

# THE STRUCTURE OF CONFIDENCE AND THE COLLAPSE OF LEHMAN BROTHERS

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## ABSTRACT

*On September 15, 2008, Lehman Brothers filed for bankruptcy and nearly caused a meltdown of the financial system. This article looks at the situation before Lehman went bankrupt and how this event came to trigger a financial panic during the fall of 2008 and early 2009. Two key ideas inform the analysis. The first is that what triggers financial panics are typically hidden losses. The second is that confidence plays a key role in financial panics and that confidence can be conceptualized as a belief that action can be based on proxy signs, rather than on direct information about the situation itself.*

On September 15, 2008 at 1:45 A.M., Lehman Brothers filed for bankruptcy, something that nearly caused a meltdown of the world's financial system. A few days later, Bernanke made his famous statement that "we may not have an economy on Monday" (Thomas & Hirsh, 2009). President Bush expressed the same idea, but in his own language, when he said, "this sucker could go down" (Mason, 2009, p. 28).

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Commentators agree that the fall of Lehman Brothers changed everything. According to economist Robert Lucas, “Until the Lehman failure the recession was pretty typical of the modest downturns of the post-war period ... After Lehman collapsed and the potential for crisis had become a reality, the situation was completely altered” (Lucas, 2009, p. 67). According to Alan Blinder, another well-known economist, “everything fell apart after Lehman ... After Lehman went over the cliff, no financial institution seemed safe. So lending froze, and the economy sank like a stone. It was a colossal error, and many people said so at the time” (Blinder, 2009).

Two months later, Henry Paulson, the Treasury Secretary, explained that the failure of Lehman Brothers had led to a systemic crisis and to the evaporation of confidence in the financial system:

We had a system crisis. Credit markets froze and banks substantially reduced interbank lending. Confidence was seriously compromised throughout our financial system. Our system was on the verge of collapse, a collapse that would have significantly worsened and prolonged the economic downturn that was already under way. (Paulson, 2008a)

What made Lehman Brothers go bankrupt and how could its bankruptcy have such an enormous impact on the financial system? How could this single event turn an economic crisis of some severity into a full-blown financial panic? These are some of the questions that this article will attempt to address. It has three main sections: the economic situation before the September 15 event; the weekend that preceded September 15, when Paulson and Bernanke made the decision to let Lehman go bankrupt; and the economic situation after Lehman’s bankruptcy.

Before proceeding to the economic situation that led up to the weekend of September 13–14, I will make a brief detour of a few pages in which I discuss the nature of confidence in the financial system. The reason for paying special attention to just *confidence* is that it plays a very special role in the financial system. One can even argue that the current financial crisis cannot be understood without taking confidence into account. This is also the case, as I will try to show, if one wants to understand the collapse of Lehman and how it turned a credit crunch into a full-scale financial panic.

## INTRODUCING THE ARGUMENT: CONFIDENCE AND ITS DOUBLE STRUCTURE

Despite its importance, there only exists a small number of studies that look at the role of confidence in finance (e.g., Walters, 1992; for a review, see Swedberg, forthcoming; for the economics of trust, see, e.g., Fehr, 2008).

In this article, I will draw on one of these studies, Walter Bagehot’s ([1873] 1922) classic *Lombard Street*. Bagehot is interesting in this context because he was well aware of the special role that confidence plays in the banking world in general. He also tried to explain the role that confidence plays in unleashing a financial panic, something that is of special relevance to this article.

The banking system, Bagehot notes, always demands an extra high level of trust, much higher than elsewhere in the economy. In this part of the economy there has to exist, as he puts it, “[an] *unprecedented trust between man and man*” (Bagehot, [1873] 1922, p. 151; emphasis added). Banks, in short, make up a kind of industry that demands a different and also a higher level of trust than other industries.

There are mainly two reasons for this: one having primarily to do with liquidity and the other with solvency. The first reason for the unprecedented level of trust to exist in the banking system has to do with maturity transformation – that deposits are short term, while loans are long term. If the depositors do not have full confidence that their money is safe, they will demand it back. And when they do so, the bank will be in trouble because it lacks liquid resources to pay the depositors. The larger the amount that is lent out, in relation to the amount deposited, the more tenuous this type of confidence will be.

The second reason for confidence being *extra* important in the banking system has to do with losses that the bank may occur through its loans. A bank is extra vulnerable, in other words, not only because of liquidity-related troubles but also because of its losses, because these must be offset against the capital of the bank. Again, the more that has been lent out, the more vulnerable a bank is. And losses increase in their turn the leverage ratio dramatically.

What this means, to repeat, is that banking is a trust-intensive industry. Bagehot also explicitly states that what is especially dangerous for the banking system is a situation in which there are *hidden losses*. The reason for this is that when these losses become known, a general panic can be set off that goes well beyond the problem bank(s). Anything may suddenly reveal the true economic situation, with the collapse of *the whole banking system* as a result. Or in Bagehot’s words:

We should cease ... to be surprised at the sudden panics [in the banking system]. During the period of reaction and adversity, just even at the last instant of prosperity, the whole structure is delicate. *The peculiar essence of our banking system is an unprecedented trust between man and man; and when that trust is much weakened by hidden causes, a small accident may greatly hurt it, and a great accident for a moment may almost destroy it.* (Bagehot, [1873] 1922, pp. 151–152; emphasis added)

In the rest of this article, I will refer several times to the argument by Bagehot about investors suddenly losing confidence in the banking system, when they realize that there are hidden losses.

It should be noted that while Bagehot indicates how the general mechanism operates, when a panic is unleashed in the banking system, he does not say much about the nature of confidence per se. And to get a more fine-tuned understanding of how a financial panic may be unleashed by hidden losses, this topic has to be addressed.

The key to an understanding of confidence, I suggest, has to do with the fact that it has what may be called *a double structure*. By this I mean that human beings are able to make important judgments about some topic X, by relying on some proxy sign or proxy information about X, that we may call Y.<sup>1</sup> In some cases, we go so far as to base our acts exclusively on Y, assuming then that it properly reflects X. This means that we have *confidence* in Y.

Confidence can therefore be defined in the following way. *Confidence is an actor's readiness to base his or her decision to act, not on the best available information about some state of affairs (because this is not available to the actor), but on proxy signs that signal what this state of affairs is.*

An example may clarify. Mancur Olson (1990, p. 178) once noted that when we walk on a sidewalk, we assume that "the concrete beneath us will hold our feet and [and] is really made up of concrete rather than paper painted as concrete." In this example, the visual image of the concrete operates as a proxy sign for the fact or the situation that what is beneath our feet is indeed concrete, with the property to hold the weight of pedestrians. Similarly, when we deal with a person or an organization, and read the proxy signs to mean that they will act in some specific way, we have *confidence* that they will do so (cf., e.g., Bacharach & Gambetta, 2001).

Also in economic life, we look for proxy signs that indicate, say, that a person will pay back his or her debt or that a firm is doing well. One sign that indicates that a firm is doing fine may be its annual report, another its credit rating. One way for proxy signs to be regarded as extra reliable or objective is to have them issued by a third party, for example, a credit rating agency or an auditing firm. Situations involving third parties are typical for a modern financial system, where the key actors are organizations and not individuals (e.g., Zucker, 1986; Shapiro, 1987).

While some proxy signs are official, others are unofficial, say articles in the business press about a firm or gossip from an acquaintance. Unobtrusive proxy signs belong to the category of unofficial signs and are often viewed as extra valuable, because they are thought to be difficult to manipulate. This, of course, is also what makes them so attractive to manipulate. In *Advice to*

*A Young Tradesman* (1748) Benjamin Franklin, for example, gives the new owner of a carpentry business the following advice: "The sound of your hammer at five in the morning, or eight at night, heard by a creditor, makes him easy six months later" (Weber, 1976, p. 49).

People use proxy signs for the simple reason that direct information about some situation is not available to them when they want to take some action, such as to invest money in a firm or to lend someone money. This means that proxy signs become very important and play the role of *stand-ins* for information about the actual situation. Just like you have to trust your visual impression that the sidewalk ahead of you is not simply a piece of painted paper, you have to trust that the annual report, the evaluation by a rating agency or whatever proxy sign you decide to rely on, properly reflects the economic situation. If not, you will not act.

If the proxy sign supplies the wrong information, the consequences will be devastating. In the case of the sidewalk, you may fall into a hole; in the case of an investment, you may lose it. Relying on a proxy sign has an emotional dimension, in the sense that you have to fully trust it, to act. It truly stands in for the correct information. Similarly, the discovery that you are now in a free fall or have just lost a fortune is a wildly disturbing and disorienting experience – and means that confidence is suddenly and brutally lost.

Earlier I cited Bagehot on the situation in which there are hidden losses in the banking system, and we are now in a position to flesh out his argument with the help of the notion of proxy signs and the double structure of confidence. If the proxy sign indicates that the economic situation is positive, and also *is* positive, there is full confidence and no problems. There are similarly no problems when the proxy sign says that the economic situation is negative, and it is negative. A firm is, say, in economic trouble, but this is well known to the market and therefore does not disturb its normal workings.

If the proxy sign says that the economic situation is negative, while it actually is *positive*, we have a case that answers to Robert K. Merton's argument about runs on a bank in his essay on self-fulfilling prophecy. A bank is solvent, but there exist rumors that it is not – with the result that depositors withdraw their money, and the bank goes bankrupt. Or in Merton's summary formulation: "A rumor of insolvency, once believed by enough depositors, would result in the insolvency of the bank" (Merton, [1948] 1968, p. 476).

My argument in this article is that while Merton has focused on one important role that a loss of confidence plays in the financial system, it is not the only one, and perhaps not even the central one for understanding

a financial panic. The real problem with a loss of confidence, I argue, is not when banks are solvent and there exist rumors to the contrary (the proxy sign is negative and the economic situation is positive). It comes when some banks are not solvent, and this is not known (the proxy sign is positive and the economic situation is negative). We are then in Bagehot's dangerous situation, in which it is not known who has losses and who has not, and in which an accident may set off a general panic that endangers the whole financial system (Fig. 1 on p. 77). Or to phrase it differently. Merton's mechanism only comes into play in an important way, in the situation of hidden losses, as described by Bagehot.

### THE ECONOMIC SITUATION BEFORE THE COLLAPSE OF LEHMAN BROTHERS

Bagehot's ideas about panics in the financial world draw our attention to two factors: losses and whether these are hidden or not. Especially if they are not known, there is a good chance that a sudden disclosure of the losses will result in a general panic, in which also banks that are doing fine will go bankrupt.

