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CLEARINGHOUSES AS LIQUIDITY PARTITIONING

Richard Squire†

To reduce the risk of another financial crisis, the Dodd-Frank Act requires that trading in certain derivatives be backed by clearinghouses. Critics mount two main objections: a clearinghouse shifts risk instead of reducing it; and a clearinghouse could fail, requiring a bailout. This Article's observation that clearinghouses engage in liquidity partitioning answers both. Liquidity partitioning means that when one of its member firms becomes bankrupt, a clearinghouse keeps a portion of the firm's most liquid assets, and a matching portion of its short-term debt, out of the bankruptcy estate. The clearinghouse then applies the first toward immediate repayment of the second. Economic value is created because creditors within the clearinghouse are paid much more quickly, and other creditors are paid no less quickly, than they would be otherwise. The rapid cash payouts for clearinghouse members reduce illiquidity and uncertainty in the financial sector, the main causes of contagion in a crisis. And because the clearinghouse holds only liquid assets, it avoids the maturity mismatch between short-term liabilities and long-term assets that characterizes the balance sheets of many financial institutions. A clearinghouse therefore is much less likely than its members to fail during a crisis. To ensure that clearinghouses remain stable and systemically valuable, rulemakers should require clearing of a wide variety of derivatives contracts, but should limit clearinghouse membership to dealer firms.

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INTRODUCTION

Bankruptcy misallocates cash during a financial crisis. When a firm files for bankruptcy, cash becomes trapped in its bankruptcy estate, often for years. Meanwhile, payments to the firm’s short-term creditors are delayed. If those creditors are financial institutions, they may suffer a liquidity shock that causes them to fail as well, even if they are fundamentally solvent. In this way, one firm’s bankruptcy can spread like a contagion during a crisis.

This Article argues that a financial clearinghouse reduce contagion risk by improving the allocation of cash in a crisis. A clearinghouse is an organization that serves as a central counterparty for its members, which are financial institutions that trade regularly among themselves. When one member files for bankruptcy, the clearinghouse engages in what this Article calls *liquidity partitioning*: it cordons off a portion of the member’s liquid assets and a matching amount of its short-term debts, and it applies the first toward immediate repayment of the second. As a result, the clearinghouse’s surviving members receive prompt cash payouts instead of delayed bankruptcy payouts. And the impact of one firm’s bankruptcy on financial-sector creditors is determined immediately instead of over the course of months or years. In this way, the clearinghouse reduces both illiquidity and uncertainty, two of the main sources of systemic risk.

Mandatory use of clearinghouses was one of the measures that Congress included in its regulatory response to the recent financial crisis. Thus, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank) establishes that certain swaps

contracts that previously were traded “bilaterally”—directly between buyers and sellers—will have to be traded through clearinghouses instead. Critics argue that this clearing mandate does little to reduce systemic risk because a clearinghouse’s impact on creditor recoveries is zero-sum: instead of reducing total losses to creditors when an insolvent firm fails, a clearinghouse merely shifts losses from some creditors to others. Critics also argue that a clearinghouse could itself fail during a crisis, requiring a government bailout. The clearing mandate then would seemingly have failed to achieve Dodd-Frank’s primary goal, which is to replace bailouts with measures that stabilize the financial sector without putting taxpayer funds at risk.

This Article’s observation that clearinghouses engage in liquidity partitioning answers both of these objections to the clearing mandate. While a clearinghouse’s impact on the simple sum of creditor payouts is zero-sum, its impact on payout *speed* is not. When a member fails, the clearinghouse engages in netting, meaning that it uses short-term debts owed *to* the member to immediately repay short-term debts owed *by* the member. As a result, the surviving clearinghouse members are paid much more quickly than they would be in bankruptcy. Meanwhile, the bankrupt member’s outside (non-clearinghouse) creditors are not paid any less quickly: they still are paid at the end of the bankruptcy proceeding, which the clearinghouse does nothing to prolong. By accelerating cash payouts to some creditors without slowing down payouts to others, the clearinghouse decreases total illiquidity risk in the financial sector.

