12-1-2014

The Failure Resolution of Lehman Brothers

Michael J. Fleming

Asani Sarkar

Michael J. Fleming and Asani Sarkar

The Failure Resolution of Lehman Brothers

- The experience of resolving Lehman in the bankruptcy courts has led to an active debate about the effectiveness of U.S. Chapter 11 proceedings for complex financial institutions.
- Lehman's poor pre-bankruptcy planning may have substantially reduced the value of Lehman's estate and contributed to many ensuing disputes with creditors.
- For over-the-counter (OTC) derivatives transactions, where much of the complexity of Lehman's bankruptcy resolution was rooted, creditors' recovery rate was below historical averages for failed firms comparable to Lehman.
- The settlement of OTC derivatives was a long and complex process, occurring on different tracks for different groups of derivatives creditors.
- Some of the losses borne by Lehman investors stemmed from the manner in which Lehman failed and could have been avoided in a more orderly process.

1. Introduction

Lehman Brothers Holdings Inc. (LBHI) filed for Chapter 11 bankruptcy on September 15, 2008, while its subsidiaries did so over the subsequent months (see Exhibit 1 for Lehman's organizational structure).[1] With 209 registered subsidiaries in twenty-one countries, Lehman's Chapter 11 filing was one of the largest and most complex in history. Creditors filed about $1.2 trillion of claims against the Lehman estate (LBHI, "The State of the Estate," September 22, 2010), which was party to more than 900,000 derivatives contracts at the time of bankruptcy.

Several bodies of law applied to Lehman's various corporate entities (Exhibit 2):

- The U.S. Bankruptcy Code applied to LBHI and its subsidiaries.
- The Securities Investor Protection Act (SIPA) regime applied to the insolvent broker-dealer, Lehman Brothers Inc. (LBI).
- More than eighty jurisdictions' insolvency laws applied to the non-U.S. Lehman Brothers entities, such as Lehman's U.K.-based broker-dealer Lehman Brothers International (Europe) (LBIE).

[1] When referring to LBHI and all its subsidiaries as an ensemble, we use "Lehman." Otherwise, when referring to the holding company (subsidiary), we use "LBHI" (the subsidiary name). Appendix A lists the acronyms and initialisms used in the article.

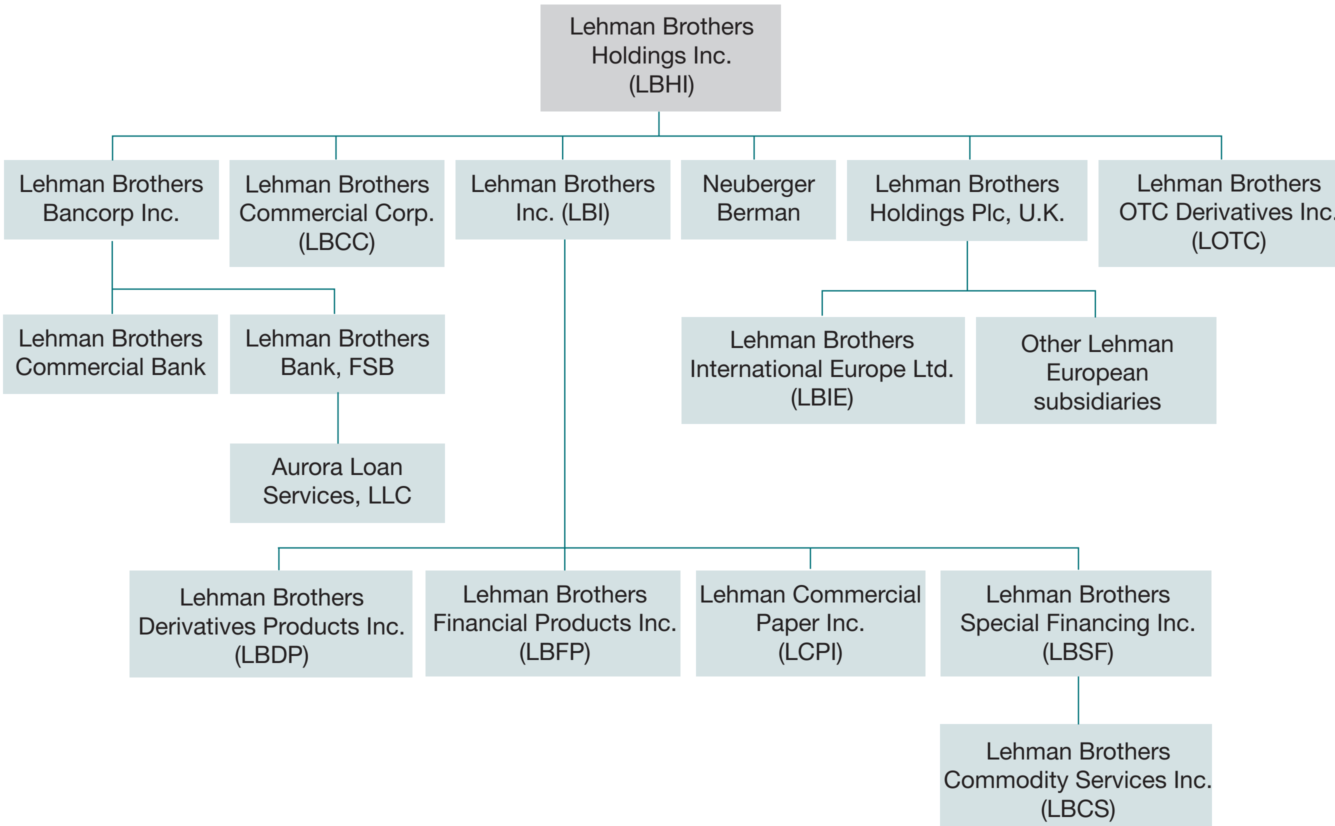
Michael J. Fleming is a vice president and Asani Sarkar an assistant vice president at the Federal Reserve Bank of New York.

michael.fleming@ny.frb.org; asani.sarkar@ny.frb.org

The authors thank Tobias Adrian, Wilson Ervin, Sahil Godiwala, Anna Kovner, Lisa Kraidin, Antoine Martin, James McAndrews, Hamid Mehran, João Santos, Joseph Sommer, and Emily Warren for helpful discussions and/or comments on earlier drafts as well as Samuel Antill, Weiling Liu, and Parinitha Sastry for excellent research assistance. The views expressed in this article are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

Exhibit 1

Organization Chart for Lehman's U.S. and European Subsidiaries



Sources: Derived from Valukas (2010).

Notes: The exhibit shows the organizational structure for Lehman Brothers' U.S. and major European subsidiaries.

- The Federal Deposit Insurance Act applied to its state-chartered bank and federally chartered thrift.
- U.S. state insurance laws applied to its insurance subsidiaries.

The failure of Lehman Brothers was associated with substantial losses for its equity holders and creditors. The experience of resolving Lehman in the bankruptcy courts has since led to an active debate regarding the effectiveness of U.S. Chapter 11 proceedings for complex financial institutions. Some economists have suggested a modification of Chapter 11, called Chapter 14, to apply to all financial companies exceeding $100 billion in consolidated assets (Jackson 2012). In contrast, Title II of the Dodd-Frank Wall Street Reform and Consumer Protection Act, passed in 2010, creates an alternative resolution mechanism, the Orderly Liquidation Authority, that expands the reach of the Federal Deposit Insurance Corporation (FDIC) to resolve large non-bank financial institutions such as Lehman.

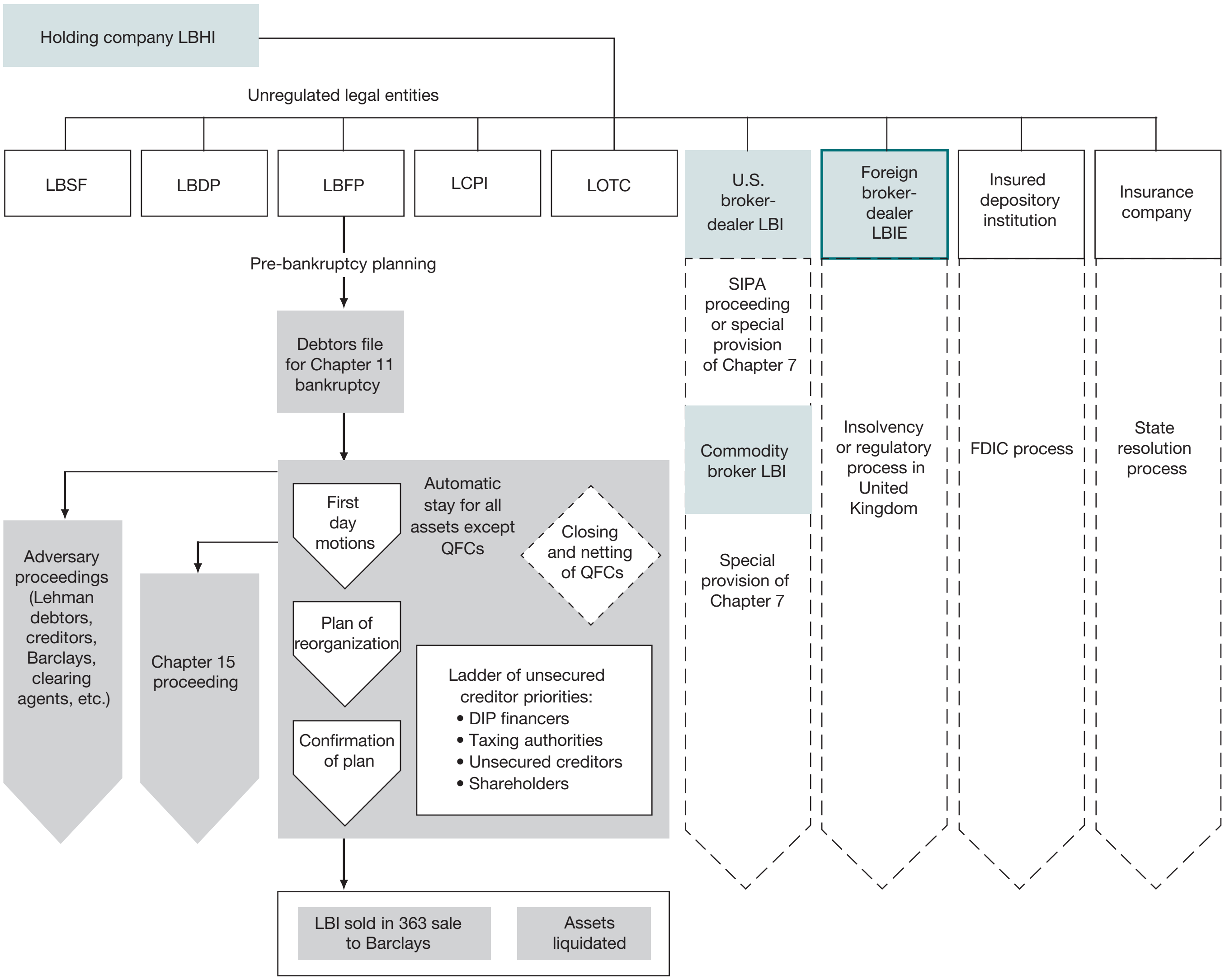
In this article, we examine the resolution of Lehman in the U.S. Bankruptcy Court proceedings[2] with a view toward understanding the sources of complexity in its resolution to thereby inform the debate on appropriate resolution mechanisms for complex financial institutions. Below are the main steps involved in Lehman's bankruptcy process (Exhibit 2):[3]

[2] While this article focuses on the application of the U.S. Bankruptcy Code to Lehman, we include two appendixes on the settlement of centrally cleared derivatives (Appendix B) and the resolution of LBI under the SIPA regime (Appendix C). Moreover, in a companion article, we discuss the value destruction resulting from the Lehman bankruptcy (Fleming and Sarkar 2014).

[3] At various points during the bankruptcy proceedings, the Lehman estate also brought a number of motions and adversary proceedings to facilitate the case, to determine liabilities, and to recover or sell assets, as shown in Exhibit 2.

Exhibit 2

Chapter 11 Bankruptcy Process for Lehman Brothers



Source: Derived from U.S. Government Accountability Office (2011).

Notes: The exhibit shows the bankruptcy process for Lehman Brothers and its affiliates. LBHI is Lehman Brothers Holdings Inc.; LBSF is Lehman Brothers Special Financing; LBDP is Lehman Brothers Derivatives Products; LBFP is Lehman Brothers Financial Products; LCPI is Lehman Commercial Paper Inc.; LOTC is Lehman Brothers OTC Derivatives; LBI is Lehman Brothers Inc.; LBIE is Lehman Brothers International (Europe); SIPA is Securities Investor Protection Act; FDIC is Federal Deposit Insurance Corporation; QFCs are qualified financial contracts; DIP is debtor in possession. Chapter 15 of the Bankruptcy Code governs judicial cross-border coordination. Sale of the company, in whole or in part, is commonly called a Section 363 sale because that is the section of the Bankruptcy Code that applies to sales that are free and clear of creditor claims.

- Pre-bankruptcy planning, including searching for potential buyers and preparing for filing of a bankruptcy petition;
- First-day-of-bankruptcy motions to obtain funding in order to operate businesses during bankruptcy and permission to use cash collateral on which secured creditors had claims;
- Closing and netting out qualified financial contracts (QFCs);
- Section 363 asset sales;[4]

[4] Sale of the company, in whole or in part, is commonly called a Section 363 sale because this section of the Bankruptcy Code applies to sales that are free and clear of creditor claims. Asset sales also occur as part of the confirmation plan.

- Establishing the total amount owed to creditors through the claims process, by providing reports on the debtor's financial condition and reviewing (and objecting to, if necessary) creditor claims;
- Filing a plan of reorganization[5] after negotiations with significant creditors, along with a disclosure statement to inform creditors about the plan;
- Confirming the plan to settle creditor claims through voting by creditors and a confirmation hearing; [6] and
- Making payments to creditors under the plan.

We discuss Lehman's pre-bankruptcy planning, its funding sources during bankruptcy, the settlement of QFCs, the claims process, and the amounts recovered by different creditor groups. The bulk of our study is devoted to the settlement of Lehman's creditor and counterparty claims, especially those relating to over-the-counter (OTC) derivatives. We focus on derivatives because we find that much of the complexity of Lehman's bankruptcy was rooted in the settlement procedures for its OTC derivatives positions. Moreover, derivatives receive special treatment under the U.S. Bankruptcy Code through exemptions or "safe harbor" from several provisions of the code (for example, exemption from the automatic stay; see Appendix D for a more complete discussion of safe harbor provisions). However, questions have been raised regarding the desirability of providing these exceptions. For example, Andrew Gracie, the executive director of the Bank of England's special resolution unit argues that the onset of a bank resolution should not, by itself, be considered an event of default that allows counterparties to quickly terminate derivative contracts, as happened with Lehman.[7] By providing a detailed description of the use of safe harbor provisions and other derivatives settlement procedures in the Lehman bankruptcy, our study may help inform the discussion on the role of derivatives in bankruptcy.