Bagehot wrote in the late 19th century when it was thought that banks should be conservative and not engage in speculation. The key term was *prudence*. These ideas were also strong in the international financial system known as the Bretton Woods system (1944 to early 1970s). One difference to Bagehot's days was that there now existed legislation that ensured that deposits were safe. Apart from this, the general way in which confidence operated, and how it was managed, was not very different from Bagehot's time.

The situation in the new financial system, that replaced the Bretton Woods system, is very different. Since the early 1970s, an international financial system has come into being that is extremely dynamic and ever-changing (e.g., Eatwell & Taylor, 2000). Currencies are traded every day in enormous amounts, and massive amounts of capital are quickly flowing back and forth between countries and continents. National financial systems are increasingly being opened up to one another; and one may for the first time speak of the emergence of a truly global financial system. This system, it should be emphasized, is much more volatile and prone to crises than the Bretton Woods system. That this is something that has also been realized by the major powers can be illustrated by the creation in 1999 of the Financial Stability Forum (FSF).

		The Economic Situation is	
		Positive	Negative
Proxy Sign Indicating the Economic Situation is	Positive	++	+-
	Negative	-+	--

Fig. 1. Proxy Signs and the Nature of Confidence. *Notes:* Confidence can be defined as an actor's readiness to base the decision to act, not on the best available information about some state of affairs but on *proxy signs* that signal what this state of affairs is. A proxy sign can in the ideal case be assumed to be either aligned with the state of affairs or not. In the former case, a positive proxy sign correctly indicates a positive state of affairs, and a negative sign correctly indicates a negative state of affairs. Confidence is maintained in both of these cases, because the actor has correct information (++/--). When, in contrast, the proxy sign and the situation are *not* aligned and the proxy sign therefore misrepresents the situation, confidence will suffer. If the proxy sign is negative, and the state of affairs positive, and this is applied to the situation of a bank, one may get a run on the bank along the lines that Robert K. Merton (1948) has outlined in his essay on self-fulfilling prophecy. When the proxy sign is positive, and the state of affairs negative in the banking community, one in contrast gets a case that is closer to the very dangerous situation that is described by Walter Bagehot (1873) in *Lombard Street*. To avoid misunderstandings, it should be explicitly stated that what here is called state of economic affairs does not represent some objective and "true" reality but is a social construction, again based on signs. Adding to the complexity is that a sign (including the proxy sign) also has to be interpreted by some actor – and different actors may interpret a sign differently.

The economic culture in this new financial system is also very different from what it was after World War II and earlier. Stable national markets, which were tightly controlled by central banks, have today been replaced by national systems with fierce competition, speculation, and a steady stream of financial innovations (e.g., Strang, 1997; Eatwell & Taylor, 2000). The idea that a bank should be conservative and display prudence in its acts has been replaced by the idea of the bank as a profit-making outfit, not so different from an ordinary firm. And just as the pressure is enormous on modern firms to show very high profit levels and have short time horizons, so is the case with the actors in the financial sphere (e.g., Franzén, 2009). As globalization has increased, the power of central banks to dictate what is going on in the financial arena has also been severely reduced.

Not only has the traditional notion of a bank changed, a number of non-banks and other financial actors have increasingly begun to engage in

activities that were formerly restricted to banks and carefully regulated (e.g., Mayer, 1998; Berger, Kashyap, & Scalise, 1995). It should also be emphasized that in the United States (which this article is dealing with) these non-banks have typically *not* been covered by bank or banklike regulation. Instead they have become part of what is known as the shadow banking system.

The shadow banking system consists in principle of “non-banks [that] functionally do just what a ‘bank’ does” (Akerlof & Shiller, 2009, p. 82). What a bank does functionally is to concentrate sums of money, provide credit, and engage in maturity transformation. It should however be emphasized that many of the actors in the shadow banking system have their own equivalents to bank deposits, such as day-to-day financing say in the repo market. They also have their own equivalents to traditional bank loans, such as long-term investments or securities that are not very liquid but high in yield.

Another way of putting it would be to say that the traditional type of banking has been replaced by a modern system of banking – which is structurally very similar to the traditional system of banking, when it comes to vulnerability related to confidence (e.g., Gorton & Metrick, 2009). As we later shall see, it was precisely runs based on short-term borrowing, and not on deposits, that caused the financial crisis to erupt.

Examples of institutions that belong to the shadow banking system include the following: investment banks, monoline insurers, structured investment vehicles (SIVs), hedge funds, mortgage brokers, and perhaps offshore banking in general (e.g., Geithner, 2008; Krugman, 2008; Zandi, 2009b, pp. 119–121). Information about the shadow banking system, it should also be noted, is typically of poor quality, and regulations about the need to maintain reserves, in case of losses, are usually lacking. As a result, confidence is *extra* volatile and vulnerable in the shadow banking system.

Krugman (2010) notes that “in the years before the crisis ... regulators failed to expand the rules [for banks] to cover the growing ‘shadow’ banking system, consisting of institutions like Lehman Brothers that performed banklike functions even though they didn’t offer conventional bank deposits.”

To this should be added that many new financial instruments have appeared in the post-Bretton Woods system. Many of these are of such complexity that they cannot be understood or are only understood by a few people who are specially trained. Some of these new instruments are not traded on markets, and this means that their value has to be determined in some other way, say through mathematical models. The rating agencies have also had to deal with this issue as part of their valuations.

In terms of proxy signs, all of these developments have made it harder for market actors to properly evaluate what is going on. They lack much of the information that is needed to evaluate the actors in the shadow market system. And, to repeat, many of the new financial instruments are so complex and impenetrable that you typically have to trust the evaluation of other actors. Both tendencies make confidence precarious and extraordinarily hard to manage.

From something like 2001 and onwards, a credit bubble started to appear in the United States. Huge amounts of capital moved into the country, in search of profit higher than the low rate of interest that existed at the time. A housing bubble was also in the making, and through the process of securitization, the housing market was closely linked to the credit bubble in the U.S. financial system as well as to the international financial system. Mortgages, traditionally the business of local banks, were now increasingly being pooled, turned into bonds and collateralized debt obligations (CDOs) that were sold on to investors, in the United States and elsewhere.

One novelty about the housing bubble was that it also involved a new group of economic actors: people who for the first time were able to buy a house, thanks to subprime and low-grade mortgages (“Alt-A mortgages”). As opposed to the traditional kind of person buying a house and taking out a mortgage, these new actors could only pay their fees on one condition, and this was that the housing market kept going up. So long as was the case, they could renegotiate and continue to own their houses (e.g., Gorton, 2008). The moment the market turned down, however, they would have to foreclose, and the securities based on this type of mortgage would register a loss.

This is exactly what happened in 2007, when the decline of the U.S. housing market started to seriously impact the financial system. The financial crisis, it is generally agreed, began in August 2007, when a major mortgage outfit went under and the Fed as well as the European Central Bank had to infuse billions of dollars and euros into their financial systems.

The failing subprime mortgages were, to repeat, at the center of what was now going wrong, and by August 2007, the amount of subprime mortgages was estimated at \$2 trillion. If these mortgages had been of the old type, there would have been foreclosures and many local banks would have had to face severe losses. Now, instead, the great majority of the mortgages were largely securitized, and this meant that something else happened.

It is also true that if the new securities had been fully transparent, the investors at the end of the chain would have had to take their losses and that would have been all. This, however, is not what happened. Instead the trouble spread to other parts of the financial system: interbank lending

started to freeze up and a run on SIVs took place. Why was this the case? According to the author of an important paper on the credit crunch that now came into being, entitled “The Panic of 2007,” the reason was that it was impossible for the investors to decide which bonds and CDOs had suffered the losses and to what extent (Gorton, 2009). The way that these securities had been constructed made them impenetrable.

Gary Gorton, the author of that paper, also argues that the so-called ABX indices came to play a crucial role in transforming a situation of economic loss in the housing market into a low-level panic in parts of the financial system (cf. MacKenzie, 2009a, pp. 63–65). The ABX indices, which first appeared in 2006, made it possible for the first time to establish a market price for mortgage-related subprime bonds, and the CDOs based on these, and also to hedge against a fall in value. The problem, however, was that while the ABX indices allowed investors to realize that the market was now lowering the price on securities based on subprime mortgages, they did not allow the investors to figure out exactly which securities were involved.

The result was a fear about hidden losses that spread to all subprime mortgage-related bonds and CDOs as well as to the institutions suspected of owning these. Gorton also notes that once mortgage-related bonds and CDOs began to fall in value, so did other other securities. The need for more collateral in the repo market, for example, pushed many other types of securities onto the market and lowered their price. The accounting rule that mandated securities to be valued at their market price operated in the same direction (FASB 157 or the mark-to-market rule).

Gorton (2009, p. 568) sums up his argument as follows:

The ABX information, together with the lack of information about location of the risks, led to a loss of confidence on the parts of the banks in the ability of their counterparties to honor contractual obligations. The panic was on, starting with a run on structured vehicles.

While Gorton focuses on the difficulty in locating losses because of the opacity of various financial instruments, it can be added that one can also think of other reasons why there were hidden losses. One is financial fraud, which clearly played an important role in the subprime market; another is various accounting tricks.<sup>2</sup>

But even if there were clear problems in the financial markets already in 2007, it was not easy for the investors to read the signs. The Dow, for example, hit a record high of 14,164 in October but also oscillated quite a bit. People in the finance industry were well aware that something was happening, but seemed to think that it was a problem of liquidity

rather than insolvency. John Taylor (2008), a well-known expert on finance, was at this point convinced that the problems were due to insolvency (see also Roubini, 2007). A survey of traders that Taylor (2008) and a colleague let carry out showed however that most of these thought it was a question of liquidity.

As 2007 became 2008, the economic problems continued, and also other mortgages than subprime and Alt-A began to fall in value. This meant that the potential losses – the hidden losses – were now extended to a pool of mortgage-backed securities worth somewhere between \$5 and \$10 trillion. An increasing number of mortgage-related originators were also going bankrupt, and the price of housing continued to fall. When SIVs came under pressure, they had to be moved back onto the balance sheet of their originators. Citigroup had a number of SIVs and, as a result, had to suddenly owe up to enormous losses.