Liquidity partitioning also makes a clearinghouse much more stable than its members. A clearinghouse’s balance sheet is symmetrical in terms of duration: the clearinghouse accepts responsibility for its members’ short-term debts only to the extent that the members can provide the clearinghouse with short-term, liquid assets. By contrast, many financial institutions—including many clearinghouse members—engage in maturity transformation: they raise funds through short-term loans (including demand deposits) and invest the funds in long-term, illiquid assets. As a consequence, these institutions tend to have low cash ratios—that is, small cash holdings relative to their short-term debts. During a crisis, the failure of one such institution can cause creditors to fear that others are exposed to similar risks and therefore are about to fail as well. Creditors may then “run” on financial institutions generally, withdrawing cash and refusing to renew short-term loans. Because the institutions typically have more short-term debt than cash on hand, they may have to seek bankruptcy protection (or, if banks, enter receivership) even though their underlying business activities remain profitable.

This sort of liquidity shortage is precisely the hazard that a clearinghouse protects against: it intercepts cash headed toward a bankruptcy estate and uses it to make immediate payouts to financial institutions. Indeed, faster payouts reduce uncertainty about the clearinghouse members' financial stability, which decreases the likelihood that their creditors will run in the first place. At the same time, liquidity partitioning shields the clearinghouse from the risks associated with its members' long-term, illiquid assets, making the clearinghouse much less likely than its members to become either illiquid or insolvent. Critics who argue that the clearing mandate will simply shift bailouts from swaps dealers to clearinghouses in the next crisis have not recognized that clearinghouses are far less likely to require a bailout because they avoid the maturity mismatch between assets and liabilities that characterizes many other financial institutions.

To date, the debate over the clearing mandate has not focused on how maturity transformation leaves many financial institutions vulnerable to liquidity shocks in a crisis. Rather, the emphasis has been on the question whether clearinghouses can prevent domino-effect insolvencies in the financial sector. Under that theory of systemic risk, when one financial institution becomes insolvent and defaults on its debts, its financial-sector creditors suffer losses that can leave them insolvent and cause them to default as well. Under this view, spreading insolvency rather than spreading illiquidity is the source of financial-sector contagion.

There are two problems with a defense of the clearing mandate based on a theory of financial crises that emphasizes insolvency risk. The first is the one identified by the clearing mandate's critics—namely, that a clearinghouse does not actually reduce total losses to an insolvent firm's creditors; it just shifts losses from some creditors to others. The second problem is that none of the large, private financial institutions that received government bailouts during the 2008 crisis actually appears to have been insolvent. Instead, those institutions became distressed because uncertainty caused their short-term creditors to run. Once the crisis passed, these bailout recipients were able to generate sufficient profits to repay all of their creditors, as well as the government, with interest. Illiquidity, not insolvency, had brought them to the brink of collapse.

One lesson of the recent crisis is that, for a policy measure to be effective at reducing systemic risk, it must relieve the liquidity pressure on financial institutions that results from their low cash ratios. The bailouts of 2008 increased cash ratios by giving recipients cash in exchange for long-term preferred stock. But the bailouts were politically unpopular, raising the question whether policymakers can increase

the financial sector's cash ratio during a crisis without putting taxpayer funds on the line.

This Article shows how a clearinghouse can, like a bailout, increase the financial sector's cash ratio after a financial institution fails. The clearinghouse achieves this result not by injecting taxpayer funds into the financial sector but rather by making better use of cash already in private hands. Thus, by netting out claims with a failed member, the clearinghouse prevents cash from entering the member's bankruptcy estate, where it would effectively leave the financial sector. The clearinghouse then applies that cash toward repayment of short-term debts owed to other financial institutions. In this way, the clearinghouse keeps cash circulating in the financial sector (maintaining the cash ratio's numerator) while promptly discharging short-term liabilities (reducing the denominator).