[5] In Lehman's case, the reorganization plan resulted in liquidation of the company. There are advantages to using Chapter 11, rather than Chapter 7, for liquidation (for example, the debtor, rather than a trustee, has control over the sale process). However, failed Chapter 11 cases are often converted to Chapter 7 cases.

[6] Lehman was also involved in Chapter 15 cases, which were ancillary to the U.S. bankruptcy case and involved cross-border insolvency. Such cases allowed Lehman's foreign creditors (who had claims against a Lehman foreign subsidiary in a foreign judicial or administrative proceeding) to be recognized by the U.S. Bankruptcy Court and to participate in Lehman's U.S. bankruptcy case. See http://www.uscourts.gov/FederalCourts/Bankruptcy/BankruptcyBasics/Chapter15.aspx. In this article, we do not cover cross-border issues, although to the extent that the resolution of Lehman's U.K. broker-dealer affected the SIPA proceedings, these are discussed in Appendix C.

[7] See http://www.bloomberg.com/news/2014-03-04/boe-seeks-derivatives-pact-to-prevent-a-repeat-of-lehman-cascade.html.

The payout ratio to Lehman's creditors was initially estimated to be about 21 percent on estimated allowable claims of $362 billion, implying a loss to creditors and counter- parties of roughly $286 billion. Actual distributions to date appear to have exceeded initial estimates, although some of the amount distributed has gone to other Lehman creditors rather than third-party creditors. Comparison with historical experience indicates that the recovery rate for LBHI's senior unsecured creditors has been below average so far, even after accounting for possible mitigating factors (for example, the state of the economy and the credit cycle). However, recovery rates varied across creditor groups. Creditors of three Lehman derivatives entities received full recovery on their claims, and counterparties of centrally cleared securities were mostly made whole. In contrast, many of Lehman's OTC derivatives' counterparties suffered substantial losses.

Some of the losses borne by Lehman investors emanated from the manner in which Lehman failed and could have been avoided in a more orderly liquidation process. The bankruptcy was poorly planned, for example, which may have substantially reduced the value of Lehman's estate (Valukas 2010, p. 725) and contributed to ensuing litigation with creditors.

Creditor losses would have been more substantial without the ability of LBI, the U.S. brokerage subsidiary of LBHI and subsequently of Barclays Plc, to finance positions through the Federal Reserve's (Fed) liquidity facilities. Such financing was critical to the relatively smooth transfer of LBI customer accounts to Barclays and the preservation of firm value. Since then, the Dodd-Frank Act has circumscribed the ability of the Fed to act as lender of last resort to the same extent that it did during the financial crisis.

We assess the effectiveness of the settlement procedures with respect to their speed, predictability, and transparency. We find that the speed of resolution varied across claimant groups. Retail OTC derivatives counterparties of Lehman terminated their contracts within weeks of LBHI's bankruptcy filing under the safe harbor provisions, but final settlement of their claims remains incomplete.[8] In contrast, derivatives contracts of large, institutional counterparties (which constituted a small share of Lehman's derivative contracts by number, but a significant share by value) took several years to terminate, let alone finally settle.

Regarding the predictability of the settlement process, while existing case law provided a useful starting point for the Lehman resolution, the court provided new

[8] As explained in Appendix D, while termination is the first step in settling an OTC derivatives position, final settlement of terminated derivatives contracts requires further steps, such as valuing transactions.

interpretations of provisions in the Bankruptcy Code (regarding, for example, some aspects of the safe harbor provisions for derivatives). In part, this reflected the importance of complex financial securities to which Lehman was a party. The bankruptcy court had to analyze these securities for the first time and sometimes came out with controversial judgments that surprised many observers.

Finally, regarding transparency, we find that while the Lehman estate provided substantial ongoing information on the progress of resolution, the information was sometimes either incomplete or reported in a piecemeal manner that made it difficult to obtain an integrated view of bankruptcy outcomes.

In the remainder of the article, we discuss the effectiveness of Lehman's pre-bankruptcy planning (Section 2), funding during the first week of bankruptcy (Section 3), the settlement of financial contracts with an emphasis on QFCs (Section 4), and creditors' recovery rates under Chapter 11 (Section 5). Section 6 summarizes our findings.

2. Pre-Bankruptcy Planning

Companies facing potential bankruptcy find it advantageous to consult a Chapter 11 attorney early so that there is more time to put together a plan and assemble a team of professionals (such as counsel and financial advisors) to work with the company. An important goal of pre-petition planning is to maintain the operations of the business during the bankruptcy process (for example, by arranging for funding and preparing an operating budget to conserve cash).

The Lehman bankruptcy was considered disorderly, in part because the institution did not plan sufficiently for the possibility of bankruptcy. Indeed, Lehman's actions were not those of a company husbanding resources in anticipation of bankruptcy. For example, Lehman continued to repurchase shares at the beginning of 2008 and decided against hiring bankruptcy counsel in August 2008 (Valukas 2010, p. 718). Management did not seriously consider bankruptcy until a few days before filing, and Lehman did not try to sell its subsidiaries until the week before its collapse (U.S. Government Accountability Office 2011).[9] Lehman consciously avoided bankruptcy planning owing to continuing interest from strategic partners and its belief that such planning would be a self-fulfilling prophecy (Valukas 2010, p. 718).

The three or four days prior to LBHI's bankruptcy filing were filled with confusion and indecision. Lehman engaged bankruptcy counsel on September 10, 2008, and preparation for filing of the bankruptcy petition began the following day (Valukas 2010, p. 719). At the same time, however, Lehman continued to believe that it would be rescued. Indeed, as late as September 14, 2008, Lehman contemplated a six-month period to unwind its positions, during which it would employ many people (Valukas 2010, p. 371).

A key step in planning for a Chapter 11 bankruptcy filing is to have certain "first day" motions and orders ready so that the judge can consider them at the beginning of the case. These orders facilitate the operational aspects of the bankruptcy filing and contribute toward a prompter and more orderly resolution (Wasserman 2006). LBHI and its bankruptcy counsel initially filed few of the typical first-day motions that seek the bankruptcy court's authorization to carry on the many facets of "business as usual" that otherwise would be prohibited by various Bankruptcy Code provisions (for example, maintain accounts and current cash management systems, affirm clearinghouse contracts, and so on; see Azarchs and Sprinzen [2008]).

Similarly, LBHI's affidavit accompanying its bankruptcy petition was unusually brief. Typically, these affidavits set out in some detail the debtor's business rationale for its first-day motions and provide the outlines of its Chapter 11 strategy. In Lehman's case, other than "preserve its assets and maximize value for the benefit of all stakeholders," little was set out (Azarchs and Sprinzen 2008). The lack of first-day motions and the sparseness of the debtor's affidavit suggest a lack of preparedness for bankruptcy.

The abruptness of LBHI's filing is reported to have reduced the value of Lehman's estate by as much as $75 billion (Valukas 2010, p. 725). For example, 70 percent of derivatives receivables worth $48 billion were lost that could otherwise have been unwound.[10] The lack of planning also contributed to many ensuing disputes with creditors.

[9] Lehman had discussions with Bank of America (for a proposed merger between the two companies) in July 2008 and again in September 2008, when U.S. Treasury Secretary Henry Paulson urged Bank of America to buy Lehman (Valukas 2010, p. 697).

[10] An alternative view is that the Lehman estate did not suffer any substantial loss on its derivatives position since LBHI's counterparties initially overstated some of their claims, which were subsequently overturned by the bankruptcy court (U.S. Government Accountability Office 2013).

3. Funding in the First Week of Bankruptcy

Unlike LBHI, LBI did not file for bankruptcy on September 15, 2008, because it expected to conduct an orderly liquidation by unwinding its repos and matched books while attempting to find a buyer (Valukas 2010, p. 2117). Ownership of LBI's assets was transferred to Barclays on September 22. However, in order to remain a going concern, LBI needed liquidity between September 15 and 22. Absent such liquidity, the sale would have failed, further impairing the value of Lehman's estate.

At, and just after, the time of LBHI's bankruptcy filing, LBI's cash position was precarious ("Trustee's Preliminary Investigation Report and Recommendations," August 25, 2010). More than 90 percent of LBI's assets had been composed of reverse repos, stock borrowing agreements, and financial instruments owned. Reverse repos and securities loans had declined since May 2008 (Panel A of Table 1). Tri-party repo funding in particular had dropped from $80 billion on May 31, 2008, to $650 million on September 19, 2008. Failed transactions and the failure of counterparties to return margin posted by LBI harmed its cash position. Finally, customer and prime broker accounts moved to other broker-dealers, while clearing firms required additional collateral, deposits, and margins.[11]

In order to operate until its sale was completed, LBI had to rely on other funding sources, including the Fed's liquidity facilities and advances by Barclays and LBI's clearing agents.

3.1 Post-Petition Financing of LBI by the Fed

In connection with LBHI's preparations for bankruptcy petition, the Fed, acting in its capacity as lender of last resort, advised Lehman that it would provide up to two weeks of overnight secured financing through the Primary Dealer Credit Facility (PDCF) to facilitate an orderly unwind of LBI (Valukas 2010, p. 2118). Without Fed funding, LBI's customers would have faced long delays in accessing their accounts while their claims were resolved in the SIPA proceedings (as discussed further in Appendix C).

On September 14, 2008, the Fed expanded the set of collateral acceptable at the PDCF to include all tri-party-eligible collateral.[12] Under the PDCF, the Fed extended between $20 billion and $28 billion per day to LBI from September 15 to September 17, 2008 (Panel B of Table 1). However, the Fed limited the collateral LBI could pledge to what it had in its clearance box at JPMorgan Chase (JPMC) on September 12 and also imposed higher haircuts on LBI than on other dealers (Valukas 2010, p. 2119).[13] Nevertheless, LBI borrowed against a wide variety of collateral, such as asset-backed securities and equity (Panel B of Table 1).

In addition to the PDCF, the Fed had introduced the Term Securities Lending Facility (TSLF) and single-tranche term repurchase agreements in March 2008 to address the liquidity pressures in secured funding markets.[14] While LBI had outstanding borrowing of $18.5 billion from the TSLF at the time of bankruptcy, it did not undertake new borrowing from the TSLF *after* bankruptcy. Similarly, LBI had single-tranche term repos outstanding of $2 billion at the time of bankruptcy, but did not undertake new borrowing through the program after bankruptcy.

3.2 Post-Petition Financing of Lehman by Barclays

On September 17, 2008, the Fed and Barclays formally agreed that Barclays would replace the Fed as a source of secured funding for LBI (Valukas 2010, p. 2162). On September 18, in exchange for $46.2 billion in cash, the Fed delivered LBI collateral to Barclays and advised it of the option to finance the collateral at the PDCF (Valukas 2010, p. 2165). Between September 18 and September 22, 2008, Barclays borrowed up to $48 billion from the PDCF and $8 billion from the TSLF (Panel C of Table 1).

[11] An additional factor, noted by Duffie, Li, and Lubke (2010), is the use of novations by LBHI's counterparties (whereby they would exit their positions by assigning them to other dealers) in the days before bankruptcy. These novations depleted LBHI's cash reserves and, effectively, those of LBI (since LBHI was the main source of LBI's funding).This occurred because when Lehman's original dealer counterparty, through novation, transferred its position to another dealer, Lehman lost the associated "independent amount" of collateral (which functions similar to an initial margin). The collateral was not replaced because initial margins are not posted in dealer-to-dealer trades.

[12] Eligible collateral originally comprised Fed-eligible collateral plus investment-grade corporate securities, municipal securities, mortgage-backed securities, and asset-backed securities. See http://www.federalreserve.gov/newsevents/press/monetary/20080914a.htm.

[13] Clearance box assets are securities that were held in LBI's "clearing box accounts" at JPMC. These assets facilitated securities trading by providing collateral against which open trading positions could be secured.

[14] For the Fed's announcement of the TSLF program, see http://federalreserve.gov/newsevents/press/monetary/20080311a.htm. Under single-tranche repurchase agreements, the Fed's Open Market Trading Desk lent money in the form of term twenty-eight-day repurchase agreements against Treasury, agency debt, or agency mortgage-backed securities. Dealers could borrow against all three types of collateral, which constituted a single tranche, as opposed to the Desk's conventional repurchase arrangements whereby each type of collateral constitutes a separate tranche. See http://www.newyorkfed.org/markets/operating_policy_030708.html for further details.

Table 1

Funding for Lehman around the First Week of Its Chapter 11 Filing

Panel A: Short-term Assets of LBI, May 31–September 19, 2008
Billions of dollars

	May 31, 2008	August 31, 2008	September 19, 2008
Reverse repos	141.2	143.5	11.1
Securities loans	87.7	68.2	41.8
Repos plus securities loans	228.8	211.6	121.9

Panel B: Borrowing by LBI, September 15-17, 2008

				Share of Collateral Pledged (Percent)							
Loan Date	Source of Funding	Type of Funding	Amount (Billions of Dollars)	UST/ Agency Securities	Agency MBS	Private-Label MBS	Corporate Bonds	Municipal Bonds	ABS	Equity	Other[a]
09/15/2008[b]	Fed	PDCF	28.0	13.1	7.0	5.0	41.8	10.0	12.2	7.6	3.3
09/16/2008[c]	Fed	PDCF	19.7	6.5	0.0	9.6	53.9	1.7	14.9	9.0	4.4
09/17/2008[d]	Fed	PDCF	20.4	16.4	13.3	2.1	31.5	0.4	16.6	18.6	1.1
09/15/2008	Barclays	Tri-party repo	15.8	Not known							
09/16/2008	Barclays	Tri-party repo	15.8	Not known							
09/17/2008	Barclays	Tri-party repo	15.8	Not known							

Panel C: Borrowing by Barclays, September 18-22, 2008

				Share of Collateral Pledged (Percent)							
Loan Date	Source of Funding	Type of Funding	Amount (Billions of Dollars)	UST/ Agency Securities	Agency MBS	Private-Label MBS	Corporate Bonds	Municipal Bonds	ABS	Equity	Other[a]
09/18/2008	Fed	PDCF	47.9	14.7	52.8	5.9	7.4	0.5	3.1	15.5	0.1
09/18/2008	Fed	TSLF Schedule 2	5.0	0.0	45.4	20.1	0.0	0.0	34.4	NE	NE
09/19/2008[e]	Fed	PDCF	16.0	0.8	10.3	11.9	20.3	2.7	3.4	50.4	0.3
09/19/2008[e]	Fed	TSLF Schedule 1	2.7	0.0	2.0	35.6	27.4	0.0	34.4	NE	NE
09/22/2008[f]	Fed	PDCF	16.0	0.4	11.0	10.4	20.4	2.7	3.7	51.1	0.3

Sources: Trustee's Preliminary Investigation Report and Recommendations (2010), Valukas (2010), and http://federalreserve.gov/newsevents/reform_transaction.htm.