Two hedge funds that were legally independent of Bear Stearns, but linked to it through bonds of obligation, were liquidated in July 2007 because of heavy losses in mortgage-based securities (e.g., Cohan, 2009). When Bear Stearns assumed responsibility for these losses, it was considerably weakened. The mortgage-related assets that Bear Stearns itself had kept, in combination with a very high leverage ratio, did the rest, and on March 16, 2008, Bear Stearns was sold to JPMorgan Chase to avoid bankruptcy. The deal had been partly financed by the Fed, which indicates the severity of the situation because investment banks are regulated by SEC and not by the Fed. This was the first time in history that the Fed had helped to rescue an investment bank.

Bear Stearns, like the other major investment banks, had been part of the so-called originate and distribute chain of the mortgage securities and had got caught holding too many securities of poor quality while it was very highly leveraged. It disappeared in a run on the bank, triggered by its weak economic position.

The end for Bear Stearns began on March 10, when one of its mortgage-based debts was downgraded by Moody's, something that started a rumor that the bank was in trouble. Bear Stearns immediately denied that it had liquidity problems but, as is often noted, when a bank denies that it has a liquidity problem it is already lost. “When confidence goes, it goes,” as Paulson said when asked about the chances of Bear Stearns to survive (Wessel, 2009a, p. 151; cf. Bagehot, [1873] 1922, p. 68).<sup>3</sup>

The fate of Bear Stearns allows us to quickly revisit the theories of Merton and Bagehot about loss of confidence and how it is related to financial collapse. Merton argues that a healthy bank can fail because of

rumors even if it is solvent, whereas Bagehot argues that a bank is extra vulnerable to losses of confidence if it has *hidden losses*.

Christopher Cox (2008, p. 3), Chairman of the SEC at the time when Bear Stearns went under, has explained its fate along the lines of Merton:

In accordance with customary industry practice, Bear Stearns relied day-to-day on its ability to obtain short-term financing through borrowing on a secured basis. Beginning late Monday, March 10, and increasingly through the week, rumors spread about liquidity problems at Bear Stearns, which eroded investor confidence in the firm. Notwithstanding that Bear Stearns continued to have high quality collateral to provide as security for borrowings, market counterparties became less willing to enter into collateralized funding agreements with Bear Stearns. This resulted in a crisis of confidence.

Hedge fund investor David Einhorn (2008a, p. 6) explains the fate of Bear Stearns more along the lines of Bagehot:

Of course, Bear didn't fail because of market rumors. It fell because it was too levered and had too many illiquid assets of questionable value and at the same time depended on short-term funding.

During the months after the fall of Bear Stearns, the general economic situation continued to worsen. As the prices on the housing market were going down, securities that at first had seemed safe now entered the danger zone, including those with an AAA rating. By August, according to information from the IMF, the value of many assets had fallen dramatically, something that was especially dangerous for those institutions that depended on short-term financing (Turner, 2009, p. 24).

As the economic situation continued to worsen during the fall of 2008, the pressure shifted to the remaining investment banks and especially to Lehman Brothers. To better understand what happened during the fatal weekend of September 13–14, when the fate of Lehman was decided, we will now turn to the economic activities of Lehman during 2007 and 2008.

### LEHMAN BROTHERS UP TO THE WEEKEND OF SEPTEMBER 13–14

The modern Lehman Brothers (with distant origin in a dry goods business that was begun in Alabama in 1847) assumed the functions of an investment bank some 50 years later (e.g., McDonald & Robinson, 2009; Tibman, 2009). In 1994, it was spun off from American Express, and Richard Fuld, who had joined Lehman in 1969, was appointed its President and CEO.

Lehman did well under Fuld's leadership, and by 2006, it had some \$700 billion in assets and liabilities and around \$25 billion in capital. Its assets were mainly long term and its liabilities short term. It financed itself by borrowing from tens of billions of dollars to hundreds of billion dollars on a daily basis in the short-term repo market. As any investment bank, Lehman was as a consequence highly dependent on confidence.

Till Fuld was pushed to the side in June 2008, he ran Lehman in an authoritarian manner, setting his own distinct mark on the aggressive and competitive type of corporate culture that seems to be characteristic of modern investment banks.<sup>4</sup> Like many successful CEOs on Wall Street, Fuld also chose a lifestyle that isolated him from what goes on in the world of ordinary people.<sup>5</sup>

As in most investment banks, the employees of Lehman were paid extraordinarily high salaries and bonuses, which together ate up more than half of what the company earned in pretax profit (Dash, 2010a). The bonuses at Lehman were also structured in such a way that they encouraged risk-taking (Valukas, 2010, p. 162).

One reason why Lehman would later go bankrupt has to do with the fact that anyone who was perceived as a threat by Fuld was quickly eliminated – including a number of critics who early on realized that Lehman was headed for serious trouble (McDonald & Robinson, 2009; Tibman, 2009). It should also be noted that Fuld's personal experience was mainly as a bond trader and that he had little technical understanding of such new financial instruments as CDOs, credit default swaps (CDSs), and the like (e.g., McDonald & Robinson, 2009, pp. 91, 234–236).

Lehman was one of the leaders in the production of securitized mortgages and also owned two mortgage firms, BNC in California and Aurora Loan Services in Colorado.<sup>6</sup> According to *The Wall Street Journal*, "Lehman established itself [in the mid-1990s] as a leader in the market for subprime-mortgage-backed securities. It built a staff of experts who had worked at other securities firms and established relationships with subprime-mortgage lenders" (Hudson, 2007).

In 2005 and 2006, Lehman was the largest producer of securities based on subprime mortgages. By 2007, more than a dozen lawsuits had been initiated against Lehman on the ground that it had improperly made borrowers take on loans they could not afford. "Anything to make the deal work," as one of Lehman's former mortgage underwriters put it (Hudson, 2007).

As soon as the subprime crisis erupted, Lehman started to suffer losses. According to what currently constitutes the most exhaustive investigation of

Lehman's affairs, however, its fall had mainly to do with a dramatic change of strategy that took place in some other areas than the subprime market and that was initiated in 2006 (Valukas, 2010).<sup>7</sup> From 2006 till mid-2007, Lehman followed a very aggressive new strategy that consisted in using its own capital to expand in commercial real estate, private equity, and leveraged lending. Fuld did not believe that the problems in the subprime mortgage market would spread; he also thought that the problems in this market provided Lehman with an opportunity to aggressively advance when its competitors were pulling back.

Lehman's so-called countercyclical strategy was terminated by mid-2007, as its losses and illiquid assets were beginning to get out of control. Neither during the last quarter of 2007 nor during the first quarter of 2008, however, did Lehman attempt to raise equity or sell of assets. During this period, it also used an accounting trick to remove some \$50 billion from its books ("Repo 105"). By this time, Lehman's dependence on the short-term repo market had also increased dramatically and was nearly 26% of its liabilities or twice that of peer banks (Valukas, 2010, p. 1407).

The fall of Bear Stearns in mid-March dramatically changed Lehman's situation. Its shares, which sold for \$62.19 on January 2 fell 19% to \$31.75 on the day after the collapse of Bear Stearns (Onaran, 2008, p. 61; Valukas, 2010, p. 11). Many people on Wall Street also believed that Lehman was the next bank to go.

Secretary of the Treasury Henry Paulson was one of these persons and he now started to meet regularly with Fuld. He emphasized to Fuld that Lehman was in a very difficult economic situation and had to find a buyer. "We pressed him to find a buyer [after June]," Paulson later said (Nocera & Andrews, 2008).

People from the SEC and the New York Fed were now stationed at Lehman. The Federal Reserve and the New York Fed also started to help Lehman with huge loans and would do so till its collapse on September 15. As with its accounting trick known as "Repo 105," Lehman used this money to make investors believe that Lehman was in better shape than it was.<sup>8</sup>

Fuld, it appears, did not realize the seriousness of either what Paulson was telling him or of the situation in general. For one thing, he thought that he had the full backing of Paulson. "We have huge brand with treasury," as he phrased it in e-mail, after a meeting with Paulson on April 12 (Fuld, 2008a).

From March to the September 13–14 weekend, Fuld also turned down several opportunities to sell Lehman as well as an infusion of capital from Warren Buffett (e.g., Story & White, 2008). Attempts to cut deals with Morgan Stanley, Goldman Sachs, and Bank of America similarly came to

nothing (e.g., Sorkin, 2009a). To what extent Fuld's personal attachment to Lehman played a role in this is unclear. As late as early July, however, he told a journalist, "I will never sell this firm" (Gowers, 2008).

Despite all of these failures, Fuld insists that it was rumors and short selling that brought down Lehman, not its huge losses in a deteriorating economy and his own failure to deal with this. "Ultimately what happened to Lehman Brothers," Fuld (2008b, p. 8) would later say when he testified at Congress, "was caused by a lack of confidence."

While it seems that Fuld believed that Lehman could weather any storms it faced during the spring and summer of 2008, investors were getting increasingly nervous. While many banks had declared heavy losses and write-downs, Lehman was not one of them. In fact, Lehman declared a profit of several hundred million dollars for the first quarter of 2008. The three major rating agencies responded by applauding Lehman's performance, something they would do till the very end.<sup>9</sup>

Still, rumors were strong that Lehman was covering up its losses. Some investors also started to look for information on their own, and what they found made them suspicious. One of these was David Einhorn, the head of a hedge fund called Greenlight Capital. At a conference for investors in April, Einhorn gave a speech in which he argued that investment banks were dangerous for a number of reasons. For one thing, he said, they used half of their revenue for compensation – something that means that its employees had a very strong incentive to increase the leverage of their firm. He ended his speech with a full-blown attack on Lehman. If you calculate its leverage properly, he said, it was 44:1. This means, he explained, that if the assets of Lehman fell by 1%, the firm would have lost almost half of its equity. The consequences of this were dramatic: "suddenly, 44 times leverage becomes 80 times leverage and confidence is lost" (Einhorn, 2008a, p. 9).

Einhorn also tried to estimate Lehman's losses. He did this by looking very carefully at various categories of assets, in which Lehman had invested and which had fallen in value since 2007. His conclusion was the following:

Lehman does not provide enough transparency for us to even hazard a guess as to how they have accounted for these items. Lehman responds to requests for improved transparency begrudgingly. I suspect that greater transparency on these valuations would not inspire market confidence. (Einhorn, 2008a, p. 9)

Einhorn, however, was not finished with Lehman. In late May, he made a second public attack on Lehman. This time he announced that his hedge fund was shorting Lehman and he explained the reason for this in detail

(Einhorn, 2008b, p. 9). He ended on the following note: “My hope is that Mr. Cox and Mr. Bernanke and Mr. Paulson will pay heed to the risks to the financial system that Lehman is creating and that they will lead Lehman toward a recapitalization and recognition of its losses – hopefully before taxpayer assistance is required” (Einhorn, 2008b, p. 9).