Whether the clearing mandate will realize the systemic benefits of liquidity partitioning will depend on how it is implemented by rulemakers. As noted, these systemic benefits derive from netting, which is what keeps cash out of a bankruptcy estate and in circulation in the financial sector. Clearinghouses make it possible for parties to engage in a particular type of netting called *multiparty* netting, which occurs when the bankrupt firm has a claim against one counterparty and a debt with another, and the former is used to pay the latter. A second type, called *multicategory* netting, occurs when a bankrupt firm has debits and credits over different contract types. Parties do not need a clearinghouse to engage in multicategory netting, and indeed a clearinghouse can undermine multicategory netting opportunities if it fails to accept a variety of contract types for clearing. For the mandate to be effective in reducing systemic risk, it must be structured so that it increases opportunities for multiparty netting more than it reduces opportunities for multicategory netting.

Part I of this Article describes the traditional functions of clearinghouses, which include netting as well as mutualization of losses among members. Part II reviews the debate over the clearing mandate so far, describing the main arguments that have been advanced for and against the proposition that mandatory use of clearinghouses can reduce systemic risk. Part III presents the thesis that a clearinghouse accelerates creditor payouts and thus reduces illiquidity and uncertainty during a financial crisis. Part IV considers whether the systemic benefits of liquidity partitioning could be achieved through mechanisms other than clearinghouses, for example by amending the Bankruptcy Code to allow multiparty netting without a central counterparty. Finally, Part V considers implications of the Article's thesis for lawmakers and regulators.

I

THE MECHANICS OF CENTRAL CLEARING

A clearinghouse is an organization that serves as a central counterparty for a group of dealer firms that trade regularly among themselves.¹ The traded articles can be securities, commodities, or derivatives—that is, financial contracts whose values are based on asset prices and other market factors. As an illustration using a simple derivatives contract, imagine that Buyer wishes to purchase a cattle future from Seller. The two could deal with each other directly, forming a “bilateral” contract. But if both are members of the Chicago Mercantile Exchange, they instead will contract through CME Clearing, the clearinghouse that backs that exchange.² The clearinghouse interposes itself between the parties, serving as the counterparty to each. Instead of selling the cattle future to Buyer, Seller sells it to the clearinghouse, which sells an identical future to Buyer. In this way, the clearinghouse is, within the circle of its members, the “seller to every buyer and the buyer to every seller.”³

Dealer firms organize clearinghouses to redistribute counterparty risk, which is the risk that one party to a contract will impose losses on the other by failing to perform. In the cattle-future example, the contract means that Seller has agreed to deliver cattle on a specified future date, at which point Buyer has agreed to pay a specified price. Most futures, however, are cash settled: rather than handling physical commodities on the maturity date, the parties settle based on the difference between the contract price and the current market price.⁴ If the market price is higher than the contract price, Seller pays Buyer the difference; if the reverse, Buyer pays Seller. Without central clearing, each party bears the risk that the other will fail to make the required settlement payment. With central clearing, this risk is transferred to the clearinghouse.

By accepting counterparty risk, the clearinghouse redistributes the losses that members would otherwise bear individually when a member becomes insolvent and defaults on its in-house (centrally cleared) contracts. This redistribution takes two forms, which can be

¹ See Anupam Chander & Randall Costa, *Clearing Credit Default Swaps: A Case Study in Global Legal Convergence*, 10 CHI. J. INT'L L. 639, 651–53 (2010).

² See CHI. MERCANTILE EXCH., AN INTRODUCTION TO FUTURES AND OPTIONS 7 (2006), available at http://www.cmegroup.com/files/intro_fut_opt.pdf (describing how CME Clearing backstops futures trading on the Chicago Mercantile Exchange).

³ COMM. ON PAYMENT & SETTLEMENT SYS., TECHNICAL COMM. OF THE INT'L ORG. OF SEC. COMM'N, RECOMMENDATIONS FOR CENTRAL COUNTERPARTIES 5 (2004), available at <http://www.bis.org/publ/cpss61.pdf>.