Notes: LBI is Lehman Brothers Inc.; UST is U.S. Treasury; MBS is mortgage-backed securities; ABS is asset-backed securities; Fed is Federal Reserve; PDCF is Primary Dealer Credit Facility; TSLF is Term Securities Lending Facility; NE is not eligible.

[a] For PDCF, the "other" category includes international securities (securities issued by non-U.S. entities, government, and private sources, including supranational agencies) and other eligible collateral.

[b] Lehman and Barclays begin to negotiate sale of LBI's business and assets to Barclays.

[c] Lehman and Barclays execute Asset Purchase Agreement, providing for sale to Barclays of selected Lehman assets.

[d] Lehman asks Bankruptcy Court to schedule sale hearing and establish sale procedures.

[e] Bankruptcy Court holds sale hearing to consider proposed sale of LBI to Barclays.

[f] Barclays buys LBI, and sale transaction is closed. Almost all of LBI assets and employees are transferred to Barclays.

Barclays also provided overnight funding to LBI of $15.8 billion through tri-party repo transactions between September 15 and September 17 (Panel B of Table 1). And on September 17, Barclays provided $450 million in debtor-in-possession financing to LBHI secured by LBHI's assets in Neuberger Berman (Azarchs and Sprinzen 2008). Funds under the facility helped sustain LBHI's businesses pending the completion of LBI's sale.

3.3 Post-Petition Financing by LBI's Clearing Agents

JPMorgan Chase and Citibank advanced credit to LBI after the bankruptcy of LBHI, allowing LBI to clear trades and obtain funding. For example, at the urging of the Fed and LBHI, JPMC made clearing advances to unwind LBI's outstanding tri-party repos worth $87 billion on September 15 and substantial additional amounts on the following day to "avoid financial market disruption" (LBHI, "Debtors versus JPMorgan Chase Bank, N.A.," April 19, 2012). LBI was a party to tri-party term repos that continued to perform, and it obtained overnight funding through general collateral finance (GCF) repos (Valukas 2010, p. 2124).

JPMC and Citibank were faced with requests for advances *after* the bankruptcy filing of LBHI. Although they may have had *pre-petition* secured claims against LBHI under its guarantees, these guarantees were cut off by the filing and would not cover later events. The court confirmed that their new, post-petition advances would continue to benefit from the pre-petition guarantees under securities contracts and thereby allowed LBI to continue clearing and settling securities trades until its sale.[15]

3.4 Sale of LBI to Barclays

The Section 363 sale of LBI to Barclays (Exhibit 2) illustrates the complexities of an expedited sale of a large financial institution during bankruptcy under the Bankruptcy Code. For example, the Fed had to finance LBI temporarily and then arrange for Barclays to replace it, as discussed previously. Later, Barclays argued that it had not agreed to purchase some of the collateral that it was being asked to finance, leading to disputes with its clearing agent JPMC and also with LBI that persisted and threatened to derail the transaction during the weekend following September 19, 2008 (when the sale of LBI to Barclays closed). Eventually, a resolution was reached with the help of the Fed and with the Depository Trust and Clearing Corporation (DTCC) agreeing to clear LBI trades for less than the required collateral (Valukas 2010, p. 2197).[16] Even after the sale closed, unsecured creditors tried to get the sale order overturned.

4. Settlement of Lehman's OTC Derivatives Positions

Lehman traded in equities, fixed-income securities, and derivatives in U.S. and international markets. In the United States, many of these securities (such as equity, listed corporate and municipal bonds, U.S. government debt, and certain derivatives contracts) are centrally cleared, and their settlement occurred outside of the Chapter 11 bankruptcy process. Where Lehman acted as a broker on behalf of retail or wholesale clients and the securities were centrally cleared, the central clearinghouse was the client's counterparty. Accordingly, the central counterparties (CCPs) acted on behalf of the clients to either close out or transfer their accounts to third-party brokers. Where Lehman acted for its own account, the CCPs were Lehman's counterparty, and they generally closed out Lehman's house (proprietary) positions. Since our focus is on Lehman's resolution under the U.S. Chapter 11 Code, we relegate discussion of Lehman's centrally cleared positions to Appendix B.

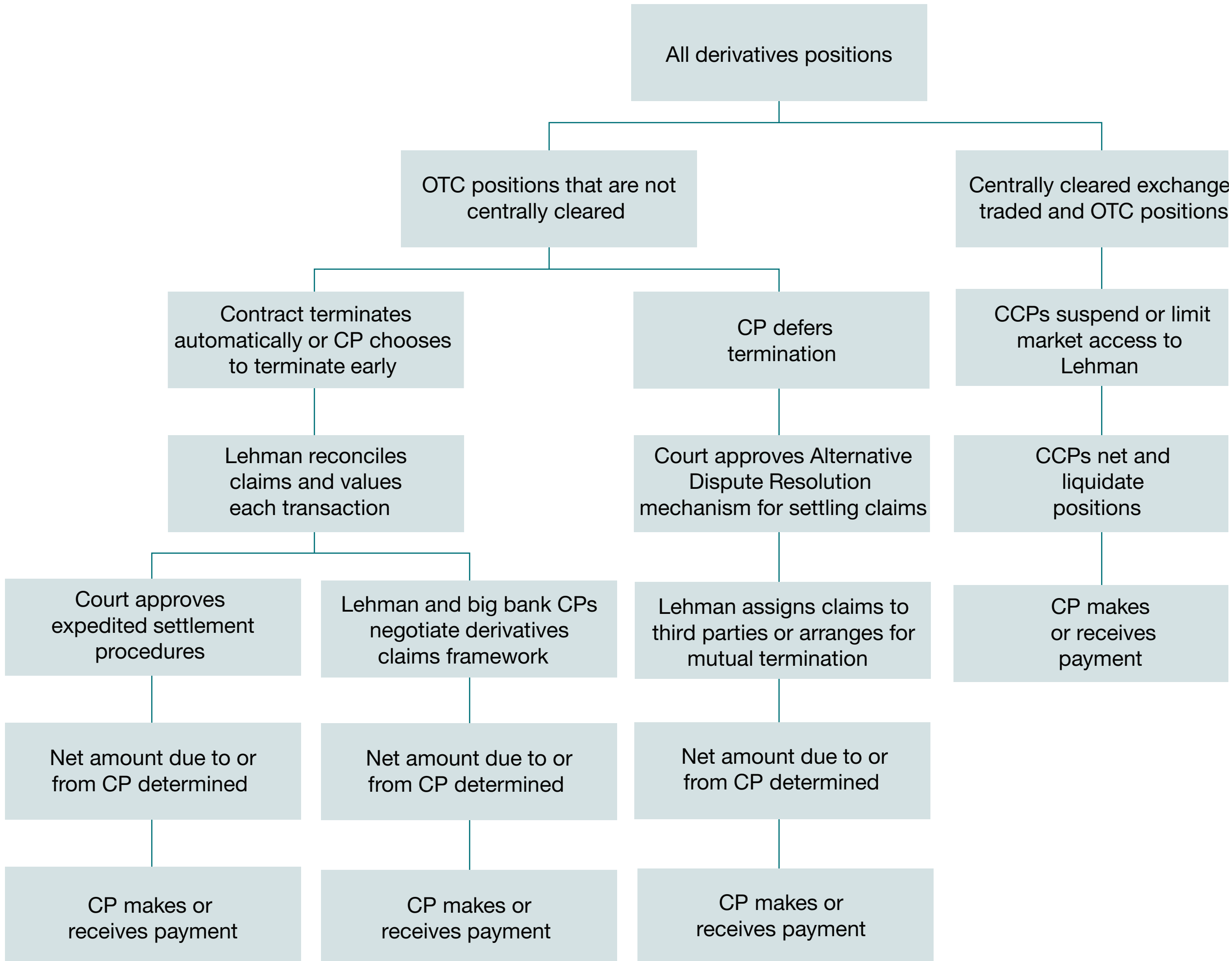
The remainder of this section describes the settlement of Lehman's OTC derivatives contracts (for example, interest rate swaps) that were bilaterally cleared (Exhibit 3).[17] Prior to bankruptcy, Lehman's global derivatives position was estimated at $35 trillion in notional value, accounting for about 5 percent of derivatives transactions globally

[15] The court also denied the rights of other parties, such as Bank of America and Swedbank AB, a Swedish bank and creditor to LBHI, to set off Lehman's pre-petition obligations against its cash deposit accounts, thus allowing Lehman to preserve cash. Swedbank sought to offset Lehman's payment obligations under pre-petition swaps with deposits Lehman had made at Swedbank post-petition. Bank of America seized Lehman's account funds, which were unrelated to safe harbor transactions.

[16] Specifically, DTCC agreed to clear LBI trades even though the available collateral was $6 billion less than what it had previously required.

[17] A derivatives contract is an International Swaps and Derivatives Association (ISDA) Master Agreement, supplemented with a schedule. The Master Agreement and schedule collectively set forth the fundamental contractual terms of all derivatives transactions that are executed between the parties. Each individual transaction is documented with a confirmation. There may be several confirmations (corresponding to individual derivatives transactions) under a single Master Agreement and schedule (Durham 2010). Hence, there will typically be multiple trades associated with each derivatives contract.

Exhibit 3
Lehman's Derivatives Settlement Procedures



Source: Authors' compilation.

Notes: The exhibit shows the detailed settlement procedure for derivatives contracts of Lehman Brothers. OTC is over-the-counter; CP is counterparty; CCP is central counterparty.

(Summe 2012).[18] Its OTC derivatives positions represented 96 percent of the net worth of its derivatives-related entities (Panel A of Table 2). The settlement of these contracts under the Chapter 11 provisions proved challenging, partly owing to the inherent complexity of these procedures and to the presence of large and global derivatives counterparties, as discussed below.

Concern over the size of Lehman's OTC derivatives positions led to a special trading session on September 14, 2008,

[18] Outside of the United States, derivatives transactions were executed through LBIE.

Table 2
Settlement of Lehman's Over-the-Counter Derivatives Contracts

Panel A: Lehman Derivative Positions, at Time of Bankruptcy

	Net Worth[a] (Billions of Dollars)	Share of Net Worth (Percent)
All positions	21.0	100.0
OTC positions	20.3	96.2
Exchange-traded positions	0.8	3.8

Panel B: Termination of Derivative Claims

	Contract		Transactions	
	Number	Not Terminated (Percent)	Number	Not Terminated (Percent)
Initial position[b]	> 6,000	100.0	> 900,000	100.0
Terminated as of Nov. 13, 2008		—	733,000	23.8
Not terminated as of Jan. 2, 2009	2,667	43.6[b]	18,000	2.0[b]
Not terminated as of June 17, 2009	1,068	16.9[b]	5,858	0.5[b]

Panel C: Timeline of Final Settlement of Derivative Claims

Settled as of:	Contracts Reconciled (Percent)	Contracts Valued (Percent)	Contracts Finally Settled (Percent)	Estimated Number of Contracts Not Finally Settled[c]
07/31/2009	45	35	6	5,960
09/16/2009	53	44	11	5,643
11/05/2009	61	50	17	5,262
09/30/2010	95	87	46	3,449
03/31/2011	99	99	59	2,631
12/31/2012	—	—	84	1,014

Panel D: Derivative Claims of Large ("Big Bank") Counterparties, January 13, 2011

	Number of Trades	Claims (Billions of Dollars, Except as Noted)	Number of Contracts[d]
Initial position, all counterparties	961,436[e]	45.31	2,961
Finally settled, all counterparties	69,684	5.04	1,561
Outstanding, all counterparties	891,752	40.37	1,400
Outstanding, thirty largest counterparties	817,221	21.75	148
Share of remaining, thirty largest counterparties (percent)	85	48.00	5

Sources: Debtors' Disclosure Statement for First Amended Joint Chapter 11 Plan (January 25, 2011); Debtors' Disclosure Statement for Second Amended Joint Chapter 11 Plan (June 30, 2011); Debtors' Disclosure Statement for Third Amended Joint Chapter 11 Plan (August 31, 2011); Lehman Brothers Holdings Inc.: Debtor's Motion (November 13, 2008, and January 16, 2009), §341 Meeting (January 29, 2009, and July 8, 2009), State of the Estate (November 18, 2009), Plan Status Report (January 13, 2011), 2013+ Cash Flow Estimates (July 23, 2013); Valukas (2010).

[a] Amount equals the value of assets minus liabilities of LBHI-controlled derivative entities.

[b] Different numbers were reported for total number of contracts and trades in different reports. Shares are based on the numbers reported in the associated reports.

[c] Amount is based on an assumption of 6,340 derivative contracts at the beginning of bankruptcy.

[d] Number of contracts excludes the number of guarantee claims (that is, claims based on guarantees by LBHI).

[e] Number of trades does not correspond to that reported in Panel B as it comes from a report at a different time, and adjustments were made by the estate in the interim.

organized by major market participants to net their mutually offsetting positions. However, the netting effort largely failed as there was little trading during the session.[19] LBHI filed for bankruptcy the following day, but Lehman's derivatives entities did so only some days later.[20] However, since LBHI was the credit support party for almost all of Lehman's derivatives transactions, its bankruptcy filing constituted a default event under the ISDA Master Agreement (Appendix D provides background on the settlement of derivatives in bankruptcy). More than 6,000 derivatives claims involving more than 900,000 transactions were filed against Lehman and its affiliates.[21] Counterparties that had terminated their derivatives contracts or otherwise had claims against the estate were required, by October 22, 2009, to file a special Derivative Questionnaire and to provide a valuation statement for any collateral, specify any unpaid amounts, and supply their derivatives valuation methodology and supporting quotations.

The settlement of Lehman's OTC derivatives positions proceeded along three tracks (Exhibit 3). Most derivatives contracts were terminated early, under the safe harbor provisions that provide statutory exceptions to the automatic stay of debt in bankruptcy (see Appendix D). However, out-of-the-money counterparties, which owed money to Lehman, typically chose not to terminate their contracts. Even after termination, the parties had to agree to a termination value of their trades, which proved difficult in illiquid markets and especially so for large positions; therefore, settlement with large ("big bank") counterparties proceeded along a third track. We describe the settlement of OTC derivatives for each of these three cases.

4.1 OTC Derivatives Contracts That Were Terminated Early

According to the ISDA Master Agreement, the bankruptcy filing of LBHI meant that derivatives contracts with automatic early termination clauses terminated immediately (Appendix D). In addition, those counterparties of Lehman's derivatives entities without the automatic early termination option could elect to terminate their transactions by giving written notice.