That Einhorn had a very good understanding of Lehman’s financial state became clear in early June, when Lehman announced a stunning loss of \$2.8 billion for its second quarter. But even this did not calm investors, who feared that Lehman had quite a bit more of hidden losses. Rumors grew strong that Lehman was about to collapse.

Lehman was not alone in having problem, as the crisis grew deeper. One major trouble spot was Fannie Mae and Freddie Mac, the two semiofficial private agencies that together guaranteed some \$1.5 trillion in mortgages. On September 7, both of these institutions were nationalized and infused with \$200 billion in resources by the Treasury. The U.S. state had once more intervened, and it had again gone far beyond what it had done in the past.

By this time, Fuld was desperately trying to raise capital and to find a buyer. He contacted a number of potential investors, including Citigroup, which sent over a team to go through Lehman’s books (McDonald, 2009, p. 281). Lehman’s last chance of being bought up disappeared on September 10, when Korea Development Bank announced that it had decided to withdraw from a possible acquisition. The very same day Lehman also declared a loss of \$3.9 billion and was warned by Standard & Poor that it might be downgraded.

The next day Lehman had great difficulty in scraping together the extra collateral of \$8 billion that JPMorgan Chase now demanded, and it was clear that the financing of Lehman’s daily operations was quickly drying up. The end, in other words, was near. On September 12, a number of the key CEOs on Wall Street each got a call from staff members at the Fed telling them to attend an emergency meeting at 6 pm at the New York Fed. Lehman’s fate was to be decided.

### THE FATAL WEEKEND OF SEPTEMBER 13–14, 2008

The weekend of September 13–14 is usually presented in terms of how the attempt to save Lehman failed and how Lehman had to declare bankruptcy in the early hours of September 15. In this article, the focus will primarily be on the role of confidence in the events of September 13–14. This means that

I will continue to look at investor confidence in Lehman. One of the tasks of the weekend, for example, was precisely to determine the actual economic situation of Lehman. The outcome of this will allow us to judge whether Lehman was indeed in a much worse economic situation than was officially known – or just the victim of ill-founded rumors, along the lines that Cox had argued about Bear Stearns.

In presenting what happened during the weekend of September 13–14, it should be noted that this type of meetings, in which so-called private sector or industry solutions are sought under the guidance of the Fed, are strictly secret. No notes are taken and participants are not supposed to discuss what happens. While there exist a few accounts of the weekend already, some important information will probably be added in the future (e.g., Fishman, 2008; Wessel, 2009a; Sorkin, 2009a; Stewart, 2009; Paulson, 2010). We still miss accounts, for example, from the two representatives for Lehman (Bart McDade and Alex Kirk; Richard Fuld was not invited).

It should also be emphasized that a new type of confidence also needs to be taken into account, once we enter the weekend of September 13–14. This is confidence in the state. If a private sector solution did not work out, would the Fed step in and back Lehman or not? I refer to this type of confidence as *confidence in the state* because what was at issue was not so much if the Treasury or the Fed would support Lehman, but if the U.S. state would do so.

While confidence in the state differs in many ways from investor confidence, it can be analyzed according to the scheme that was earlier introduced. If the state sends a signal (proxy sign) that it will intervene, and then does intervene, confidence will be maintained. The same is true when the proxy sign is negative and no action is taken. If the state, however, says it will *not* intervene to back some party, but does so anyway, some confidence may be lost but not all of it. If the state says that it will back some party, and does *not* do so, in contrast, confidence in the state will be threatened and perhaps shattered.

According to an analyst at Morgan Stanley, there was strong confidence at the time that the U.S. state would not let a big bank go under: “Prior to Lehman, there was an almost unshakable faith that the senior creditors and counterparties of large systemically important financial institutions would not face the risk of outright default. This confidence was built up ever since the failure of Continental Illinois (at the time the seventh largest US bank) in 1984, a failure in which bondholders were [fully paid out]” (van Duyn, Brewster, & Tett, 2008).

But there was also the issue of moral hazard and the notion that the best solution is always to let the market decide. How difficult it was to manage confidence in the state at this point can be exemplified by Paulson's behavior. During a conference call with Bernanke and Geithner, which took place during the week that preceded the weekend of September 13–14, he exclaimed with dismay, "I'm being called Mr. Bailout. I can't do it again [bailing out another bank]" (Wessel, 2009a, p. 14).

Paulson later said that the reason for his outburst was that he did not want any Fed officials to leak to the press that he was ready to support another bailout. Paulson had at the time received quite a bit of criticism for helping Bear Stearns and Freddie Mac and Fannie Mae. It should also be noted that many members of the country's political elite – including presidential candidates Obama and McCain as well as the Speaker of the House, Nancy Pelosi – were against a bailout, as were many people in the financial world and around Bush (e.g., Cornwell, 2008; Sorkin, 2009a, pp. 283–285).<sup>10</sup>

Soon after his outburst, Paulson allowed some of his staff members to leak to the press that he was totally opposed to a bailout. This deeply upset Geithner, who confronted Paulson: "The amount of public money you're going to have to spend is going up, more than you would have otherwise! Your statement is way out of line!" (Wessel, 2009a, p.16). In Geithner's view, what was needed in a situation like this was a flexible approach, not locking yourself into a position.

Also Bernanke was very upset over Paulson's outburst and wanted to be reassured that Paulson had not committed himself to some definite action before he knew what was going on. Like Paulson, Bernanke had been criticized for not letting the market take care of Bear Stearns and Freddie Mac and Fanny Mae. One editorial at the *Wall Street Journal* on the Bear Stearns deal was, for example, entitled "Pushovers at the Fed" (*Wall Street Journal*, 2008b).

Bernanke would later recall that many economists had also told him to trust the market. At the annual Fed conference in August 2008, "a lot of economists ... were saying: 'Oh, you know, you should be in favor of the market. Let them fail. The market will deal with it'" (Wessel, 2009a, p. 21; cf. Cassidy, 2008, p. 61). Bernanke, however, did not find the arguments of the economists very convincing:

I was unpersuaded. I believed that a failure of a major institution in the midst of a financial crisis would not only create contagion through effects on counterparties, but would likely have a tremendous negative effect on broader market confidence. (Wessel, 2009a, p. 21)

When more than 20 CEOs from Wall Street met on Friday September 12, the first thing they were told by Paulson was that there was not going to be any bailout of Lehman. "There is no political will for a federal bailout" (Wessel, 2009a, p. 16). Paulson also added that he had located two potential buyers for Lehman: Bank of America (once again) and Barclays.

After the weekend was over, Paulson insisted that he had said that there was not going to be a public bailout for the sole purpose of making it clear to the participants that they would have to try very hard to find a private solution to Lehman's situation:

We said, 'No public money'. We said this publicly. We repeated it when these guys came in. But to ourselves we said, 'If there's a chance to put in public money and avert a disaster, we're open to it'. (Stewart, 2009, p. 63)

After Paulson had addressed the CEOs on Friday September 12, Geithner divided up the bankers into three groups and assigned each of them a task for the weekend. One group was to estimate Lehman's losses; another to prepare for Lehman's bankruptcy; and a third to see if Lehman could be saved. If Lehman went bankrupt, Geithner said, certain preparations had to be made; there had to be "foam on the runway" (Wessel, 2009a, p.17).

The bankers left on Friday evening with their respective tasks and were told to come back early the next day, September 13. On Saturday, the group that had been assigned to estimate Lehman's economic situation, concluded that its losses were much larger than had been thought. Beside its mortgage-related losses, which were already known, Lehman also had tens of billion of dollars of losses in its portfolio for commercial real estate. Altogether, Lehman's losses – hidden as well as already known losses – amounted to something like \$30–80 billion.<sup>11</sup>

Earlier in the week, Bank of America had been told about some of Lehman's losses due to its dealings in commercial real estate. As a result of this, it had finally lost interest in acquiring Lehman. Instead Bank of America switched its attention to Merrill Lynch, which was looking for a buyer. John Thain, the CEO of Merrill Lynch, was convinced that once Lehman was gone, the market would turn on his firm (Thain, 2009). With Paulson's blessing, he quickly came to an agreement with Bank of America that it would buy Merrill Lynch. The details of the deal were worked out the next day.

But a new source of trouble also emerged on Saturday September 13. One of the participants in the weekend meeting, who had inside information about AIG, approached Paulson and asked if he was keeping an eye on the giant insurance firm. "Why, what's wrong at AIG?", Paulson asked (Stewart, 2009, p. 65). When he was told that AIG needed \$6 billion in

a week to survive, and much more during the following two weeks, Paulson exclaimed, "Oh, my God!". Later in the evening, the CEO of AIG telephoned and said that he needed \$40 billion.

By Saturday, it was clear that Barclays was interested in buying Lehman but also that the financial authorities in England first had to approve the deal. On Sunday September 14, it became obvious that this approval would not come. Exactly why this was the case is still unclear, but it is likely that the English financial authorities feared that Lehman was considerably weaker than what Barclays thought. And while the Fed and the Treasury had been willing to cover some of the losses of Lehman in a deal with Barclays, they were not ready to advance the huge amount that a full-scale rescue mission would demand.

"The British screwed us," Paulson (2010, p. 213) concluded. It was at this point that it was decided that Lehman had to declare bankruptcy. Its head bankruptcy lawyer, Harry Miller, was now told that he had to arrange for Lehman's bankruptcy. Miller, who had known for some time that this might happen, exclaimed:

You don't realize what you're saying. It's going to have a disabling effect on the markets and destroy confidence in the credit markets. If Lehman goes down, it will be Armageddon. (Stewart, 2009, pp. 67-68)

When Bernanke and Paulson were asked some time after Lehman's bankruptcy, why they had chosen not to save the bank, they both defended their decision. Paulson said that the U.S. state simply did not have the power to prevent Lehman from going under and that it would have been counterproductive to say so publicly. "You don't want to say 'the Emperor has no clothes'" (Wessel, 2009a, p. 24).

Bernanke initially said that the Fed did not intervene because the market had known for a long time about Lehman's problems and should therefore have been able to handle what was coming. Later he also pointed out that the Fed lacked the legal authority to intervene in the situation because Lehman lacked sufficient collateral for a loan. "Lehman was insolvent," he stated, "and didn't have the collateral to secure the amount of Federal Reserve lending that would have been necessary to prevent its collapse" (Stewart, 2009, p. 72). As the Fed on September 15-17 made a series of huge loans to the unit of Lehman that was sold off to Barclays, this latter argument is not convincing.<sup>12</sup> The likely explanation is that Bernanke simply did not think that the fall of Lehman would set off the kind of panic it did.

