lack of portfolio liquidity and excessive leverage.

Looking forward, policymakers and regulators should carefully monitor hedge fund leverage and collect data on and monitor the liquidity of hedge fund portfolios. They not only should focus on the largest funds but should also pay attention to risk posed by the large number of small or medium-sized funds pursuing similar strategies. Finally, they should be on the lookout for important classes of derivatives that trade outside Dodd-Frank's regulatory structure and should continue to pursue coordination of regulations across national jurisdictions.

Hedge funds need not be the primary concern of regulators as they work to improve the stability of the world's financial system. However, policymakers should strive to better understand and monitor the systemic risks posed by this part of the financial system. And they should weigh any reduction in systemic risk due to increased regulation against the reduction in the hedge funds' ability to provide value to their investors and the economy more generally, as well as the costs of overseeing numerous medium-sized financial institutions.