The majority of Lehman's derivatives contracts, by number (but not by value, as we shall see later), were terminated shortly after LBHI's bankruptcy filing. Out of more than 900,000 trades, 733,000 were automatically terminated by November 13, 2008 (Panel B of Table 2). About 80 percent of the derivatives counterparties to Lehman Brothers Special Financing (LBSF) terminated their contracts under the ISDA Master Agreement within five weeks of the bankruptcy filing, the largest-ever termination of derivatives transactions (U.S. Government Accountability Office 2011).

Final settlement of terminated derivatives contracts required further steps (Appendix D). The Lehman estate had to 1) reconcile the universe of all trades between Lehman and a particular counterparty, 2) value each transaction, and 3) negotiate settlement amounts with the counterparty. The sheer number of derivatives contracts made each of these steps an arduous process ("Debtors' Disclosure Statement for First Amended Joint Chapter 11 Plan," January 25, 2011). Accordingly, on November 13, 2008, Lehman asked the court to approve procedures for entering into settlement agreements with counterparties that had terminated their contracts with Lehman, in order to establish termination payments and the return or liquidation of collateral, without the need for further action by the bankruptcy court. Lehman asked that these procedures also apply to counterparties that had not yet terminated their contracts but were considering doing so. The court approved these procedures on December 16, 2008. Nevertheless, only 6 percent of ISDA contracts had been settled by July 2009, with this number rising slowly to 46 percent by September 2010 (Panel C of Table 2).

4.2 OTC Derivatives Where Out-of-the-Money Counterparties Chose Not to Terminate Early

Many nondefaulting counterparties were out-of-the-money and would have owed large termination payments to Lehman, so they chose not to send a termination notice.[22] The Lehman estate estimated these payments to be of significant value and feared that market movements would reduce the amounts owed to it (LBHI, "Debtor's Motion for an Order

[19] See "Derivatives Market Trades on Sunday to Cut Lehman Risk," *Reuters*, September 14, 2008, available at http://www.reuters.com/article/2008/09/14/us-lehman-specialsession-idUSN1444498020080914.

[20] For example, Lehman Brothers Special Financing did not file for bankruptcy until October 3, 2008.

[21] The exact total number of Lehman's derivatives trades and contracts at the time of bankruptcy remains unclear. Reports by the Lehman estate variously put the number of trades at 906,000, 930,000, and 1,178,000, and the number of contracts at 6,120, 6,340, and 6,355.

[22] For example, many municipalities and nonprofits had issued floating-rate bonds and entered into interest rate swaps with Lehman where they paid a fixed rate and received a floating rate. Some of these swap counterparties were out-of-the-money to Lehman as the fixed rate was higher than the floating rate prior to Lehman's bankruptcy (Braun 2013).

Pursuant to Sections 105 and 365 of the Bankruptcy Code," November 13, 2008). Moreover, the counterparties refused to make required periodic payments to Lehman on out-of-the-money contracts on the grounds of Lehman's default under the ISDA Master Agreement.[23]

Lehman and its counterparties were often unable to agree on the amount due on contracts when the counterparty was out-of-the-money, partly because of the prevailing illiquidity of markets, which made valuing derivatives trades difficult. Under the Master Agreement, valuation claims are determined primarily by replacement costs, which diverged substantially from fair market value owing to the wide bid-offer spreads at the time. Moreover, Scott (2012) argues that replacement costs likely did not track actual costs, because nondefaulting parties had considerable leeway in arriving at their estimates and also because it was likely difficult to obtain three dealer quotes as required (see Appendix D).

On November 13, 2008, Lehman asked the court to approve procedures to realize the value of nonterminated derivatives contracts either by Lehman assigning them to third parties in exchange for consideration, or alternatively by mutual termination. The court gave its approval (LBHI, "Debtor's Motion for an Order Approving Consensual Assumption and Assignment of Prepetition Derivative Contracts," January 28, 2009), authorizing Lehman to assign nonterminated derivatives contracts with the consent of unsecured creditors and the counterparty, but without the need for further court approval. The effect of the court's decisions was to strongly encourage out-of-the-money counterparties to comply with these Alternative Dispute Resolution (ADR) procedures and to substantively engage in settlement and termination discussions.[24] Indeed, by January 2, 2009, just 2,667 contracts (out of more than 6,000 contracts at the time of bankruptcy) and 18,000 derivatives trades remained outstanding, and by June 17, 2009, less than 17 percent of contracts and less than 1 percent of trades were not terminated (Panel B of Table 2).

Assignment of claims moved slowly, partly because of market illiquidity and the balance sheet constraints of financial firms, and partly because the positions were less valuable. For example, some were uncollateralized, had weak credits, or involved long maturity instruments (LBHI, "§341 Meeting," July 8, 2009). Nevertheless, the Lehman estate made good progress on collecting derivatives receivables, with cash collections increasing from less than $1 billion through November 7, 2008, to about $8 billion through November 6, 2009 (LBHI, "The State of the Estate," November 18, 2009) and to about $11.5 billion through June 30, 2010 (LBHI, "The State of the Estate," September 22, 2010). As of January 10, 2011, Lehman had issued notices to counterparties commencing ADR procedures in connection with 144 derivatives contracts and resolved fifty-two of these contracts, resulting in receipt of approximately $356 million ("Debtors' Disclosure Statement for First Amended Joint Chapter 11 Plan," January 25, 2011).

4.3 OTC Derivatives Contracts with Big Bank Counterparties

The OTC derivatives market was highly concentrated at the time of LBHI's bankruptcy (and remains so today), with a few large banks accounting for a substantial share of market activity. This fact was reflected in counterparty shares of the value of derivatives claims against Lehman and, in particular, the shares of the thirty largest "big bank" counterparties, all of which were affiliates of thirteen major financial institutions.[25] Thus, in January 2011, the Lehman estate reported that, of the outstanding contracts, the share of the thirty big bank counterparties was 85 percent of the number of trades and 48 percent of derivatives contracts by dollar value, but only 5 percent of the number of contracts (Panel D of Table 2).

Settlement of derivatives with big bank counterparties proved challenging owing to difficult legal and valuation issues (LBHI, "The State of the Estate," September 22, 2010). First, the total amount distributable to derivatives creditors depended upon the resolution of the basis for the distribution of creditor claims (that is, whether it should be the assets of subsidiaries or of Lehman's consolidated balance sheet—the "substantive consolidation" issue). As further discussed in Section 5, after negotiations between Lehman and its creditors, between 20 and 30 percent of payments owed to creditors (including derivatives creditors) of affiliates such as LBSF were reallocated to holding company creditors. Second, the Lehman estate and the big bank counterparties needed to negotiate a uniform method for settling the remaining outstanding derivatives contracts.

The Lehman estate argued that big bank counterparties submitted inflated claims ("Debtors' Disclosure Statement for

[23] For example, Metavante Corporation refused to make payments on an interest rate swap agreement with LBSF ("Debtors' Disclosure Statement for First Amended Joint Chapter 11 Plan," January 25, 2011).

[24] The rules of discussions were formalized by the court's order on September 17, 2009, approving the ADR and mediation procedures for nonterminated derivatives trades. The purpose of the order was to promote "consensual recovery" and to encourage effective communication between Lehman and its counterparties.

[25] The thirteen major financial institutions were Bank of America, Barclays, BNP Paribas, Citigroup, Credit Suisse Group, Deutsche Bank, Goldman Sachs, JPMorgan Chase, Merrill Lynch, Morgan Stanley, the Royal Bank of Scotland, Société Générale, and UBS.

First Amended Joint Chapter 11 Plan," January 25, 2011).[26] Their disagreements centered on 1) the time and date of valuation, 2) the method of valuation (for example, use of the bid or ask price as opposed to the mid-market price, as well as the inclusion of additional amounts added to the mid-market prices), and 3) setoff.[27] As previously discussed, the valuation of claims proved particularly difficult because of the "replacement cost" methodology required by the Master Agreement and the wide bid-offer spreads at the time.[28] Lehman and its counterparties also disagreed on the discount rate and prices that were inputs into valuation models (for example, whether to use end-of-day prices on a particular date).

To avoid the costs and delays of litigating disputes with the big bank counterparties individually (and a potentially different outcome in each case), a derivatives claims settlement framework was included as part of Lehman's January 2011 liquidation plan. The framework provided for rules to settle the half of derivatives claims that remained outstanding at the time and a commitment to a process and timeline (LBHI, "The State of the Estate," September 22, 2010). The derivatives claims settlement rules offered a standardized methodology. In particular, these derivatives contracts were valued at mid-market at the market close of a specified termination date with an "additional charge" based on the maturity and risk of the contracts ("Debtors' Disclosure Statement for Third Amended Joint Chapter 11 Plan," August 31, 2011).[29] Also, the number of maturity "buckets" used for aggregating and offsetting exposures was reduced. With regard to the process, the framework was used to determine most unsettled derivatives claims (all claims except for those already settled, those not disputed by Lehman, or those previously allowed by the bankruptcy court).

Confirmation of the Joint Chapter 11 plan by the court on December 6, 2011, did not completely resolve the settlement of derivatives with big bank counterparties, as the Lehman estate had entered into settlement with only eight of thirteen major financial firms at the time. The slow progress of negotiations can be gauged by the fact that, in 2012, the estate settled only about 1,000 of the roughly 2,000 contracts open at the beginning of the year (LBHI, "2013+ Cash Flow Estimates," July 23, 2013). This implies that an estimated 16 percent of contracts remained to be finally settled almost a year after confirmation of the liquidation plan (Panel C of Table 2). Nevertheless, sufficient progress was made such that the Lehman estate was able to make the first distribution to creditors on April 17, 2012.

Discussion: Settlement of Lehman's Derivatives Claims

For a firm, like Lehman, that was planning to liquidate its assets, the objective of Chapter 11 bankruptcy is to maximize the present recovery value of the bankruptcy assets of each of its entities. However, there is a trade-off between obtaining the highest possible recovery value of assets, which may require a lengthy bankruptcy process, and minimizing costs (such as legal and administrative fees) that increase with time.[30] Moreover, uncertain and unpredictable resolutions may destroy value by increasing systemic risk through information contagion (in other words, bad news about Lehman's resolution adversely impacting other firms) or fire sales of correlated assets of entities unrelated to Lehman. Conversely, resolutions that largely follow case law, and that keep claimants informed on a regular basis, are likely to mitigate value destruction from resolution. Accordingly, we assess the efficiency of the claims settlement process with respect to its duration, predictability, and transparency.

Promptness of Resolution Varied across Creditor Claims

The speed of resolution varied across claimant groups. Retail OTC derivatives counterparties of Lehman terminated their contracts within weeks of the bankruptcy filing under the safe harbor provisions. But despite a perception to the contrary,[31] the final settlement of their claims was a long

[26] The disagreements between Lehman and the big bank counterparties stem from the rights of the debtor and its counterparties under Section 562 of the Bankruptcy Code.

[27] Lehman's out-of-the-money counterparties attempted to reduce their payments by "setting off" the amount they owed to Lehman against money that (they claimed) Lehman owed to them in a separate transaction.

[28] An example of inflated claims resulting from the changed valuation methodologies occurred with respect to Lehman's derivatives transactions with Nomura Holdings (Das 2012). Prior to their termination on September 8, 2008, Nomura appeared to owe Lehman $484 million. Subsequently, however, Nomura lodged a calculation statement claiming that Lehman owed it $217 million. The $700 million difference was the result of Nomura changing from the quotation method to the loss method, according to Lehman.

[29] If the big banks could prove that they entered into economically identical and commercially reasonable replacement trades on the date of LBHI's filing, they could use the value of these trades instead of the methodology.

[30] Covitz, Han, and Wilson (2006) find that firm value initially increases with time spent in default, but declines thereafter. Earlier research that does not account for the endogeneity of time in default finds a negative relationship between value and the time spent in default (see, for example, Acharya, Bharath, and Srinivasan [2007]).

[31] For the contrary perspective, see Liew, Gu, and Noyes (2010), who state that "counterparties of Lehman Brothers were able to close out their OTC trades

process, proceeding along three separate tracks, requiring two settlement mechanisms in addition to the one specified in the ISDA Master Agreement, and involving continuing litigation and numerous operational problems.[32] Thus, about 1,000 derivatives contracts remained "not settled" by the beginning of 2013, more than four years after the start of Lehman's bankruptcy.

The Lehman estate pointed to the need for doing due diligence on numerous, complex claims on an individual basis as the chief cause of delay. The Lehman estate had statutory duties and fiduciary obligations to review and reconcile how each party reached its early termination amount so that all creditors would be treated equally ("Debtors' Disclosure Statement for First Amended Joint Chapter 11 Plan," January 25, 2011). For example, the Lehman estate had to identify and object to claims that were inflated in value or were duplicative of other claims. Claims that involved complex and illiquid securities were difficult to value. The estate's determinations of claims were frequently subject to litigation by creditors. Indeed, the two new settlement mechanisms approved by the courts were a means of applying uniform methods to a large number of claims, and it appears that they proved effective in facilitating settlement.

Another factor delaying the resolution of claims was the lack of pre-bankruptcy planning by Lehman, resulting in LBI being sold to Barclays in haste. The rushed sale caused numerous problems—uncertainty regarding the number of Lehman customer accounts transferred to Barclays or left behind, lack of access to the accounts that were left behind, and litigation with Barclays, CCPs, and clearing firms regarding the LBI sale—all of which prolonged the resolution process (see Appendix C).

Finally, the organizational complexity of Lehman contributed to delays. In many instances, Lehman and its counterparties were uncertain of the identity of the specific Lehman entity against which creditors had claims. Moreover, different Lehman entities had different bankruptcy filing dates in different international legal jurisdictions, which created problems in cases where one subsidiary was acting as an agent of another subsidiary in client transactions. Further, Lehman's interconnectedness (in particular, guarantees by the holding company to affiliates) led to delays as holding company creditors argued in favor of a greater share of recovery than expected under strict priority rules.

Predictability of Resolution Outcomes Was Less than Expected

Some legal experts have considered the Chapter 11 process predictable because it follows a long-standing legal tradition with an established set of rules for allocating creditor claims (U.S. Government Accountability Office 2011). This was only partly true for Lehman's bankruptcy, as new precedents were set for many aspects of its resolution. For example, the allocation of creditor claims did not follow standard priority rules. While deviations from priority rules are not unusual in Chapter 11 proceedings, they have declined substantially over time, dropping from 75 percent of cases before 1990 to only 9 percent during the period 2000-05 (Bharath, Panchapagesan, and Werner 2010). Moreover, deviations from absolute priority have typically favored equity holders (Bharath, Panchapagesan, and Werner 2010), whereas under Lehman's Chapter 11 liquidation plan, creditors of derivatives entities with positive net worth received less than their strict priority shares, while holding company creditors received more.