## THE ACCIDENT THAT PUNCTURED CONFIDENCE AND UNLEASHED THE FINANCIAL PANIC

Lehman's bankruptcy, most commentators agree, set off a panic that would end up by threatening not only the U.S. financial system but also the global financial system. According to Bernanke, "virtually every large financial firm in the world was in significant danger of going bankrupt" (Bernanke, 2009). Presumably the bankruptcy worked as a kind of detonator, but if this is true, how exactly did it work? Or was Lehman's bankruptcy rather the first in a series of explosions, so to speak, that eventually set off an avalanche? These questions are currently hard to answer, among other reasons because there is very little exact knowledge about what happened once Lehman went bankrupt.

Nonetheless, some facts *are* available, and one may start by looking at the effects that were directly caused by Lehman's bankruptcy. By "*direct effects*" I designate effects that were due to direct interaction with Lehman, say because some institution owned Lehman bonds, was engaged in a CDS with Lehman or the like.

But there were also *indirect effects* or effects without direct interaction. This type of effect includes actions that were caused by the fear that was unleashed by Lehman's collapse, by rumors that now began to circulate, and the like. Following Bagehot, we would assume that indirect effects are more dangerous than direct effects.

One can get a quick sense for how widespread the direct effects of Lehman's bankruptcy were, simply by contemplating the fact that this was a \$613 billion bankruptcy – the largest ever in U.S. history. To this can be added that there were nearly 80 Lehman subsidiaries around the world that had close ties with the U.S. parent company. This ensured that the fallout of Lehman would immediately spread all over the world.

Exactly how many direct links are we talking about between Lehman and other actors? The question is hard to answer, even if one can get some indication from the fact that "millions of transactions" were immediately frozen thanks to the bankruptcy and around 20,000 claims have been filed against Lehman in bankruptcy court (Hughes, 2009).<sup>13</sup>

Newspaper reports and information available from the bankruptcy case confirm that Lehman immediately caused losses on a global scale, in countries as far apart as Iceland, Scotland, and Japan.<sup>14</sup> In Japan, banks and insurance companies announced that they stood to lose some \$2.4 billion because of their ties to Lehman, while the Royal Bank of Scotland

Group mentioned a sum between \$1.5 and 1.8 billion (Bloomberg.com, 2008; Reuters, 2008). In Iceland, financial institutions only held 180 million euros worth of Lehman bonds, but were very much hurt by the spike in CDSs that followed Lehman's fall (Jonsson, 2009, p. 158).

Many other countries and types of actors were directly linked to Lehman as well. In England, for example, some 5,600 retail investors had bought Lehman-backed structured products for \$160 million (Ross, 2009). And in Hong Kong, 43,000 individuals, many of them senior citizens, had bought so-called minibonds to a value of \$ 1.8 billion, issued by Lehman (Pittman, 2009). We also know that losses were incurred by pension funds, such as the New York State Teachers' retirement plan (e.g., Bryan-Low, 2009). All in all cities and counties in the United States lost more than \$ 2 billion thanks to Lehman (Carreyrou, 2010; cf. Crittenden, 2009). One state-owned bank in Germany, Sachsen Bank, lost around half a billion euros (Kirchfeld & Simmons, 2008). A large number of hedge funds in London also had some \$12 billion in assets frozen when Lehman declared bankruptcy (Spector, 2009).

The Fed and the Treasury had been afraid that Lehman's involvement in CDSs would cause chaos in the financial world and, as a result, done whatever they could to handle this problem before the bankruptcy. Commentators agree that the activities of Bernanke and Paulson were successful on this score.<sup>15</sup> Nonetheless, the price on CDSs immediately spiked after the announcement of Lehman's bankruptcy, and, as we know, this caused considerably damage to some institutions.

What the Fed and the Treasury failed to realize, however, was that one of the major actors in the money market had invested several hundred million dollars in Lehman bonds. This was Primary Fund, which held \$785 million in Lehman bonds that now became worthless. When this loss became known, a run was set off on the money market.

The last example shows how closely related direct and indirect causes can be. The existence of investments in Lehman bonds in one money market firm made investors think that also other money market firms might have Lehman bonds or Lehman-related assets ("*hidden losses*"). Direct links to one actor, in short, led to a belief that that all of the actors in the market might have similar holdings. This reaction can be called *categorical*, in the sense that it involved a category of actors rather than one or several actors with direct links to Lehman.

Another example of an indirect effect of Lehman's bankruptcy was the rumors that now started to fly around and attach to single actors, and rumors typically emerge when there are hidden losses. One example of this

involved UBS AG, which suddenly stood to lose \$4 billion, according to one analyst's report on September 16. The actual figure, it was later found out, was \$300 million (Mollenkamp et al., 2008).

The fact that Dow Jones fell 500 points or 4.4% on September 15 – the largest drop since the attack on September 11 – is another example of an indirect effect of Lehman's bankruptcy. And so is the loss of confidence in the U.S. state and its capacity to control what was going, that occurred when it became known that it was not going to support Lehman. The French finance minister as well as the head of the European Central Bank immediately criticized the U.S. decision (see also Paulson, 2010, p. 348).

In the category of indirect and categorical effects, one can also include the renewed attacks that now followed on the remaining investment banks. Two of the main investment banks had already disappeared – Bear Stearns and Lehman – and the last of these had gone down without any support from the U.S. state. Investors now turned to the remaining investment banks, as evidenced by a sharp rise in the cost of insuring them against default. The price rose several hundred basis points for (in this order) Morgan Stanley, Goldman Sachs, and Citigroup (Onaran & Helyar, 2009, p. 61).

The process of financial disintegration that had been set off by Lehman would accelerate during the fall of 2008. It would appear that many investors and politicians feared that the whole global financial system would come apart several times after September 15. Exactly how to trace what was happening during the panic is not clear. Besides individual testimonies to the effect that the financial system was indeed on the verge to implode, one may however also refer to some indices that measure fear and stress in various financial markets. Two of these indices, for example, peaked during the fall, one just once and the other several times.

The LIBOR-OIS spread peaked in mid-October, until the decision was announced to use Troubled Asset Relief Program (TARP) money to increase the capital of U.S. banks and also that FDIC would insure all new bank loans (e.g., Taylor, 2008; cf. Zandi, 2009a). VIX or the so-called Fear Index shot up at this point as well, but reached an even higher peak a week later and on November 17–20. The reason for the two last peaks seems to have had to do with worrisome international financial news (Fig. 2).<sup>16</sup>

After the period of mid-October to mid-November, the panic gradually started to cool off until the free fall period ended, some time in the early summer of 2009. On September 15, on the anniversary of the bankruptcy of Lehman, Bernanke publicly stated that the crisis was "very likely over" (Robb, 2009; Fig. 3).

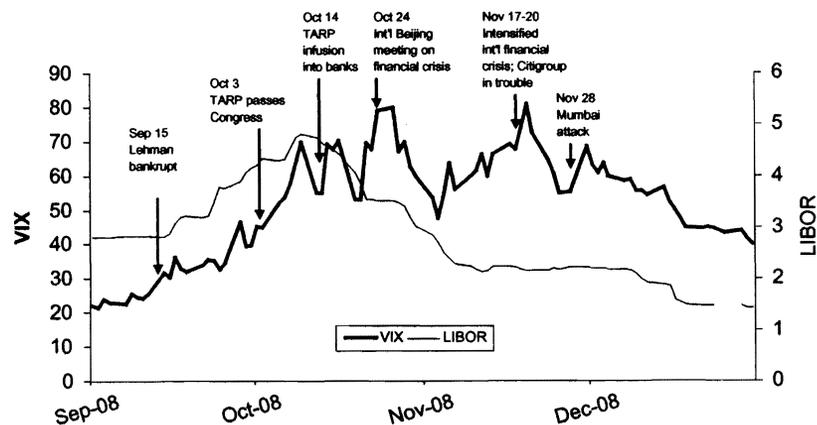


Fig. 2. VIX or the So-Called Fear Index and LIBOR during the Fall of 2008. Notes: While VIX or the so-called fear index does not measure a lack of confidence, one may nonetheless argue that it covers some aspects of this phenomenon. Confidence implies steady behavior and volatility the opposite of this. It should be noted that VIX does not measure volatility in the past, but the volatility that investors expect in the next 30 days. The volatility that is at issue is that of the S&P 500 Index. "High levels of the VIX reflect investor anxiety regarding a potential drop in the stock market," according to Robert Whaley, "Understanding the VIX," *Journal of Portfolio Management* (Spring, 2009), p. 104. VIX typically spikes upwards, Whaley also says, when there are unexpected events in the economy or in the social or political arena. The chance of VIX going above 34.22 he estimates to 5%, and the longest time that this figure has been surpassed since 1986 is 47 days. During the financial crisis, it can be added, the number was 151 (from September 26, 2008 to May 4, 2009).

What role did confidence, or rather the loss of confidence, play in this process between the fall of Lehman in the mid-September and the early summer of 2009, when the free fall seems to have ended? Again, this may be more of a research topic than something that can be established with certainty today. What I will do in the meantime, however, is to suggest that one may want to distinguish between two types of loss of confidence and show how this may be of some help in understanding what happened after Lehman's bankruptcy.

Bagehot, to recall, argues that in a situation with hidden losses, some "accident" may unleash a panic. "A small accident may greatly hurt [the financial system], and a great accident for a moment may almost destroy it"

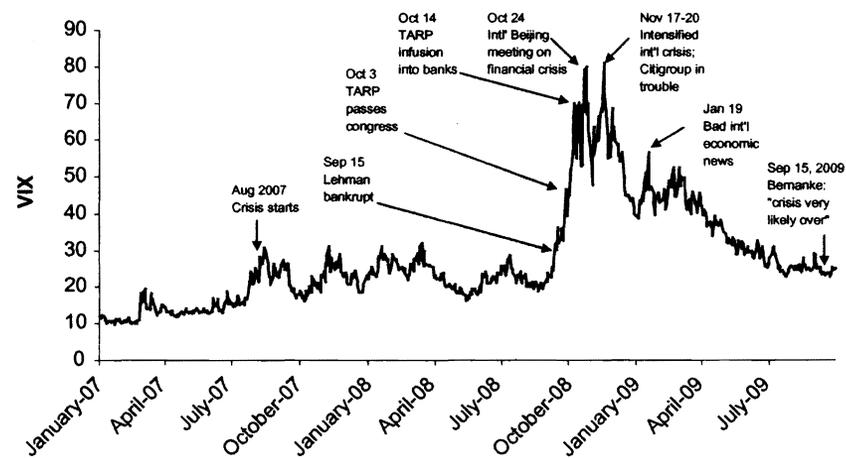


Fig. 3. VIX or the So-Called Fear Index during the Financial Crisis, August 2007 to September, 2009. Notes: The fear index rose sharply above 20 in August 2008, a level below which it would not return until December 22, 2009.