⁴ See CHI. MERCANTILE EXCHANGE, *supra* note 2, at 7 (explaining the difference between physical delivery and cash settlement, and noting that only about three percent of futures result in physical delivery).

called *loss externalization* and *loss mutualization*. Loss externalization refers to how the clearinghouse shifts losses from clearinghouse members to the insolvent member's outside (nonmember) creditors. And loss mutualization refers to how the clearinghouse spreads any remaining, non-externalized losses among the surviving members.

A. Loss Externalization

Clearinghouses externalize losses primarily by making it possible for members to engage in multiparty netting. As a backup measure, clearinghouses require members to post collateral (typically, securities) on their contracts, which like netting shifts insolvency risk to outside creditors.

1. *Multiparty Netting*

Netting means that when a clearinghouse member fails, the in-house debts owed *to* that member are applied toward repayment of the in-house debts owed *by* that member.⁵ In this way, the clearinghouse effectively functions as an agreement in which each member pledges its in-house claims against other members as security for its own in-house liabilities.

Netting redistributes insolvency risk. When an insolvent clearinghouse member defaults on its debts, netting increases total recoveries for other members by the same amount that it decreases total recoveries for the insolvent member's outside creditors.⁶ To see why, imagine that Firm A has sold a futures contract to Firm B, which in turn has sold an identical contract to Firm C. Imagine further that the market price of the asset referenced in the contracts (it could be a commodity such as cattle, a currency, or a financial instrument) has risen such that if the contracts terminated today, Firm A would owe Firm B \$100, and Firm B would owe Firm C the same amount. Finally, imagine that Firm B has other assets worth \$200 and other unsecured liabilities of \$300. Firm B is thus insolvent, and we will assume it files for bankruptcy. Per the standard terms of derivatives contracts, Firm B's bankruptcy causes both futures to terminate, and each party who

⁵ Craig Pirrong, *The Clearinghouse Cure*, REGULATION, Winter 2008–09, at 47 [hereinafter Pirrong, *Clearinghouse Cure*].

⁶ Craig Pirrong explains the impact of multiparty netting in a derivatives clearinghouse as follows: “[N]etting effectively gives derivatives counterparties a priority claim on one of the dealer’s assets—its winning derivatives positions. This priority shifts wealth from other creditors to these counterparties, and hence is not a social benefit, but a transfer.” *Id.*; see also Craig Pirrong, *Derivatives Clearing Mandates: Cure or Curse?*, J. OF APPLIED CORP. FIN., Summer 2010, at 50 (“[N]etting effectively changes priorities among creditors; netting improves the priority of derivatives counterparties in bankruptcy, and lowers the priority of a bankrupt’s other creditors.”); Mark J. Roe, *Clearinghouse Overconfidence*, 101 CALIF. L. REV. 1641, 1661–62 (2013) (describing how netting transfers losses from clearinghouse members to non-clearinghouse creditors).

is “out of the money” must make a termination payment to its respective counterparty (who is “in the money”).⁷

Consider first what happens if the contracts among Firms A, B, and C are bilateral. Firm A now owes Firm B a \$100 termination payment, and bankruptcy law requires that it be paid into Firm B’s bankruptcy estate.⁸ Firm B, in turn, owes \$100 to Firm C, but bankruptcy’s automatic stay prevents Firm C from collecting immediately. Instead, Firm C must submit a \$100 proof of claim to the bankruptcy trustee and wait to be repaid along with the rest of Firm B’s creditors. (The implicit assumption for now is that no collateral has been posted on the contracts and therefore that Firm C’s claim is unsecured.) Firm B’s estate accordingly will have a total of \$300 in assets and \$400 in liabilities. Since all of the liabilities are (by assumption) unsecured, the trustee will apply the pro rata rule,⁹ eventually paying each creditor 75 cents on the dollar. Firm C will receive \$75, and Firm B’s remaining creditors will receive \$225.