In the Lehman bankruptcy, complex financial structures were analyzed and adjudicated in the bankruptcy court for the first time, and consequently the court's judgments were sometimes controversial and even surprising to many observers (as acknowledged by Judge Peck in "Lehman Brothers Special Financing Inc. versus BNY Corporate Trustee Services Limited," January 25, 2010). Thus, in some cases, Lehman's counterparties may have been denied the benefits of certain safe harbor provisions, such as when the court refused to enforce "flip clauses" (widely used in collaterized debt obligations and other financial structures).[33] Since the U.S. court's decision contradicted an earlier U.K. court decision, and the U.S. case was subsequently settled out of court, the legal validity of flip clauses became uncertain and potentially affected the credit ratings of financial structures.[34] Also, the

smoothly under ISDA Master Agreements, despite severely stressed market conditions." See also Summe (2012) for a similar viewpoint.

[32] Operational problems resulted from market participants that traded with different Lehman entities having multiple ISDA Master Agreements in place with different transactions recorded under each contract, according to Das (2012), who adds that many counterparties' information systems inaccurately grouped contracts for determining netting and net exposure.

[33] In the case involving flip clauses, LBSF was a credit default swap counterparty to a special purpose vehicle that issued credit-linked synthetic portfolio notes, with LBHI acting as LBSF's guarantor. The notes were secured by collateral, which Bank of New York held in trust for the benefit of both the note holder and LBSF. When LBHI filed for bankruptcy, the swaps were terminated, and LBSF had priority over the collateral. But Bank of New York argued that, since LBSF also filed for bankruptcy later, the priority reverted to the note holder instead because of a "flip clause" specified in the swap contract. However, the court ruled that the flip clause was unenforceable under the *ipso facto* doctrine prohibiting the modification of a debtor's contractual rights because of the debtor's bankruptcy ("Lehman Brothers Special Financing Inc. versus BNY Corporate Trustee Services Limited," January 25, 2010).

[34] In other cases, the bankruptcy court was thought to have defined the rights of nondefaulting parties under safe harbor provisions more narrowly than previously—for example, by imposing a time limit on a counterparty's right to seek relief, as in the Metavante case (LBHI, "Order Pursuant to

settlement of Lehman's OTC derivatives with large institutional counterparties followed different rules compared with those that were terminated early. For example, the valuation methodology for calculating termination amounts for big bank counterparties, as outlined in the derivatives claims settlement framework, was different from that followed for non-big bank counterparties.

Transparency of Resolution Was Good, but Could Have Been Better

The Lehman estate issued numerous reports and created websites containing archives of court documents and presentations. Nevertheless, the level and accuracy of detail provided by the Lehman estate could have been better. For example, at least three different versions of Lehman's initial derivatives positions were provided in different reports. Moreover, numbers were reported piecemeal rather than in the aggregate and often without much context. For example, it is difficult to estimate the total amount paid by the Lehman estate in consulting and professional fees and administrative expenses since the inception of the bankruptcy filing. One report showed the fees and expenses paid since 2011 (the amount reported in the media), while the fees and expenses paid prior to 2011 were reported in multiple other documents. Moreover, the fee and expense categories sometimes differed between the earlier and later reports. In a similar vein, information about the number of claims reconciled, valued, settled, and still open was provided piecemeal and at different points in time. In some respects, the dribbling out of information reflected the fact that the Lehman estate was engaged in settling thousands of complex claims dynamically, with the relevant information subject to periodic revisions. Nevertheless, it would be valuable if, in future resolutions, the bankruptcy estate provided more comprehensive statistics so that interested parties could obtain a better understanding of the resolution process.

Sections 105(a), 362, and 365 of the Bankruptcy Code," September 17, 2009). However, a counterparty waiting too long to terminate could be deemed to have waived its right to do so (Charles 2009). Some commentators have argued that creditor rights under safe harbor provisions were limited when the court granted Lehman the right to choose the time of termination, to determine the termination value, and to act as the calculating agent for valuing derivatives—rights that would normally by exercised by the nondefaulting party (Ricotta 2011; Das 2012). A counterargument is that Section 562 of the Bankruptcy Code gives Lehman certain rights to make some of these determinations. Finally, the Lehman bankruptcy raised new issues regarding the applicability of safe harbor provisions to setoff rules, such as whether such provisions may eliminate the requirement that the obligations are mutual—that is, creditor A and debtor B must owe money to each other (Smith 2010).

5. Recovery Estimates for Lehman Creditors under Chapter 11

At the time of the bankruptcy filing, there were 67,000 claims against Lehman worth $1.16 trillion (Panel A of Table 3). Under a plan that Lehman submitted to creditors and the court on June 29, 2011, initial claims were reduced to $764 billion, after adjusting for duplicate, inflated, and invalidly filed claims.[35] Of this amount, claims totaling about $214 billion, or 28 percent of the total, were effectively "double counted" since they were either guarantee claims (claims based on guarantees by LBHI) or affiliate claims (claims by Lehman entities against each other).[36] After this and other adjustments, allowed claims to third-party creditors across twenty-three Lehman entities totaled $362 billion.

Of the total allowed claims, recovered assets were originally estimated at nearly $84 billion—prior to administrative expenses of $3.2 billion, amounts due to intercompany entities or affiliates of nearly $2.9 billion, and operating disbursements of approximately $3.1 billion—for a net distributable amount to third-party creditors of $75.4 billion (second column of Panel A of Table 3). The net amount expected to be distributed to third-party creditors amounted to a claim payout ratio of 20.9 percent.

As of March 27, 2014, the Lehman estate had made five distributions to creditors, with total recoveries exceeding the initial estimates and allowed claims falling below the initial estimates. Consequently, the recovery ratio for unsecured creditors has been more than 28 percent (last column of Panel A, Table 3).[37] The amounts distributed include intercompany claims, so that third-party recovery rates have been lower than 28 percent. For example, of almost $45 billion provided in the third, fourth, and fifth distributions, third-party creditors received about $32 billion. Moreover, part of the higher recovery rate is owing to a reduction in claims allowed by the Lehman estate. Nevertheless, recoveries for third-party creditors appear to have been larger than

[35] While the recovery estimates reported in the table were as of May 13, 2011, the plan was submitted to the court on June 29, 2011.

[36] For example, a third-party guarantee claim is that of a third party against LBHI on account of its guarantee of an affiliate and is duplicative of the party's direct claim against the affiliate.

[37] We estimate the payout ratio for LBHI creditors from the distribution notices (see LBHI: "Notice Regarding Initial Distributions Pursuant to the Modified Third Amended Joint Chapter 11 Plan ," April 11, 2012; "Notice Regarding Second Distributions Pursuant to the Modified Third Amended Joint Chapter 11 Plan," September 25, 2012; "Notice Regarding Third Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan," March 27, 2013; "Notice Regarding Fourth Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan," September 26, 2013; "Notice Regarding Fifth Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan," March 27, 2014).

Table 3

Estimated Recovery of Creditor Claims under Chapter 11

Panel A: Aggregate Recovery for Lehman and Affiliates, as of March 2014
Billions of Dollars, Except as Noted

	Estimated Recovery for Third-Party Creditors		Distributions to All Creditors, Unsecured Claims
	September 15, 2008	May 13, 2011	March 27, 2014
Number of claims	67,000	48,000	
Value of claims	1,160	764	
Reductions related to:			
Accounts payable and other		113	
Third-party guarantee claims		83	
Affiliate guarantee claims		72	
Affiliate claims		59	
Number of claims based on derivative contracts		45	
Debt		22	
Value of claims after reduction		370	
Other adjustments		8.5	
Estimated allowed claims		361.5	303.6
Estimated recovery		83.7	
Administrative expenses[a]		3.2	
Due to intercompany entities		2.9	
Operating disbursements[b]		3.1	
Net amount distributable		75.4	86.0
Payout ratio[c] (Percent)		20.9	28.3

Panel B: Recovery by Affiliate as of March 27, 2014

Affiliate	Primary Assets	Shareholder Equity/ Total Assets[d] (Percent)	Cash Position[d] (Millions of Dollars)	Distributions to All Creditors, Unsecured Claims (Billions of Dollars)	Payout Ratio, General Unsecured Creditors[c] (Percent)
LBHI	Holding company	9.7	1,148	49.82	25.23
LOTC	OTC derivatives	13.5	132	1.42	100.00
LBDP	Interest-rate and currency swaps	51.9	297	0.67	100.00
LBFP	Interest-rate and FX OTC derivatives; exchange-traded derivatives; government bonds	54.9	7	0.45	100.00
LBCC	OTC and exchange-traded foreign currency	10.3	8	1.58	87.41
LBCS	Commodities	12.3	30	2.32	67.38
LCPI	Secured and unsecured loans	Negative	461	15.41	61.63
LBSF	Interest-rate, currency, credit, and mortgage derivatives	4.3	7	13.06	30.90

Table 3 (Continued)

Estimated Recovery of Creditor Claims under Chapter 11

Panel C: Estimated Recovery for Derivative Claims of Large Counterparties as of May 13, 2011

Claimants	Asserted Claims (Billions of Dollars)	Allowed Claims (Billions of Dollars)	Allowed to Asserted Claims (Percent)
Eight largest counterparties	9.6	6.2	64.6
Thirty largest counterparties	21.8	10.3	47.4

Sources: Debtors' Disclosure Statement for Second Amended Joint Chapter 11 Plan (June 30, 2011); Debtors' Disclosure Statement for Third Amended Joint Chapter 11 Plan (August 31, 2011); Lehman Brothers Holdings Inc.: State of the Estate (November 18, 2009, and September 22, 2010), Notice Regarding Initial Distributions Pursuant to the Modified Third Amended Joint Chapter 11 Plan (April 11, 2012), Notice Regarding Second Distributions Pursuant to the Modified Third Amended Joint Chapter 11 Plan (September 25, 2012), Notice Regarding Third Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan (March 27, 2013), 2013+ Cash Flow Estimates (July 23, 2013), Notice Regarding Fourth Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan (September 26, 2013), Notice Regarding Fifth Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan (March 27, 2014); Valukas (2010).

Notes: LBHI is Lehman Brothers Holdings Inc.; LBDP is Lehman Brothers Derivative Products; LBFP is Lehman Brothers Financial Products; LCPI is Lehman Commercial Paper Inc.; LBCS is Lehman Brothers Commodity Services; LBCC is Lehman Brothers Commercial Corporation; LOTC is Lehman Brothers OTC Derivatives; LBSF is Lehman Brothers Special Financing.

[a] For LBHI, the amount includes $1 billion of incremental liquidation administrative expenses.
[b] From 2011 onwards; the amount includes professional fees and compensation, outsourced services, and information technology activities.
[c] Amount equals net amount distributed as percent of estimated allowed claims.
[d] Shareholder equity, total assets, and cash position numbers are as of September 14, 2008. LBHI's cash position includes $509 million seized post-filing by Bank of America.

expected, helped by settlements with other banks and Lehman's foreign subsidiaries.

Based on the cumulated distributions so far, creditors of the holding company (LBHI) have received 21.3 percent of their allowed claims in the aggregate. Senior unsecured creditors of LBHI have received 26.9 percent of their allowed claims (LBHI, "Notice Regarding Fifth Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan," March 27, 2014).[38]

We examine historical recovery rates to assess whether LBHI's recovery rate so far has been significant (as argued by Scott [2012]) or poor (according to the Federal Deposit Insurance Corporation [2011]). Average recovery rates for senior unsecured claims between 1982 and 1999, based on bonds, loans, and other debt instruments, are estimated at 56 percent for all industries and 59 percent for financial institutions (Acharya, Bharath, and Srinivasan 2007). Recovery rates are considerably lower during periods of distress: 19 percentage points lower in recessions (Schuermann 2004), 15 percentage points lower in periods of industrial distress (Acharya, Bharath, and Srinivasan 2007), and 15 to 22 percentage points lower, depending on the default event, during credit cycle downturns (Bruche and Gonzalez-Aguado 2007).[39] Thus, even after accounting for possibly reduced recovery rates owing to adverse credit and macroeconomic conditions, the recovery rate so far for LBHI has been low compared with the historical average. With additional distributions yet to come, the final recovery rate is expected to be higher, but it remains to be seen whether it will meet historical norms.

While the average payout ratio for Lehman and affiliates has been about 28 percent, recovery rates have been higher for creditors of certain derivatives subsidiaries of LBHI and, in a few cases, have reached 100 percent (Panel B of Table 3). The plan had estimated that seven of the twenty-three Lehman entities would pay all of their claims in full and have remaining funds for their shareholders. Prior to its bankruptcy filing, Lehman traded derivatives through a number of wholly owned subsidiaries, both in a trading capacity and as an end-user, as listed in Panel B of Table 3.[40] Lehman's first

[38] Other creditor groups received considerably less. For example, senior third-party guarantee claims recovered 16.7 percent and subordinate claims recovered 0 percent (LBHI, "Notice Regarding Fifth Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan," March 27, 2014).

[39] In Bruche and Gonzalez-Aguado (2007), the credit cycle is unobservable and represented by a two-state Markov chain. While the literature does not find a statistically significant effect of macroeconomic factors on recovery rates (Altman, Brady, Resti, and Sironi 2005; Acharya, Bharath, and Srinivasan 2007), these studies have short sample periods that do not include many recession periods.

[40] Lehman's fixed-income derivatives products business was principally

liquidation plan filed in March 2010[41] had called for maintaining the corporate distinction of each of the twenty-three Lehman entities that had filed for bankruptcy, implying that each affiliate would make payments to its creditors on the basis of its own assets. Derivatives creditors would have generally benefited from such an approach, given the positive equity cushions of most Lehman derivatives entities.

General creditors of LBHI argued that parent company guarantees of affiliates' debt meant that more debt resided at the parent level while assets were at the subsidiary level.[42] As such, creditors with claims against an affiliate subject to an LBHI guarantee could recover against both LBHI and the affiliate. An ad hoc group of ten LBHI creditors submitted their own liquidation plan on December 15, 2010, proposing to "substantially consolidate" all affiliates' assets into one Lehman entity. In contrast to the existing company structure, under the consolidated structure, guarantee claims would be eliminated. Therefore, holders of parent company claims would receive more with consolidation. Lehman rejected this plan and, after further negotiations with creditors, submitted an amended plan on June 29, 2011, that proposed to retain the corporate formalities of each debtor entity, but to redistribute the payouts made to certain creditors. After further revisions to this plan, the Modified Third Amended Plan was finally confirmed on December 6, 2011, following a creditor vote, and became effective on March 6, 2012, enabling Lehman to emerge from bankruptcy and make distributions to creditors.