(Bagehot, [1873] 1922, pp. 151–152). Lehman would seem to qualify as a great accident, because the decision to let it go bankrupt was followed by a period of immense turmoil in the world's financial markets.

In one swift moment, investors in various markets were now faced with the knowledge that some of their assets had suddenly become much less worth than they had thought. The loss of confidence that comes when actors suddenly realize that there are hidden losses among their assets represents one type of loss of confidence – what may be called a *collapse of confidence*. This type of loss of confidence is the one that Bagehot had in mind, and it is typically related to a strong sense of fear and panic.

The second type of loss of confidence is somewhat different in nature. It is related to actions that investors and institutions take when they realize that they can no longer trust the usual proxy signs in the economy. When investors feel that they cannot rely on the proxy signs that are available, they do not engage in any action – which means that markets freeze up.

This type of loss of confidence is less dramatic than the one that Bagehot refers to but deeply damaging nonetheless. It represents a type of loss of confidence that may be called a *withdrawal of confidence*. It is a loss of confidence that is typically accompanied by decisions taken through calm and rational deliberation. If confidence is quickly withdrawn, the pedestrian

(to recall Mancur Olson's image) will end up in a free fall – just as Adam Smith famously did when he dropped into a hole while he was visiting a tannery in Glasgow (“talking warmly on his favorite subject, the division of labor” – Ross, 1993, p. 152). If confidence is slowly withdrawn, on the contrary, he or she will simply stand still and refuse to budge.

Both types of loss of confidence were part of the events that followed on Lehman's bankruptcy. In looking at the events that now unfolded, some have attracted attention because they raised the specter of systemic risk in a very dramatic manner. These include the fall of AIG, the attack on the remaining banks, and the sudden demand by Paulson and Bernanke for \$700 billion to handle the crisis.

But also other important events took place during this period. These did not threaten the whole system in a similarly dramatic fashion, but nonetheless affected it deeply. Among these, one may include the freezing up of a number of important financial markets, such as the money market, the repo market, and the interbank market. Some of these actions were the result of a collapse of confidence, but more often of a withdrawal of confidence.

After September 15, it seemed several times to the Fed that a systemic crisis was immanent. The first time this happened was the very same day that Lehman declared bankruptcy. On September 15, AIG was downgraded by the major credit rating agencies, something that meant that it had to raise its collateral considerably. AIG had over the years lost more than \$50 billion in mortgage-related businesses, but what was now pushing it over the edge was its enormous portfolio of CDSs (Lewis, 2009). A unit attached to AIG's London office (AIG F.P.) had in particular taken on \$75 billion in subprime-related CDSs. In general, it appears that the leadership of AIG had little understanding of the complexity and dangers involved in dealing with CDSs.<sup>17</sup>

Bernanke felt that if AIG suddenly went bankrupt, this might break the financial system. He was also sure, as he later put it, “that the markets weren't expecting it to go” (Wessel, 2009b, p. 25). The Fed therefore made a quick decision to invest \$ 80 billion in AIG, for which it got 77.9% of its equity (in preferred nonvoting stock).

In terms of loss of confidence, it is likely that AIG's bankruptcy would have led to a quick collapse of confidence, followed by a major withdrawal of confidence. It is nonetheless true, as was soon quickly pointed out, that the resolve to let the market take care of things only lasted for a day. It was a realization of this type that led Barney Frank, the Chairman of the House Financial Services Committee, to suggest that September 15 be called “Free Market Day” (*Wall Street Journal*, 2008a).

While the decision by the Fed to back AIG may have prevented the financial system from breaking down, it also led to confusion. The reason for this was that it came one day after the Fed had let Lehman fail. According to *The Financial Times*, “many analysts ... criticized the US authorities for adopting an arbitrary approach to financial rescues – saving AIG but not Lehman – that failed to boost confidence” (Guha, Mackenzie, & Tett, 2008).

“This is an economic 9/11!”, Paulson told his staff on September 16 (Sorkin, 2009b, p. 174). That confidence was disappearing quickly from the financial world was, for example, clear from what was happening to the two remaining investment banks. During the days after Lehman's bankruptcy, the shares of Goldman Sachs and Morgan Stanley fell quickly and it seemed clear that both of them might go down.<sup>18</sup> While Stanley Morgan was carrying some heavy undisclosed losses, Goldman Sachs was in much better shape because it had been insuring itself against a fall in the mortgage market since 2006. If Goldman Sachs had fallen, it would in other words been a case of self-fulfilling prophecy along the lines of Merton.

The two banks blamed the short-sellers for their troubles and succeeded on September 19 in getting SEC to issue a temporary ban on short-selling of financial companies. For the record, it should be mentioned that short-selling is routinely used by investment banks to make a profit.

The ban on short-selling, however, was not enough to stop the fall of the shares of Goldman Sachs and Morgan Stanley. Another solution was instead found to their problems, and this was to change their status from investment banks to bank holding companies. This took place on September 21 and meant that from now on they fell under the jurisdiction of the Fed, as opposed to that of SEC. They now also got access to some additional lending facilities of the Fed. This was probably what ultimately saved Goldman Sachs and Morgan Stanley, even if their shares continued to fall till mid-November.

Also the shares of Citigroup kept going down after the collapse of Lehman. From 2007 and onwards, the giant bank conglomerate had taken heavy mortgage-related losses; it was also suspected of having many more hidden losses of this type. The Fed, however, had confidence in the solvency of Citigroup, as evidenced by the fact that it facilitated and approved its acquisition in late September of Wachovia, another huge bank. The deal between Citigroup and Wachovia was however undone shortly thereafter. Wells Fargo declared itself willing to take over Wachovia without any government support – and got the Fed's blessing to do so.

Bernanke and Paulson eventually realized that Citigroup itself was in very bad shape. When the decision was made in mid-October to invest TARP

funds straight into the capital of the banks, Citigroup received \$25 billion. Toward the end of November, the Fed agreed to invest another \$20 billion and also to guarantee \$306 billion of its loans and securities. The decision was justified by Treasury on the ground of “declining stock price.” Critics, however, regarded the \$306 billion as “an undisguised gift” (Lewis & Einhorn, 2009).

The financial storm that broke out after Lehman’s fall on September 15 also made Bernanke and Paulson realize very quickly that something else had to be done than just attend to individual cases. It was crucial to try to stop the whole situation from further deterioration, and for this, measures of a very different type were needed. “We couldn’t keep using duct tape and bailing wire to try to hold the system together,” as Paulson (2010, p. 254) put it. Huge amounts of money were necessary that could be used very quickly at their discretion, and the figure they decided on was \$700 billion.

Behind this decision was, among other things, Bernanke’s conviction that the threat of a depression must be fought through massive infusions of money by the U.S. state. This was a conviction that was directly inspired by Milton Friedman’s analysis of how the Great Depression had been caused by the Fed’s failure to provide liquidity. A few years earlier, Bernanke (2002) had publicly told Friedman, “You’re right. We [that is, the Fed] did it. But thanks to you we won’t do it again.”

Bernanke and Paulson first went to Bush to get the President’s support for their plan to infuse a huge amount of money into the financial system to stabilize it. “Mr. President,” Bernanke said, “we are witnessing a financial panic” (Paulson, 2010, p. 255). He added that the situation was as bad as the Depression and that “it could get worse.”

On September 18, Bernanke and Paulson had their first meeting with congressional leaders, and Bernanke did his utmost to get the massive funds that were necessary to fight the threat of a depression. He told the politicians that it was “only a matter of days” till there would be a “meltdown [of the financial system].” He used very strong language. “I kind of scared them,” he later said, “I kind of scared myself” (Wessel, 2009a, p. 204; cf. Paulson, 2010, pp. 258–262).

Paulson quickly put together a three-page document that would have allowed him the right to use \$700 billion at his own discretion to fight the crisis. The text included the following statement: “Decisions by the Secretary [of Treasury] pursuant to this Act are non-reviewable and committed to agency discretion, and may not be reviewed by any court of law or any administrative agency” (*New York Times*, 2008). Joseph Stiglitz

(2009), who has characterized this document as “an act of extraordinary arrogance,” has also the following to say of Paulson:

Bernanke sold the program as necessary to restore confidence. But it didn’t address the underlying reasons for the loss of confidence. The banks had made too many bad loans. There were big holes in their balance sheets. No one knew what was truth and what was fiction. The bailout package was like a massive transfusion to a patient suffering from internal bleeding – and nothing was done about the source of the problem.

Paulson’s plan to have \$700 billion to combat the crisis with was first rejected by the House of Representatives, something that made the whole situation worse. On October 1, however, the Senate passed the bill to fund the TARP. On October 3, after pressure, the House passed the bill as well.

Having the TARP, however, did not stop the panic from escalating. One reason for this was that the idea of buying up a substantial part of all toxic mortgage-related securities was difficult to put into action, because these types of securities were hard to value and trade in a situation of free fall. “Cash for trash” (as some called this approach) was simply not the solution. Something else was needed to restore confidence in the financial system.

The new strategy was first hit on by the British, who on October 8 announced that they would invest 400 billion pounds directly into the capital of their banks. This was a much faster way of strengthening the banks than by buying up their toxic assets, as Bernanke and Paulson had tried to do. The leverage of the banks would improve dramatically in this way. Two days after the British decision, it was announced at a G-7 meeting that public sources should be used to capitalize banks and other major financial institutions.

On October 14, the general public in the United States was told about a new Capital Purchase Program. Paulson announced that \$250 billion of the TARP money was to be used to strengthen the capital base of the U.S. banking system. *The Financial Times* commented,

what finance ministers now accept is that liquidity concerns reflect genuine solvency and capital fears. More important still, they also now recognize – even in the US – that the only way to address this is to use taxpayer cash to recapitalize banks in a systemic manner, instead of demanding that central banks should solve the problem with ever-more liquidity tricks. (Tett, 2008b)

That this operation was seen as a way of restoring confidence is clear from a statement that Paulson made to the banks on October 13, to make them accept the infusion of capital: “This is about getting confidence back into the system. You’re the key to that confidence” (Sorkin, 2009a, p. 524; cf. Paulson, 2010, p. 337). And similarly, when Paulson (2008b) publicly

announced the new use of TARP funds the next day: "Today, there is a lack of confidence in our financial system – a lack of confidence that must be conquered because it poses an enormous threat to our economy."