As a result of the plan, between 20 and 30 percent of payments owed to creditors of various operating companies were forfeited and reallocated to the parent company's creditors. In particular, distributions due to claim holders of derivatives entities such as LBSF, Lehman Commercial Paper Inc., Lehman Brothers Commodity Services, Lehman Brothers OTC Derivatives Inc., and Lehman Brothers Commercial Corporation were reallocated to holders of senior unsecured claims and general unsecured claims against LBHI. Accordingly, while Lehman Brothers OTC Derivatives Inc., Lehman Brothers Financial Products, and Lehman Brothers Derivative Products all had recovery rates of 100 percent, LBSF (the largest derivatives entity) had recovered about 31 percent, despite having a positive equity cushion (Panel B of Table 3).

Recovery rates for large derivatives counterparties are likely to be different from those of other secured creditors. This is because the Lehman estate followed a different settlement approach regarding these claims, as discussed in Section 4. Under the Chapter 11 liquidation plan, the eight largest financial institutions were allowed about 65 percent of their asserted claims, while the thirty largest big bank counterparties were allowed about 47 percent of their asserted claims (Panel C of Table 3).

Discussion: Recovery Rates of Lehman Creditors

Recovery rates varied across creditor groups. Creditors of two Lehman derivatives entities received full recovery on their claims, while customers of centrally cleared securities were mostly made whole. In contrast, most counterparties of Lehman's OTC derivatives suffered substantial losses. What caused some Lehman creditors to receive better recovery rates than others?

A crucial factor for LBI customers to receive full recovery was the availability of Federal Reserve funding for LBI and Barclays in the first week after bankruptcy, which allowed LBI to continue operating until it was sold to Barclays. The Fed also urged LBI's clearing agents to continue to provide intraday liquidity so that trades could be settled (LBHI, "Debtors versus JPMorgan Chase Bank, N.A.," April 19, 2012).

Central clearing allowed Lehman's positions to be terminated rapidly and resulted in minimal losses for Lehman's customers (Appendix B). However, CCPs and clearing firms filed numerous suits against the Chapter 11 debtors and the SIPA trustee (Appendix C) that, had these suits not been decided in favor of Lehman, would have led to larger losses for Lehman's customers. Also, despite central clearing, some of Lehman's house positions suffered large losses due to the extreme illiquid market conditions prevailing during the financial crisis (Appendix B).

The positive net worth of most of Lehman's derivatives entities at the time of bankruptcy also helped, although the largest entity (LBSF) was borderline insolvent with shareholder equity of only 4 percent of total assets (Panel B

conducted through LBSF and Lehman's separately capitalized "AAA"-rated subsidiaries Lehman Brothers Financial Products and Lehman Brothers Derivative Products. Lehman's equity derivatives products business was conducted through Lehman Brothers Finance, Lehman Brothers OTC Derivatives Inc., and LBIE, and its commodity and energy derivatives product business was conducted through Lehman Brothers Commodity Services. Lehman conducted a significant amount of its spot, forward, and option foreign exchange business through Lehman Brothers Commercial Corporation.

[41] There were four versions of Lehman's joint proposed Chapter 11 plan (referred to as the liquidation plan in the text). The original proposal was filed in March 2010, followed by amended versions on January 25, 2011, June 30, 2011, and August 31, 2011.

[42] LBHI was the guarantor to the majority of ISDA derivatives contracts with about 1.7 million trades and more than 10,000 counterparties (Government Accountability Office 2011). There were also intercompany claims against Lehman's subsidiaries. For example, other Lehman entities filed 630 claims worth about $19.9 billion against LBI.

of Table 3). Indeed, derivatives positions were reliable revenue sources for the Lehman estate during bankruptcy (Summe 2012). Derivatives creditors could have received even more if some of their allocations had not been diverted to larger counterparties of LBHI under the Chapter 11 liquidation plan.

In contrast to centrally cleared derivatives, the settlement of Lehman's OTC derivatives claims may have resulted in significant losses to Lehman ("Debtors' Disclosure Statement for First Amended Joint Chapter 11 Plan," January 25, 2011; U.S. Government Accountability Office 2011) or to Lehman's counterparties. In particular, Lehman's counterparties used the safe harbor provisions to terminate contracts when they stood to gain and to keep alive contracts when they were out-of-the-money. Further, they refused to make required periodic payments to Lehman on out-of-the-money contracts on the grounds of Lehman's default under the ISDA Master Agreement.

In other cases, the settlement of Lehman's OTC derivatives claims may have resulted in significant losses to Lehman's counterparties. Some Lehman counterparties suffered losses owing to the selection of the termination date for safe harbor purposes (Ricotta 2011). Although Lehman filed for bankruptcy protection at about 1:00 a.m. on Monday, September 15, 2008, the termination date was set as Friday, September 12, for derivatives subject to automatic termination. Normally, nondefaulting derivatives counterparties of Lehman would have attempted to hedge their positions on Monday to mitigate expected losses on their positions. However, they could not do so since their positions were deemed to have terminated two days earlier. Also, in some cases, parties had sent wire transfers to various Lehman entities on Friday to satisfy their obligations to make periodic payments, even though such payments were not required once Lehman had defaulted (Ricotta 2011). Some of these parties that had elected automatic early termination tried to revoke their elections ex post, but such an election is irrevocable.

Scott (2012) argues that twenty-four of Lehman's top twenty-five counterparties by number of derivatives transactions had entered into credit support annexes with Lehman that required the out-of-the-money party to post collateral based on mark-to-market liability, greatly mitigating the effects of a default if counterparties exercised their rights under these agreements. However, the actual extent of collateralization is in dispute. For example, it has been alleged that Lehman did not post sufficient collateral, that it failed to segregate collateral, and that hypothecated collateral could not be recovered in a timely fashion (Ricotta 2011). These problems arose in part because, although counterparties posted initial margin (or "independent amount") on their OTC trades with Lehman, dealers like Lehman generally do not post initial margin to their buy-side counterparties (Scott 2012).

Under safe harbor provisions, Lehman's nondefaulting counterparties could seize collateral that Lehman posted to them before default, even if the collateral was posted just before bankruptcy. Some in-the-money counterparties suffered losses when, under the credit support annexes included in their derivatives contracts, Lehman affiliates either were never required to post collateral or did not post sufficient collateral (Ricotta 2011).[43] As a result, they were unable to make recovery through the close-out netting process and became unsecured creditors to the Lehman estate.

Although Lehman typically did not post collateral, it held collateral posted by its counterparties. Lehman sometimes commingled its counterparties' liquid collateral with its own (less liquid) assets, either because it was allowed to hypothecate collateral, or because it did not hold counterparty collateral in a segregated account (Ricotta 2011; Scott 2012). Counterparties that had allowed Lehman to hypothecate their collateral to unrelated third parties in connection with securities transactions that could not be unwound found that their collateral had become unrecoverable. When Lehman did not segregate collateral, the collateral became an unsecured claim in the Chapter 11 cases or subject to Lehman's SIPA receivership proceedings (Ricotta 2011). It follows that counterparties did not know when their collateral would be returned to them, nor did they know how much they would recover given the deliberateness and unpredictability of the bankruptcy process.

6. Conclusion

The bankruptcy of Lehman Brothers was one of the largest and most complex in history, encompassing more than $1 trillion worth of creditor claims, four bodies of applicable U.S. laws, and insolvency proceedings that involved more than eighty international legal jurisdictions. The payout ratio to third-party creditors was initially estimated to be about 21 percent on estimated allowable claims of $362 billion. While actual distributions appear to have exceeded initial estimates, some of it has gone to other Lehman entities. Moreover, recovery rates for Lehman's senior unsecured creditors remain below historical averages even after accounting for possible mitigating factors (such as the state

[43] In lieu of posting collateral, LBHI provided credit guarantees for nearly all the derivatives transactions of its affiliates.

of the economy and the credit cycle). Customers of centrally cleared securities were generally made whole, and most customers of Lehman's broker-dealer were able to transfer their accounts to other solvent broker-dealers. In contrast, many counterparties of Lehman's OTC derivatives suffered substantial losses.

We argue that some of the losses associated with the failure of Lehman Brothers may have been avoided in a more orderly liquidation process. The poor planning of the bankruptcy process, in particular, stands out as being especially costly. In contrast, creditor losses would have been more substantial without the ability of Lehman's U.S. brokerage subsidiary, and subsequently of Barclays, to finance positions through the Federal Reserve's liquidity facilities.

The size and complexity of Lehman resulted in costly delays in settling claims. The settlement process was long as the Lehman estate had a fiduciary duty to do due diligence on numerous, complex claims on an individual basis. Further, its determination of claims was frequently litigated, as is typical for bankruptcies of large firms. Lehman's organizational complexity also contributed to delays. For example, in many instances, Lehman and its counterparties were uncertain of the identity of the specific Lehman subsidiary against which creditors had claims. Finally, Lehman's interconnectedness led to delays as LBHI creditors argued in court that, since the holding company had guaranteed some of the subsidiaries' debt, they were entitled to a portion of recovery from subsidiary assets (the "substantive consolidation" issue).

The predictability of Lehman's claims settlement procedures was hindered by the novelty of its business and financial structure (in the context of bankruptcy cases). Chapter 11 proceedings are based on the application of case law relating to the Bankruptcy Court's prior interpretations of cases. While existing case law provided a useful starting point for Lehman's resolution, the court provided new interpretations of provisions in the Bankruptcy Code (for example, regarding some aspects of the safe harbor provisions for derivatives). In part, this reflected the importance of complex financial securities that the bankruptcy court had to analyze for the first time.

In sum, the size and complexity of Lehman, the novelty of its structure, and the rarity with which such firms go bankrupt contributed to a prolonged and costly resolution. In the future, because of the Dodd-Frank Act, regulators will have the option to resolve large, complex financial firms under the Orderly Liquidation Authority, through the expanded reach of the FDIC. Details of how such a resolution would be implemented are still being worked out, making it hard to evaluate the extent to which the resolution of large nonbank financial firms will be more efficient going forward.

Appendix A: Glossary

ADR	Alternative Dispute Resolution
CCP	central counterparty
CME	Chicago Mercantile Exchange
DTCC	Depository Trust and Clearing Corporation
FDIC	Federal Deposit Insurance Corporation
FICC	Fixed Income Clearing Corporation
GCF	general collateral finance
ISDA	International Swaps and Derivatives Association
JPMC	JPMorgan Chase and Company
LBHI	Lehman Brothers Holdings Incorporated
LBI	Lehman Brothers Incorporated
LBIE	Lehman Brothers International (Europe)
LBSF	Lehman Brothers Special Financing
NSCC	National Securities Clearing Corporation
OCC	Office of the Comptroller of the Currency
OTC	over-the-counter
PDCF	Primary Dealer Credit Facility
QFC	qualified financial contracts
SIPA	Securities Investor Protection Act
TSLF	Term Securities Lending Facility

The par value of Lehman's centrally cleared U.S. positions exceeded $520 billion at the time of bankruptcy (Panel A of Table B.1). Exchange-traded and some OTC derivatives contracts (such as futures contracts) were centrally cleared, and these positions were resolved by central counterparties acting on behalf of Lehman's clients (where Lehman acted as a broker) or on behalf of Lehman (where Lehman traded for its own accounts), as illustrated in Exhibit 3.[44] The resolution of Lehman's centrally cleared securities positions by CCPs proceeded relatively smoothly, as CCPs suspended or imposed limits on the market access of defaulting Lehman entities within hours of default (Panel B of Table B.1), with most of its client and proprietary positions settled with no large losses to CCPs (CCP12 2009). However, there was controversy regarding the Chicago Mercantile Exchange's (CME) handling of Lehman's proprietary positions, as described below.

Immediate Response of CCPs to LBHI's Bankruptcy Announcement

Lehman traded in almost all developed markets and was a direct clearing participant on behalf of itself or its clients in some markets while using third-party clearing arrangements in others. Following the bankruptcy announcement of LBHI in the United States, there was uncertainty as to which of Lehman's international subsidiaries were solvent. Thus, CCPs with direct clearing relations with Lehman became unsure about Lehman's ability to deliver on obligations to them. After LBHI's bankruptcy announcement, most of these CCPs confirmed suspension, declared Lehman in default, or implemented restricted trading arrangements before markets opened in the United States. (Panel B of Table B.1). A few exchanges temporarily allowed trading and settlement by subsidiaries if they continued to meet CCP obligations (CCP12 2009). Where Lehman did not have a direct clearing relationship, the CCPs had no direct exposure to Lehman, but they worked closely with third-party clearing agents[45] to resolve Lehman's outstanding positions. Third-party clearers and trading venues quickly suspended Lehman and prevented its positions from increasing further (CCP12 2009).

In the United States, the bankruptcy announcement identified Lehman entities that remained solvent, allowing U.S. CCPs and clearing agents to continue relationships with solvent Lehman entities (although the relationship with LBI would prove to be contentious, as discussed in Appendix C). The CCPs of the Depository Trust and Clearing Corporation, namely the Fixed Income Clearing Corporation (FICC) and the National Securities Clearing Corporation (NSCC), confirmed on September 15, 2008, that Lehman's subsidiaries remained solvent participants of the CCP (CCP12 2009). ICE Clear U.S. and the CME also announced that Lehman continued to meet commitments to the clearinghouse.

Default Management and Risk Reduction by CCPs

CCPs, by taking on the obligations of their clearing members, are exposed to risk, which they manage through a variety of strategies (for example, through margins and other member contributions, and capital and insurance for use in the event of default). In Lehman's case, CCPs used similar approaches to limit their exposure, with some exceptions influenced by local regulation (CCP12 2009).

In many markets, Lehman acted as a broker, making and receiving payments on behalf of its clients. Insolvency of a broker typically results in clients facing restricted access to their accounts. In response to Lehman's insolvency, CCPs acted quickly to transfer (or facilitate transfer under the client's direction) Lehman's client accounts to other nondefaulting clearing participants. In the United States, LBI's client accounts were mostly transferred to Barclays Capital or Ridge Clearing and Outsourcing Solutions, Inc. (a clearing services provider), as further discussed in Appendix C. Overall, the vast majority of Lehman's clients obtained access to their accounts within weeks (and sometimes days) of Lehman's bankruptcy (CCP12 2009).

Lehman's house positions were the outcome of proprietary trading on behalf of itself. With limited third-party interest, most CCPs closed out these positions. In the United States, following the appointment of the SIPA trustee on September 19, 2008, the DTCC announced on October 30, 2008, that it had wound down LBI's outstanding obligations. FICC netted and liquidated $329 billion in par value of outstanding forward trades in mortgage-backed securities and $190 billion in gross government bond positions (CCP12 2009).

[44] In at least one case, a CCP helped resolve Lehman's bilaterally cleared derivative position. Specifically, LCH.Clearnet resolved the default of Lehman's interest rate swap portfolio, consisting of 66,000 trades and $9 trillion in notional value, within three weeks, well within the margin held and without loss to other market participants. See *Managing the Lehman Brothers' Default*, LCH.Clearnet, available at http://www.lchclearnet.com/swaps/swapclear_for_clearing_members/managing_the_lehman_brothers_default.asp.

[45] Clearing agents are corporations or depositories that act as intermediaries in the clearing and settlement process. See http://www.sec.gov/divisions/marketreg/mrclearing.shtml.

Table B.1
Resolution of Lehman's Centrally Cleared Positions

Panel A: Lehman's Centrally Cleared Positions at Time of Bankruptcy

Central Counterparty	Asset Type	Par Value of Positions (Billions of dollars)	Netted and Liquidated by
CME	Derivatives	4.00*	09/19/2008
FICC	MBS forwards, government bonds	519.00	10/30/2008
NSCC	Equity, municipal and corporate bonds	5.85	10/30/2008

Panel B: CCP Actions Following LBHI Bankruptcy Filing

Date	Actions of Global Central Counterparties with Respect to Lehman Entities
09/15/2008	• Six CCPs confirm no clearing relationship with Lehman • Six CCPs confirm Lehman continues to meet obligations • Eight CCPs announce default or suspension of Lehman • One CCP announces restricted trading/clearing for Lehman
09/16/2008	• Four CCPs announce default or suspension of Lehman • LCH.Clearnet and two CCPs commence transfer of client accounts • Three CCPs complete close-out of positions
09/19/2008	• Two CCPs close positions without loss • CME closes out Lehman house positions • FICC and NSCC begin close-out of house positions • LCH.Clearnet announces 90 percent risk reduction of positions • LCH.Clearnet and another CCP largely complete transfer of client positions and close out house positions
09/26/2008	• One CCP completes transfer of client accounts • Two CCPs close out positions
10/03/2008	• FICC, NSCC, and another CCP close out house positions without loss

Sources: CCP12 (2009); "Debtors' Disclosure Statement for Second Amended Joint Chapter 11 Plan" (June 30, 2011); Valukas (2010).

Notes: CME is Chicago Mercantile Exchange; FICC is Fixed Income Clearing Corporation; NSCC is National Securities Clearing Corporation.

*Aggregate margin requirements on Lehman's customer and house positions.

NSCC inherited a $5.85 billion portfolio of equities, municipal bonds, and corporate bonds, used $1.9 billion in pledged securities to settle outstanding equity obligations, and liquidated or hedged remaining positions (CCP12 2009). NSCC's portfolio included $3.8 billion in options exercises and assignments from the Options Clearing Corporation for the quarterly expiration on September 19, 2008, which was liquidated with no losses to other NSCC members.[46]

LBI had large derivatives positions at the CME, where it was a clearing member. At the time of its bankruptcy, LBI's margin requirements at the CME that were related to its proprietary and public customer positions totaled roughly $4 billion, accounting for more than 4 percent of the margin requirements of all CME clearing members (Panel A of Table B.1). Despite the size of LBI's positions, they were unwound in four days. Nonetheless, there were difficulties with the settlement, as discussed below.

On September 12, 2008, the CME was informed by federal regulators of LBHI's expected bankruptcy or sale and began preparing for a possible liquidation or transfer

[46] See "DTCC Successfully Closes Out Lehman Brothers Bankruptcy," http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aojt5wVkz_EM.

of LBI positions (Valukas 2010, p. 1844). Owing to the large size and complexity of Lehman's exchange positions, the CME judged that an open market sale would not be prudent (Valukas 2010, p. 1845). Instead, on September 14, the CME selected six firms and disclosed LBI's house positions to them in order to solicit contingent bids on these positions (Valukas 2010, p. 1846). The bids, received from five of the six firms, implied substantial losses to LBI as it would lose the majority (or, in some cases, all) of its posted margins on these positions. On September 15, the CME instructed LBI to liquidate its proprietary position in bulk, the first time that it had conducted a forced transfer/liquidation of a clearing member's position.[47] The CME took this action, even though LBI was not in default of its margin requirements, because it felt that LBI would be liquidated before too long.

Between September 15 and September 17, LBI attempted to find buyers for its house positions, but was unable to do so except for its natural gas positions (Valukas 2010, p. 1849).

On September 17, the CME learned that Barclays would not assume all of LBI's customer positions and that LBI was likely to file for liquidation on September 19. Consequently, that same evening, the CME decided to re-solicit bids from the five firms that had previously submitted bids. On the morning of Thursday, September 18, the CME transferred LBI's proprietary positions to three firms.

The bulk sale resulted in a loss to LBI on its proprietary position that exceeded $1.2 billion and an additional loss of $100 million over margin requirements (Valukas 2010, p. 1854). LBI's portfolio at the CME, largely intended to hedge Lehman's OTC swaps contracts that were guaranteed by LBHI, became outright positions after the bankruptcy filing.[48] The inability to offer both legs of the hedged positions meant that LBI could not liquidate the outright positions on favorable terms, because counterparties would require substantial additional collateral and margins ("Trustee's Preliminary Investigation Report and Recommendations," August 25, 2010).

[47] However, amid the confusion, LBI modestly *added* to its position over the next two days as Lehman traders either did not show up for work or received inadequate direction from management.

[48] This is because the swaps contracts terminated when the guarantor, LBHI, defaulted. Therefore, LBI's hedge position stood on its own.

Appendix C: Settlement of Lehman's Customer Positions under SIPA

The insolvency proceedings involving LBHI on September 15, 2008, severely limited the daily funding sources of LBI, and it was able to continue operations only by borrowing from the Fed, as detailed in Section 3.[49] On September 19, 2008, the court appointed a trustee under the Securities Investor Protection Act of 1970 to "maximize the return of customer property to customers of LBI as defined by the law, while at the same time maximizing the estate for all creditors." Different from Chapter 11, SIPA was a liquidation proceeding, with an emphasis on returning customer property wherever possible (Giddens 2008).

The LBI resolution was the largest and most complex in SIPA history. Almost 125,000 customer claims worth almost $190 billion were filed (Panel A of Table C.1). Even prior to his formal appointment, the SIPA trustee assisted in the transfer of LBI's customer accounts to Ridge Clearing and Outsourcing Solutions Inc. on behalf of NeubergerBerman, resulting in the transfer of more than 38,000 customer accounts worth over $45 billion (Panel A of Table C.1).[50] On September 19, 2008, Barclays acquired select, but not all, broker-dealer assets and customer accounts of LBI.[51] Originally, it was believed that Barclays would leave behind few significant customer accounts; accordingly, the SIPA proceedings would largely be a vehicle for effectuating customer account transfers to Barclays ("Trustee's Preliminary Investigation Report and Recommendations," August 25, 2010).

Beginning September 23, 2008, the SIPA trustee supervised and authorized the transfer of more than 72,500 private investment management accounts amounting to more than $43 billion to Barclays (Panel A of Table C.1). Effectively, these LBI account holders became Barclays account holders, and their account assets appeared on their Barclays account statements ("Trustee's First Interim Report," 2009).

[49] LBHI's rushed Chapter 11 filing also forced Lehman's European broker-dealer LBIE into administration in the United Kingdom on the morning (local time) of September 15, 2008. LBI assets that had been traded in overseas markets through LBIE (which acted as LBI's clearing and settlement agent for certain LBI overseas trades) became tied up in the LBIE administration process. At the same time, LBIE demanded more than $8 billion from LBI related to transactions allegedly made just before LBIE entered administration.

[50] Shortly after LBHI's bankruptcy filing, Neuberger Berman (which had used LBI as its clearing broker) transferred its clearing services to Ridge Clearing and Outsourcing Solutions Inc.

[51] Barclays also did not acquire LBI house positions, the resolution of which is discussed in Appendix B.

In contrast to these (mostly retail) customer accounts that were transferred within weeks of LBI's liquidation filing, the resolution of institutional customer claims through the SIPA claims process remains ongoing. The resolution of institutional claims occurred through account transfers and the SIPA claims process. After Barclays unexpectedly refused to assume LBI's prime brokerage accounts, a majority of these accounts were transferred by the SIPA trustee to other broker-dealers, using an innovative protocol that expedited the transfer process ("Trustee's First Interim Report," 2009). Almost 300 accounts worth close to $3.50 billion were transferred through the SIPA trustee's Prime Brokerage Protocol (Panel A of Table C.1). However, owing to the complexity of the process, most account transfers were only partial ("Trustee's First Interim Report," 2009).

Numerous claims remained pending after the account transfers, including thousands of customer accounts that Barclays left behind, claims of Lehman's European broker-dealer LBIE, and intercompany claims of LBHI and other Lehman affiliates.[52] These claims included both customer and general creditor claims and were determined through the SIPA claims process starting on December 1, 2008 (Giddens 2008). The process proved challenging because of complex issues of statutory interpretation and the need for extensive reconciliation and analysis. Nearly 10,000 claims were investigated, denied customer status, and closed. Nevertheless, by March 29, 2013, more than 14,000 claims had been resolved, and customers and general creditors received a distribution of about $13.5 billion (Panel A of Table C.1), the bulk of which went to satisfy LBIE's intercompany claims (Panel B of Table C.1).

A relatively small number of claims remain contested (Panel A of Table C.1) and, in order to streamline the resolution of general creditor claim disputes, the SIPA trustee recently sought and received a court order establishing ADR procedures ("Trustee's Tenth Interim Report," 2014).

Discussion: Resolution of Lehman's Customer Accounts under SIPA

The resolution process has resulted in 100 percent recovery for customers, a significant achievement for SIPA. Nevertheless, in his investigative report, the SIPA trustee noted many legal

[52] LBIE's claims included those on its own behalf and those on behalf of LBIE customers, for which LBI acted as custodian and clearing broker.

Table C.1
Estimated Recovery of Customer Claims under SIPA

Panel A: Summary of Customer Claims Resolutions as of March 29, 2013

	Number of Claims	Amount (Billions of Dollars)
Total claims	124,989	188.57
Less: Total claims resolved by transfers or claims process	—	105.78
Less: Claims distributed by accounts transfers	110,920	92.30
To Barclays	72,527	43.25
To Neuberger Berman	38,106	45.57
Through Trustee's Prime Brokerage Protocol	287	3.49
Remaining claims		14.23
Claims distributed through SIPA claims process	14,069	13.48
Claims unresolved	—	0.75

Panel B: Customer Claims Distributed through SIPA Claims Process, by Group, as of March 29, 2013

	Market Value of Securities and Cash (Billions of Dollars)	Share of Total (Percent)
Non-affiliate	1.62	12.0
LBIE	9.23	68.5
LBHI	2.37	17.6
Other affiliates	0.26	1.9
Total	13.48	100.0

Sources: Trustee's Fifth Interim Report (2011) and Trustee's Ninth Interim Report (2013).

Notes: SIPA is Securities Investor Protection Act; LBHI is Lehman Brothers Holdings Inc.; LBIE is Lehman Brothers International (Europe).

and systemic difficulties in the liquidation process (albeit unnoticed by customers whose accounts were treated as intact despite the difficulties) and made recommendations for improvements ("Trustee's Preliminary Investigation Report and Recommendations," 2010). Retail customer accounts were transferred quickly, although reconciliation of accounts and delivery of property held in custodial banks around the world took more than a year (Giddens 2010). In contrast, resolution of institutional customer claims through the SIPA claims process remains ongoing.

The rushed liquidation of customer accounts left behind by Barclays resulted in a disorderly process of unwinding LBI's customer and intercompany balances ("Trustee's Preliminary Investigation Report and Recommendations," 2010). There was inadequate understanding as to how the interests of customers whose accounts Barclays rejected would be affected, leading to prolonged disputes with Chapter 11 creditors and Barclays. For example, it was initially believed that only a few customer accounts not transferred to Barclays would be liquidated under SIPA, but a substantial number of customer accounts were actually left behind.

In addition, CCPs and clearing agents took unilateral adversarial actions that made it difficult for the SIPA trustee to obtain access to customer property and records. Thus, at the time of the bankruptcy filing, JPMC unilaterally shut off access to information systems, thereby preventing LBI and the SIPA trustee from identifying and protecting customer accounts ("Trustee's Preliminary Investigation Report and Recommendations," 2010). JPMC also did not honor customer segregation requirements. These issues were ultimately resolved through formal agreements between JPMC and the SIPA trustee, but in the meantime, the ability of the SIPA trustee to transfer customer property was impaired.

Moreover, the Depository Trust and Clearing Corporation and the Office of the Comptroller of the Currency (OCC) threatened emergency actions that harmed the account transfer process ("Trustee's Preliminary Investigation Report and Recommendations," 2010). The OCC threatened to liquidate all LBI positions unless Barclays stepped into LBI's shoes by having LBI's accounts at OCC transferred to Barclays. Although Barclays agreed, customers of LBI who did not transfer to Barclays had difficulty accessing their OCC positions and margins. Similarly, DTCC was unwilling to provide settlement services if Barclays did not take over LBI positions. The issue was settled when Barclays agreed to deposit the purchase price for LBI (due to the estate) to DTCC, but there was less cash available to settle customer claims in the interim.

The transparency of the SIPA liquidation process was good. The SIPA trustee has issued ten interim reports so far, in addition to a detailed preliminary investigative report on various aspects of LBI's resolution.

Derivatives settlement procedures, as documented under the ISDA Master Agreement, attempt to enable the nondefaulting party to assert a claim for an amount that, if fully recovered, would place it in the same position absent the default (Scott 2012).[53] To do so involves four steps: 1) terminate contracts and unwind all open transactions, 2) determine the value of each transaction, 3) perform close-out netting, and 4) pay out net amounts. The amount owed to or from a nondefaulting party on account of default is equal to the net value of the derivatives, as determined according to the selected valuation methodology plus any unpaid amounts offset by the value of the collateral. If the amount due to the nondefaulting party is positive, then it becomes an unsecured creditor to the estate.

In a bankruptcy, derivatives and other qualified financial contracts are awarded special legal treatment exempting them from several provisions of the Bankruptcy Code, thereby creating a safe harbor.[54] First, derivatives creditors can net offsetting positions with the debtor, seize and liquidate collateral, and choose whether to close out and terminate positions right after bankruptcy without being subject to the automatic stay. Relatedly, creditors have broad rights to set off debts owed to the debtor against debts due from the debtor if a setoff provision has been included in the ISDA Master Agreement. Second, they are exempt from certain creditor liabilities related to pre-bankruptcy agreements such as fraudulent conveyance liability (arising from the debtor selling its own assets prior to bankruptcy for less than fair value) and preference rules (the need to return preferential payments received just before bankruptcy or to give back preferential collateral calls). The remainder of this section focuses on the first exemption relating to the procedures for termination, liquidation of collateral, netting, and setoff.