That Paulson and Bernanke had indeed designed this particular part of their attempts to stop the financial crisis with confidence in mind is also clear from another detail in the recapitalization plan. If the new funds were only invested in the banks that needed capital, this would be interpreted negatively by the market. As a consequence, Bernanke and Paulson ordered *all* of the major banks to accept infusions of capital.

What may well have been the last time that Bernanke and Paulson feared that systemic risk was involved came in mid-December, and it involved Bank of America and Merrill Lynch. During the months after Bank of America had decided that it would take over Merrill Lynch, its CEO Ken Lewis had gradually come to realize that the losses of Merrill Lynch were enormously much larger than he had thought in September. As a result, he told Paulson (2009) that he wanted the deal unmade, invoking so-called material adverse change.

Paulson appears to have been aware of what was coming and that Bank of America had become, as he put it, "the turd in the punchbowl" (Crittenden & Hilsenrath, 2009). He and Bernanke, however, did not under any circumstances want Bank of America to undo its deal with Merrill Lynch, because they feared that it might threaten the financial system. As a result, they pressured Lewis to stick to the deal. They also decided to cover some of Merrill Lynch's losses and ended up spending \$20 billion for this purpose.

We shall now turn to some of the less dramatic but still very serious events that followed Lehman's bankruptcy. When the run on the money market started on September 15, Bernanke and Paulson were taken by surprise. It was, to repeat, a development they had not expected. The Fed initially refused to intervene, but changed its mind as the run intensified and some \$400 billion in deposits were withdrawn by nervous investors.

There seems to have been two reasons for the decision to guarantee the money market industry, which amounted to some \$4 trillion. It was first of all feared that the market might blow up, because it operated as a kind of shadow bank. The money market funds accepted deposits from individual investors that could be pulled out at a moment's notice, while providing loans to corporations of longer durations – but without being under obligation, as banks are, to set aside reserves. Second, many of the largest corporations in the United States depended on the money market for its finances.

The market for corporate paper was linked to the money market but had also started to freeze up on its own. While before Lehman, it amounted to around \$1.8 trillion, it started to decline sharply during the fall, reaching around \$1 trillion in 2009. This way the problems in the financial system were transmitted to the rest of the economy.

The repo market quickly froze up as well. This market is enormously important but little known, including its size that was estimated at \$12 trillion in 2007 (Gorton, 2009, p. 570). One important part of the market supplies money to the investment banks on a day-to-day basis and is known as the tri-party repo market, because third-party banks operate as clearing banks (New York Mellon and JPMorgan Chase). The tripartite repo is considered to make up 15–20% of the whole repo market.

One reason why also the tri-party repo market now stopped to function had to do with the kind of securities that it had started to accept as collateral. Originally, only securities issued by the Treasury had been accepted as collateral, but over the years also other and less high-quality securities were being accepted. "The system [only] works if the clearing banks are confident that they can liquidate collateral quickly," according to one expert (Mackenzie, 2009). JPMorgan Chase, to recall, had lost confidence in the collateral that Lehman had put up in early September and demanded several billions dollars more.

The borrowing between banks also froze up, as a result of the fear that other banks had hidden losses among its assets. The withholding of confidence in this type of market is usually measured by the so-called LIBOR-OIS spread, which immediately started to spike after Lehman's collapse. It continued, as we know, to do so until mid-October, when the decision was made to invest capital into the Western banking systems, including TARP into the major U.S. banks. On October 14, FDIC also announced a new program that would insure new bank loans [Temporary Liquidity Guarantee Program (TLGP)].

The withholding of confidence also affected a number of other markets than the ones just mentioned, including the markets for credit cards, car loans, and student loans. Through the monthly surveys by the Fed, we also know that it was becoming increasingly hard to get consumer and industrial loans (e.g., Federal Reserve Board, 2009). Withholding of confidence also made it more difficult for small businesses to operate and drove a number of small banks into bankruptcy. According to Stiglitz (2010, p. 119), "the banks didn't know their net worth and knew that accordingly they couldn't know that of any other firm to whom they might lend." All of this meant that the so-called real economy now began to be deeply affected

by the financial crisis – and to react back on it, increasing in this way its impact.<sup>19</sup>

### CONCLUDING REMARKS

As in all past crises, at the root of the problem is a loss of confidence by investors and the public in the strength of key financial institutions and markets, which has had cascading and unwelcome effects on the availability of credit and the value of savings. The actions today [of infusing banks with capital] are aimed at restoring confidence in our institutions and markets and repairing their capacity to meet the credit needs of American households and businesses.

– Ben Bernanke, October 14, 2008<sup>20</sup>

Rather than tackle the source of the problem, the people running the bailout desperately want to reflate the credit bubble, prop up the stock market and head off a recession. Their efforts are clearly failing: 2008 was a historically bad year for the stock market, and we'll be in recession for some time to come. Our leaders have framed the problem as a "crisis of confidence" but what they actually seem to mean is "please pay no attention to the problems we are failing to address."

– Michael Lewis and David Einhorn, January 4, 2009<sup>21</sup>

Keynes famously described the financial system as "a delicate machine, the workings of which we do not understand"; and one important reason why it is so delicate has to do with the role that confidence plays in it (Keynes, [1930] 1963, p. 136). The topic of confidence in finance, it should be added, is badly under-researched, and I have therefore in this article tried to outline what a theory of confidence may look like (see also Swedberg, forthcoming).

To recapitulate, the core idea in this theory is that confidence has to do with people's tendency to base their actions on indicators or *proxy signs* for what some situation is like, in those cases where they lack direct knowledge of the situation. When the proxy sign is properly aligned with the economic situation, investors will feel confidence (positive sign, positive economic situation; negative sign, negative economic situation). When there is a negative sign and a positive economic situation, there may be some problem (Merton's case). The real problem, however, comes when there is a positive sign and the economic situation is negative. This indicates that there are *hidden losses* in a bank or in the financial system that the investors are unaware of (Bagehot's case).

Note that this argument is not the same as what may be called the transparency argument. According to this type of argument, it was a lack of transparency in the financial system that helped to cause the financial crisis.

According to the argument presented in this article, in contrast, it was the disjunction between the proxy signs and the underlying economic situation that was a major cause of the panic.

I have then tried to apply this idea about proxy signs in the economy both to investor confidence and to the kind of confidence that economic actors have in the central bank – *confidence in the state*. I have also attempted to draw a distinction between two different types of lack of confidence. There is, on the one hand, the situation when confidence suddenly disappears (*collapse of confidence*). And then there is the situation when actors do not engage in some economic action because they lack the confidence to do so (*withdrawal of confidence*).

Loss of confidence, touched off by disclosure of hidden losses, as in the case of Lehman, can spread either in a *direct way* or in an *indirect way*. In the former case, there is interaction between Lehman and some actor. When the loss of confidence spreads in an indirect way, on the other hand, the reaction is *categorical*. That is, investors now treat all actors belonging to the same category in the same way, fearing that they may all have the same problem ("guilt by association").

I have finally noted that in a so-called *confidence relationship*, one actor has confidence that the other actor will do something, based on a proxy sign. A confidence relationship can also include a *third party* – someone who guarantees the quality of the proxy sign, by virtue of his or her objectivity, special knowledge, or the like. This is typical for a modern financial system, and rating agencies are an example of such a third party.

But there is more to say about the nature of confidence, as the two quotes at the beginning of this concluding section indicate. Confidence in the financial system is not only economic, it is also political in nature and can be used as a political tool. Confidence is not only important, but it is also ambiguous and difficult to quantify, and these two qualities add to its usefulness as a political tool. There currently exists, as the quotes at the beginning of these concluding remarks illustrate, a debate whether the financial crisis was primarily caused by a loss of confidence (*the liquidity position*) or primarily by a loss of confidence having to do with economic losses (*the insolvency position*). These two positions are not only very different in their analysis of what actually happened, but they also have different political consequences, in that they influence the diagnosis of what needs to be done with the financial system.

In this article, I have tried to use these ideas about confidence to explain Lehman's collapse and how this collapse helped to turn the credit crunch of 2007 into the financial panic of 2008. The main idea, to repeat, has been that

the economic situation before September 15 was close to the one described by Bagehot – *hidden losses* – and that Lehman then triggered a panic.

The idea that Lehman did not somehow “cause” the financial crisis, it should be noted, is very common (e.g., Paulson, 2010, p. 349). Sometimes the counterfactual point is added that if it had not been for Lehman, the crisis would have happened anyway, but then been unleashed by some other event. Jamie Daimon, the CEO of JPMorgan Chase, is of this opinion:

After Lehman’s collapse, the global financial system went into cardiac arrest. There is much debate over whether Lehman’s crash caused it—but looking back, I believe the cumulative trauma of all the aforementioned events and some large flaws in the financial system are what caused the meltdown. If it hadn’t been Lehman, something else would have been the straw that broke the camel’s back. (Carney, 2009)

A few economists have argued that that the role of Lehman in unleashing the crisis has been exaggerated and that also the behavior of Bernanke et al. was important. John Taylor, for example, argues that it was the panic-stricken behavior by Bernanke and Paulson when they went to Congress and asked for \$700 billion that made the greatest contribution to the crisis (Taylor, 2008; see also Cochrane & Zingales, 2009; for a critique, see, e.g., Ferguson & Johnson, 2010). “They said [to Congress]: ‘If you don’t do this, and even if you do, it could be the next Great Depression’” (Wessel, 2009b). Mark Zandi (2009a) points to another event – the loss of investments due to the decision by the Fed to put Freddie Mac and Fannie Mae into conservatorship – as the trigger that transformed the crisis into a full-scale panic. And, finally, according to Joseph Stiglitz (2010, p. 324), “the financial disturbances that followed Lehman Brothers collapse were, in part, a result of the increased uncertainty about the scope of the government guarantee [of all banks].”

Which argument is correct? I do not think that there currently exists enough evidence to accept one of these explanations and rule out the others. Maybe one can just say that that there were a series of decisions in the fall of 2008 that turned the credit crunch into a full-scale financial panic and that one of the most important of these involved the bankruptcy of Lehman Brothers.