The termination procedure for creditors is described by an ISDA Master Agreement that lists the default events triggering termination. Specifically, contracts terminate automatically if the derivatives contract has an automatic early termination clause or, alternatively, the nondefaulting party has the choice (but not the obligation) to terminate by giving written notice to the defaulting party. Naturally, the nondefaulting party has an incentive not to terminate the contract when it is out-of-the-money; moreover, in such cases, it has the right to suspend periodic payments to the defaulting party under the Master Agreement. Termination of a Master Agreement terminates all derivatives transactions under that agreement. The Master Agreement is supplemented or amended by a schedule that (among other things) states whether or not the derivatives transactions are supported by a guarantor or other credit support provider. If so, a default by a credit support provider will constitute a default event under the Master Agreement.

With early termination under a Master Agreement, parties can seize any collateral posted pursuant to the agreement. A derivatives transaction may include a credit support annex, which is a security agreement that describes any collateral pledged in the derivatives transactions. Typically, liquid collateral (such as U.S. Treasury securities or agency securities) is posted (Ricotta 2011). Collateral is "marked to market" and the amount due to or from a party (its "exposure") is calculated periodically. Either one side or both sides to a transaction may post collateral. The credit support annex may also permit a party to hypothecate collateral posted and delivered by the other party.

The valuation framework implicitly envisions a liquid market such that the nondefaulting party closes out its open positions at market rates and then establishes replacement hedges to offset expected price changes (Das 2012). Accordingly, valuation of contracts requires determining the exact timing of valuation, the method used, and the calculation agent carrying out the valuation. Under the 1992 Master Agreement, parties can choose between the market quotation method and the loss method. The market quotation method allows nondefaulting parties any unpaid amount plus replacement transactions valued based on quotes from at least three reference market-makers; the loss method entitles the nondefaulting party to "an amount that party reasonably determines in good faith to be its total losses" from the terminated transactions. The 2002 Master Agreement uses the close-out amount approach, which combines elements of the quotation and loss methods.[55]

[53] ISDA is an industry trade association that has developed two documents that are fundamental to any OTC derivatives transaction: the 1992 ISDA Master Agreement and the 2002 ISDA Master Agreement. Multiple derivatives transactions may be documented under a single Master Agreement that contains alternative provisions to be selected by the two signatories.

[54] More formally, "safe harbor provisions" are provisions in the U.S. Bankruptcy Code ensuring that derivatives contracts and other QFCs are enforced according to their terms by creditors even after the debtor files for bankruptcy, subject to certain exceptions under the code. Bliss and Kaufman (2006) and Roe (2011) discuss the desirability and rationale of safe harbor provisions.

[55] Similar to the quotation method, the close-out amount approach entitles the nondefaulting party to any unpaid amounts. Similar to the loss method, it also allows a "close-out amount" equal to the replacement costs of the terminated trades where the determining party may "use [any] commercially reasonable procedures in order to produce a commercially reasonable result."

Once contract values are established, close-out netting is used to determine the net settlement amount. Close-out netting involves the calculation of gains or losses for each party upon termination of a derivatives contract, repeating the calculation for all of the derivatives transactions involving the two parties and then offsetting the resulting amounts. After applying any setoff rights and the value of collateral posted, the procedure yields a single payment from one party to the other. If a party has multiple derivatives transactions with different affiliates of a firm, then netting requires written agreements with the affiliates. If no such agreements exist, then the ability to net depends on the local law of the jurisdiction (in particular, the applicable insolvency law), which often prohibits multilateral setoffs (for example, derivatives counterparty A sets off an amount it owes to Lehman affiliate B against an amount Lehman affiliate C owes to derivatives counterparty A).

References

Acharya, V., S. Bharath, and A. Srinivasan. 2007. "Does Industry-Wide Distress Affect Defaulted Firms? Evidence from Creditor Recoveries." Journal of Financial Economics 85, no. 3 (September): 787-821.

Altman, E., B. Brady, A. Resti, and A. Sironi. 2005. "The Link between Default and Recovery Rates: Theory, Empirical Evidence, and Implications." Journal of Business 78, no. 6 (November): 2203-28.

Azarchs, T., and S. Sprinzen. 2008. "How Is the Lehman Brothers Holding Inc. Bankruptcy Progressing?" Standard and Poor's Global Credit Portal, RatingsDirect.

Bharath, S., V. Panchapagesan, and I. Werner. 2010. "The Changing Nature of Chapter 11." Available at SSRN: http://ssrn.com/abstract=1102366 or http://dx.doi.org/10.2139/ssrn.1102366.

Bliss, R., and G. Kaufman. 2006. "Derivatives and Systemic Risk: Netting, Collateral, and Closeout." Journal of Financial Stability 2, no. 1 (April): 55-70.

Braun, M. 2013. "Lehman Reaches beyond Grave Seeking Millions from Nonprofits." Bloomberg, May 14. Available at http://www.bloomberg.com/news/2013-05-14/lehman-reaches-beyond-grave-to-grab-millions-from-nonprofits.html.

Bruche, M., and C. Gonzalez-Aguado. 2007. "Recovery Rates, Default Probabilities, and the Credit Cycle." CEMFI working paper no. 0612.

CCP12–The Global Association of Central Counterparties. 2009. "Central Counterparty Default Management and the Collapse of Lehman Brothers." April.

Charles, G. 2009. "OTC Derivative Contracts in Bankruptcy: The Lehman Experience." New York State Bar Association *NY Business Law Journal* 13, no. 1 (Spring): 14-17.

Covitz, D., S. Han, and B. A. Wilson. 2006. "Are Longer Bankruptcies Really More Costly?" Board of Governors of the Federal Reserve System *Finance and Economics Discussion Series,* no. 2006-27, June.

Das, S. 2012. "In the Matter of Lehman Brothers." *Wilmott* 2012, no. 59 (May): 20-29.

Debtors' Disclosure Statement for First Amended Joint Chapter 11 Plan of Lehman Brothers Holdings Inc. and Its Affiliated Debtors. January 25, 2011. Available at http://www.wilmingtontrust.com/lehman/pdf/Disclosure_Statement_First_Amended_01_25_11.pdf.

Debtors' Disclosure Statement for Second Amended Joint Chapter 11 Plan of Lehman Brothers Holdings Inc. and Its Affiliated Debtors. June 30, 2011. Available at http://www.wilmingtontrust.com/lehman/pdf/Second_Amended_Plan_filed_by_Debtors_dated_06_30_11.pdf.

Debtors' Disclosure Statement for Third Amended Joint Chapter 11 Plan of Lehman Brothers Holdings Inc. and Its Affiliated Debtors. August 31, 2011. Available at http://dm.epiq11.com/LBH/Document/GetDocument/1430484.

Duffie, D., A. Li, and T. Lubke. 2010. "Policy Perspectives on OTC Derivatives Market Infrastructure." University of Chicago. MFI Working Paper Series, no. 2010-002, January.

Durham, S. 2010. Terminating Derivative Transactions: Risk Mitigation and Close-Out Netting. Practising Law Institute.

Federal Deposit Insurance Corporation. 2011. "The Orderly Liquidation of Lehman Brothers Holdings Inc. under the Dodd-Frank Act." FDIC Quarterly 5, no. 2: 31-49.

Fleming, M., and A. Sarkar. 2014. "Where Was Value Destroyed in the Lehman Bankruptcy?" Unpublished paper, Federal Reserve Bank of New York.

Giddens, J. 2008. "In re Lehman Brothers Inc.: A Securities Investor Protection Act Liquidation." Case No. 08-01420 (JMP) SIPA, December 17. Available at http://dm.epiq11.com/LBI/document/GetDocument.aspx?DocumentId=1324539.

———. 2010. "SIPA Liquidation Overview." American Bankruptcy Institute, New York City Bankruptcy Conference, April. Available at http://www.abiworld.org/committees/newsletters/busreorg/vol9num5/sipa.pdf.

Jackson, T. H., 2012. "Bankruptcy Code Chapter 14: A Proposal." In K. E. Scott and J. B. Taylor, eds., Bankruptcy Not Bailout: A Special Chapter 14. Hoover Institution Press.

Lehman Brothers Holdings Inc. (LBHI). Debtor's Motion for an Order Pursuant to Sections 105 and 365 of the Bankruptcy Code to Establish Procedures for the Settlement or Assumption and Assignment for Prepetition Derivative Contracts. November 13, 2008. Available at http://www.swapfinancial.com/documents/document/19.

———. Debtor's Motion for an Order Approving Consensual Assumption and Assignment of Prepetition Derivative Contracts. January 28, 2009. Available at http://dm.epiq11.com/LBH/Document/GetDocument/1096464.

———. §341 Meeting. January 29, 2009. Available at http://dm.epiq11.com/LBH/Document/GetDocument/1130920.

———. §341 Meeting. July 8, 2009. Available at http://dm.epiq11 . com/ LBH/Document/GetDocument/1130931.

———. Order Pursuant to Sections 105(a), 362, and 365 of the Bankruptcy Code to Compel Performance of Contract and to Enforce the Automatic Stay. September 17, 2009. Available at http://dm.epiq11.com/LBH/Docket#Debtors=1906&DocketNumber=5209&RelatedDocketId=&ds=true&maxPerPage=25&page=1.

———. The State of the Estate. November 18, 2009. Available at http://dm.epiq11.com/LBH/Document/GetDocument/1130926.

———. The State of the Estate. September 22, 2010. Available at http://dm.epiq11.com/LBH/Document/GetDocument/1265151.

———. Plan Status Report. January 13, 2011. Available at http://dm.epiq11.com/LBH/Document/GetDocument/1309170.

———. Notice Regarding Initial Distributions Pursuant to the Modified Third Amended Joint Chapter 11 Plan of LBHI and Its Affiliated Debtors. April 11, 2012. Available at http://dm.epiq11. com/LBH/Document/GetDocument/1730908.

———. Debtors versus JPMorgan Chase Bank, N.A. Chapter 11 Case No. 08-13555 (JMP), Adversary Proceeding No. 10-03266 (JMP). April 19, 2012. Available at http://www.gpo.gov/fdsys/pkg/USCOURTS-nysb-1_10-ap-03266/pdf/USCOURTS-nysb-1_10-ap-03266-0.pdf.

———. Notice Regarding Second Distributions Pursuant to the Modified Third Amended Joint Chapter 11 Plan of LBHI and Its Affiliated Debtors. September 25, 2012. Available at http://dm.epiq11.com/LBH/Document/GetDocument/2452720.

———. Notice Regarding Third Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan of LBHI and Its Affiliated Debtors. March 27, 2013. Available at http://dm.epiq11. com/LBH/Document/GetDocument/2452746.

———. 2013+ Cash Flow Estimates. July 23, 2013. Available at http://dm.epiq11.com/LBH/Document/GetDocument/2453379.

———. Notice Regarding Fourth Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan of LBHI and Its Affiliated Debtors. September 26, 2013. Available at http://dm .epiq11. com/LBH/Document/GetDocument/2453025.

———. Notice Regarding Fifth Distribution Pursuant to the Modified Third Amended Joint Chapter 11 Plan of LBHI and Its Affiliated Debtors. March 27, 2014. Available at http://dm.epiq11.com/LBH/Document/GetDocument/2473191.

Lehman Brothers Special Financing Inc. versus BNY Corporate Trustee Services Limited. Chapter 11 Case No. 08-13555 (JMP), Adversary Proceeding No. 09-01242 (JMP). January 25, 2010. Available at http://www.gpo.gov/fdsys/pkg/USCOURTS-nysb-1_09-ap-01242/pdf/USCOURTS-nysb-1_09-ap-01242-0.pdf

Liew, C., J. Gu, and K. Noyes. 2010. "Derivatives Netting Not Fully in Place in Asia." Asia Risk. August 4.

Ricotta, P. 2011. "Some Lessons Learned from the Lehman Brothers Bankruptcy Proceedings." In Financial Derivatives in Bankruptcy, ACFA Meeting, January 12. Available at http://acfalaw.org/system/docs/79/original/Derivatives_In_Bankruptcy.pdf?1301233552.

Roe, M. 2011. "The Derivatives Market's Payment Priorities as Financial Crisis Accelerator." Stanford Law Review 63, no. 3 (March): 539-90.

Schuermann, T. 2004. "What Do We Know about Loss Given Default?" In D. Shimko, ed., Credit Risk: Models and Management. 2nd ed. London: Risk Books.

Scott, H. 2012. "Interconnectedness and Contagion." Discussion Paper, Committee on Capital Markets, November 20.

References (Continued)

Smith, E. 2010. "Setoff Issues in Derivative Transactions: The Lehman Experience." Paper presented at the 2010 Annual Meeting and Education Conference, American College of Investment Council. Available at http://aciclaw.org/sites/default/files/sessions/attachments/2013/ACICAM10_Session4b_SetoffIssuesinDerivativeTransactions.pdf.

Summe, K. A. 2012. "An Examination of Lehman Brothers' Derivatives Portfolio Postbankruptcy: Would Dodd-Frank Have Made a Difference?" In K. Scott and J. Taylor, eds., Bankruptcy Not Bailout: A Special Chapter 14. Hoover Institution Press.

Trustee's Preliminary Investigation Report and Recommendations. Case No. 08-01420 (JMP) SIPA. November 19, 2009. Available at http://dm.epiq11.com/LBI/Document/GetDocument/1320923.

Trustee's First Interim Report for the Period September 19, 2008 through May 29, 2009. Case No. 08-01420 (JMP) SIPA. Available at http://dm.epiq11.com/LBI/document/GetDocument. aspx?DocumentId=1320941.

Trustee's Fifth Interim Report for the Period October 27, 2010 through April 22, 2011. Case No. 08-01420 (JMP) SIPA. Available at http://dm.epiq11.com/LBI/document/GetDocument. aspx?DocumentId=1355722.

Trustee's Ninth Interim Report for the Period October 25, 2012 through June 14, 2013. Case No. 08-01420 (JMP) SIPA. Available at http://dm.epiq11.com/LBI/document/GetDocument. aspx?DocumentId=2385679.

Trustee's Tenth Interim Report for the Period June 15, 2013 through February 14, 2014. Case No. 08-01420 (SCC) SIPA. Available at http://dm.epiq11.com/LBI/document/GetDocument.aspx?DocumentId=2462769.

U.S. Government Accountability Office. 2011. "Complex Financial Institutions and International Coordination Pose Challenges." GAO-11-707, July 19.

———. 2013. "Financial Company Bankruptcies: Need to Further Consider Proposals' Impact on Systemic Risk." GAO-13-622, July 18.

Valukas, A. 2010. "Report of the Examiner in the Chapter 11 Proceedings of Lehman Brothers Holdings Inc." March 11. Available at http://jenner.com/lehman/.

Wasserman, R. 2006. "A Step-by-Step Look at Chapter 11." In Inside the Minds: Best Practices for Corporate Restructuring: Leading Lawyers on Communicating with Creditors, Analyzing Debt, and Filing for Bankruptcy. Aspatore Books.