One last item about confidence in the financial system needs to be addressed. My argument in this article is that confidence plays a key role in the financial system – but also that this role is currently not well understood and has not attracted enough analytical attention. So far in the discussions about the financial crisis and what caused it, it is the behavioral economists who have referred most often to confidence.

Their argument is based on the idea that human nature has its irrational sides; that confidence belongs to our “animal spirits”; and that these latter need to be much better understood (Akerlof & Shiller, 2009; cf. Krugman, 2009; Gladwell, 2009). Akerlof and Shiller (2009, p. 4) also state that the “animal spirits” constituted “the reason why ... Lehman Brothers collapsed.”

While I agree with the emphasis on confidence that one can find in the works of Shiller, Akerlof, and others on the financial crisis, I would nonetheless like to emphasize that while confidence does have a psychological side, it also has a distinctly social or sociological side. References to human nature fall pretty flat when confronted with the task of analyzing sophisticated social institutions of the type that make up the modern financial system. This is where there exists a clear opening for economic sociologists, who with their conceptual tools are well positioned to contribute to a better understanding of the role that confidence plays in modern finance.

## NOTES

1. For links between the proxy sign theory of confidence, as presented here, and the semiotics of Charles Peirce, see Swedberg (forthcoming) (cf. Peirce, [1868] 1950; Peirce, 1953, pp. 26–27). As in Peirce’s theory, the emphasis is on the existence of signs, not on the act of signaling as in the theories of Michael Spence (1974) and Gambetta (2009).

2. There currently does not exist a full account of fraud in the financial crisis of the type that William Black (2005) produced for the savings and loans crisis. At a recent lecture, Black (2009) said that fraud played “a dominant role” in the current financial crisis.

3. “Every banker knows that if he has to *prove* that he is worthy of credit, however good may be his arguments, in fact his credit is gone: but what we have requires no proof” (Bagehot, [1873] 1922, p. 68).

4. According to one account, Fuld liked to cast Lehman Brothers and its business in military terms. “Every day is a battle,” he told “his troops.” “You’ve got to kill the enemy. They [have] tried to kill us.” At one point during the difficult spring of 2008, “he urged people into battle. He got on the public-address system and spoke to traders. He even handed out some plastic swords. They were in a fight, he wanted them to know, but they’d emerge stronger” (Fishman, 2008). Lawrence McDonald, a former employee of Lehman Brothers and the author of a major book on its fall, describes Lehman Brothers as “a banking warrior” (McDonald, 2009, p. [1]). Fuld, known as “The Gorilla” by his employees because of his aggressive personality, for many years, kept a stuffed toy gorilla in his office (e.g., Sorkin, 2009a, pp. 23, 28). For information about the wives of male Lehman employees, see Vicky Ward 2010 (which is based on her forthcoming book *The Devil’s Casino: Friendship, Betrayal, and the High Stakes Game Played Inside Lehman Brothers*).

5. "Fuld lived in an enormous Greenwich mansion, over 9,000 square feet, valued at \$10 million. He had four other homes, including a mansion on Jupiter Island, one of Florida's garrisons of the big muckety-mucks in Hobe Sound, thirty miles north of Palm Beach ... He also owned a vast \$21 million Park Avenue apartment with three wood-burning fireplaces, and a spectacular ski chalet near Sun Valley, Idaho. His art collection was valued at \$200 million, including a collection of postwar and contemporary drawings worth tens of millions, one of them by Jackson Pollock" (McDonald, 2009, p. 275). During 2000–2008, Fuld received \$541 million in compensation from Lehman Brothers – and when the firm went bankrupt, he lost around \$930 million in Lehman equity (Bebchuk, Cohen, & Spamann, 2009). What Fuld and his wife had left as of the end of 2009 was minimally the four houses and the art collection. On November 10, 2008, Fuld sold the Florida mansion, worth around \$14 million to his wife for \$100 (Reuters, 2009). In April 2009, he started to work at Matrix Advisors, a hedge fund.

6. According to information from Thomson Financial, the market share of Lehman in U.S. mortgage-backed securities during the years of 2004–2007 was as follows (the figure within the brackets indicates its position in the market): 2004 – 10.1% (3), 2005 – 10.2% (2), 2006 – 10.3% (1), and 2007 – 10.7% (1) (Rose & Ahuja, 2009, p. 15).

7. In March 2010, the report of court-appointed bankruptcy examiner Anton Valukas was made public. It consists of around 4,000 pages and cost \$38 million to produce. The report is based on some 5 million documents, 4–5 million e-mails and interviews with 250 people, including people at Lehman, the Treasury, the Fed, and so on.

8. This information draws on Valukas (2010, pp. 1385–1480), McCracken and Spector (2009), and Dash (2010b).

9. "The day that Lehman filed for bankruptcy [September 15, 2008], S&P rated the investment banks debt as A, which according to S&P's definition means a 'strong' capacity to meet financial commitments. Moody's rated Lehman A2 that day, which Moody's defines as 'low credit risk'. Fitch gave Lehman a grade of A+, which it describes as 'high credit quality'" (Evans & Salas, 2009, p. 69). The business press was also, on the whole, naïve in its evaluation of Lehman (Starkman, 2009). For a failed attempt to hold the rating agencies legally responsible for the Lehman mortgage-backed securities they evaluated, see, for example, Sorkin (2010).

10. Bush's brother Jeb worked as an adviser for Lehman and his cousin George Walker IV was on Lehman's executive committee (and attempted to intervene by contacting Bush but failed). Paulson's brother Richard worked for Lehman's Chicago office (Sorkin, 2009a, pp. 181, 284).

11. Information about Lehman's hidden losses varies widely. Note also that many of these losses were unknown or hidden to the leadership of Lehman itself; its books on its commercial real estate deals, for example, were in extremely poor shape ("a horror story," McDonald & Robinson, 2009, p. 301). Lehman's investments in commercial real estate have been estimated at \$53 billion. In his book *In Fed We Trust*, David Wessel mentions the figure of \$65–70 billion since the Bank of America executives told the Fed on Saturday September 13, 2008 that Lehman had toxic real estate assets to this amount (Wessel, 2009a, pp. 17–18; cf. Sorkin, 2009a, p. 319; Valukas, 2010, pp. 209, 699). *Financial Times* reported a few days after Lehman's bankruptcy that "estimates [of Lehman's toxic assets] vary between \$40bn and \$80 bn"

(Tett, 2008a). The group at the New York Fed with the task to estimate Lehman's losses thought that \$30 billion was the right amount (Sorkin, 2009a, p. 321).

12. On September 15–17, the Fed made a series of short-term loans to a unit of Lehman that was later sold to Barclays. These loans were for \$62.8 billion (September 15), \$47.7 billion (September 16), and \$48.9 billion (September 17). Barclay later repaid these loans (Stewart, 2009, p. 80).

13. According to one source, Lehman Brothers Holdings was at the time of the bankruptcy engaged in "about one million intercompany derivative transactions and about 450 thousand external ones with around eight thousand counterparties" (Tibman, 2009, p. 218).

14. While originally it had been assumed that Lehman would file for a Chapter 7 liquidation, it ended up being a Chapter 11 or reorganization type of bankruptcy. For information regarding the case of Lehman Brothers Holdings, see the web page of the United States Bankruptcy Court, Southern District of New York. There also exist a considerable number of newspaper articles on the Lehman bankruptcy case that contain information about Lehman's counterparties and the amounts involved in various transactions. According to one of these, for example, the Swedish bank Swedbank had loaned Lehman \$1.35 billion against collateral, and its shares dived when Lehman's bankruptcy became known (Frangos, 2008).

Information about the counterparties of Lehman Brothers, it should be added, is also helpful in mapping out exactly what "too interconnected to fail" exactly means. As such, this latter concept invites to the use of network analysis (for an example of an analysis of systemic risk using networks analysis, see Markose, Giansante, Gatkowski & Shaghagh, 2010). While network analysis can be very helpful in this context, it should be added, it also needs to be complemented. One reason for this has to do with the phenomenon of what is later in this article described as a categorical reaction, that is, the phenomenon that a direct link makes a number of actors think that *all* actors of a certain type (a category) are in a similar financial predicament – and react accordingly.

15. It was also later reported that net payments of \$5.2 billion were enough to settle the \$400 billion of CDSs that Lehman was involved in (Reuters, 2008).

16. The LIBOR-OIS index is based on information from traders at banks belonging to the British Bankers' Association; the one of the VIX on actors who trade in options in Chicago (e.g., MacKenzie, 2009b; Whaley, 2009). Each index, in brief, measures the reactions of a certain group of actors. It can be added that the Dow hit its top on October 3, 2007, with 14,164, from which it then declined, with a few peaks along the line, to its record low of 6,547 on March 9, 2008. Consumer confidence, as measured through the Conference Board Consumer Confidence Index (the so-called Present Situation Index), reached a peak somewhat earlier than the Dow – in July 2007 (138.3) – and then fell to reach a record low in the 20s in 2009 (e.g., February: 21.9; November: 21.0; earlier record low: 17.5 in February 1983).

17. For an argument that AIG must make public internal information about the decisions that were responsible for its disastrous economic situation by mid-September 2008, see, for example, Spitzer, Partnoy, and Black (2009).

18. Through information of the type routinely published by the SEC, it is possible to establish that some Goldman Sachs people sold off many of their stock in their

company after the collapse of Bear Stearns and, even more, after the collapse of Lehman (Cohan, 2010).

19. The term “Lehman Wave” refers to an attempt to model the changes that were set off in long supply chains by the events of the fall of 2008 (Steen, 2009). This model describes how initially relatively small changes in the demand for a good can be increased till a “bull whip effect” is reached at the end of a long supply chain.

20. The quote comes from Paulson, Bernanke, and Bair (2008).

21. The quote comes from Lewis and Einhorn (2009).

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## THE ROLE OF RATINGS IN THE SUBPRIME MORTGAGE CRISIS: THE ART OF CORPORATE AND THE SCIENCE OF CONSUMER CREDIT RATING<sup>☆</sup>

Akos Rona-Tas and Stefanie Hiss

### ABSTRACT

*Both consumer and corporate credit ratings agencies played a major role in the US subprime mortgage crisis. Equifax, Experian, and TransUnion deployed a formalized scoring system to assess individuals in mortgage origination, mortgage pools then were assessed for securitization by Moody's, S&P, and Fitch relying on expert judgment aided by formal models. What can we learn about the limits of formalization from the crisis? We discuss five problems responsible for the rating failures – reactivity, endogeneity, learning, correlated outcomes, and conflict of interest – and compare the way consumer and corporate rating agencies tackled these difficulties. We conclude with some policy lessons.*

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