Now consider what happens if we assume instead that the contracts among Firms A, B, and C are centrally cleared. (Firm B’s other debts remain bilateral.) When Firm B files for bankruptcy, Firm A does not pay the \$100 it owes Firm B into the bankruptcy estate; rather, it pays that amount to the clearinghouse, which in turn pays \$100 to Firm C. Firm C therefore recovers \$25 more than it recovered without the clearinghouse. Meanwhile, the only assets now available to Firm B’s outside creditors are the \$200 in outside assets. Because these outside creditors are owed \$300, they recover 67 cents on the dollar, as contrasted with the 75 cents on the dollar (or \$225 total) that they recovered without the clearinghouse. Relative to bilateral trading, multiparty netting through the clearinghouse has transferred \$25 from the outside creditors to Firm C, the in-house creditor.

⁷ The termination payment will typically equal the amount that the in-the-money party would have to pay to replace the contract at current market prices. See PRACTISING LAW INST., TERMINATING DERIVATIVE TRANSACTIONS: RISK MITIGATION AND CLOSE-OUT NETTING § 5.4 (2010) (stating that, under the most common method for calculating termination payments, market quotes are used to determine “the cost of preserving for each party [the] ‘economic equivalent’ of the transaction”). Some derivatives contracts include “walkaway” clauses that purport to waive the termination payment when the event of default is the bankruptcy of the in-the-money party. Such claims are, however, generally considered unenforceable. Dodd-Frank Wall Street Reform and Consumer Protection Act § 210(c)(8)(F), 12 U.S.C. § 5390 (2012) (making walkaway clauses unenforceable against parties placed into receivership pursuant to the FDIC’s “orderly liquidation authority”); PRACTISING LAW INST., *supra* at § 5.3; accord *In re Lehman Bros. Holdings Inc.*, 452 B.R. 31, 38–39 (Bankr. S.D.N.Y. 2011) (treating a walkaway-like clause as an *ipso facto* clause that is unenforceable in bankruptcy).

⁸ See 11 U.S.C. § 542(b) (2012) (“[A]n entity that owes a debt that is property of the estate and that is matured, payable on demand, or payable on order, shall pay such debt to, or on the order of, the trustee . . .”).

⁹ See *id.* § 726(b) (specifying that unsecured claims of equal rank are paid pro rata).

FIGURE 1. OPEN THREE-FIRM EXAMPLE, BILATERAL TRADING

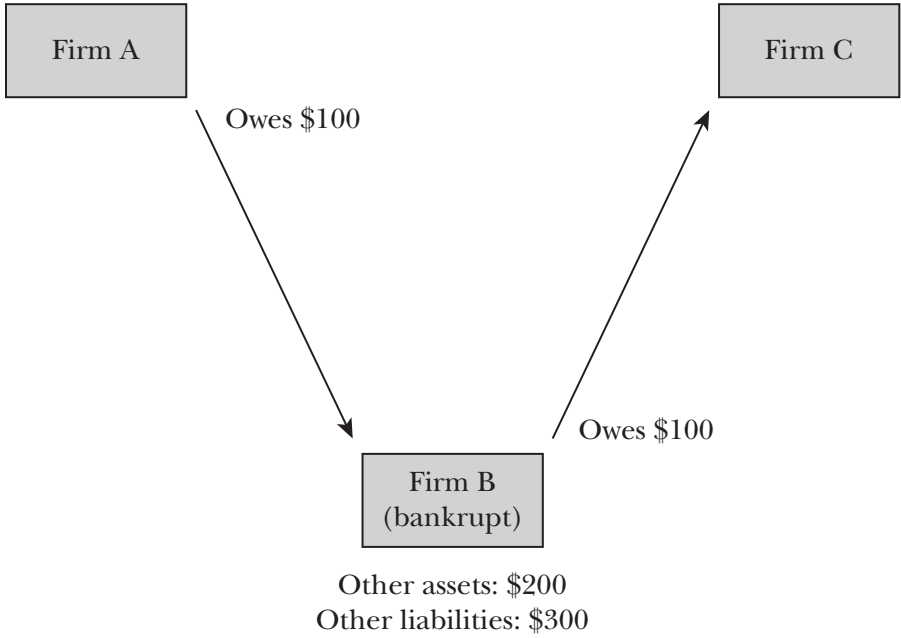
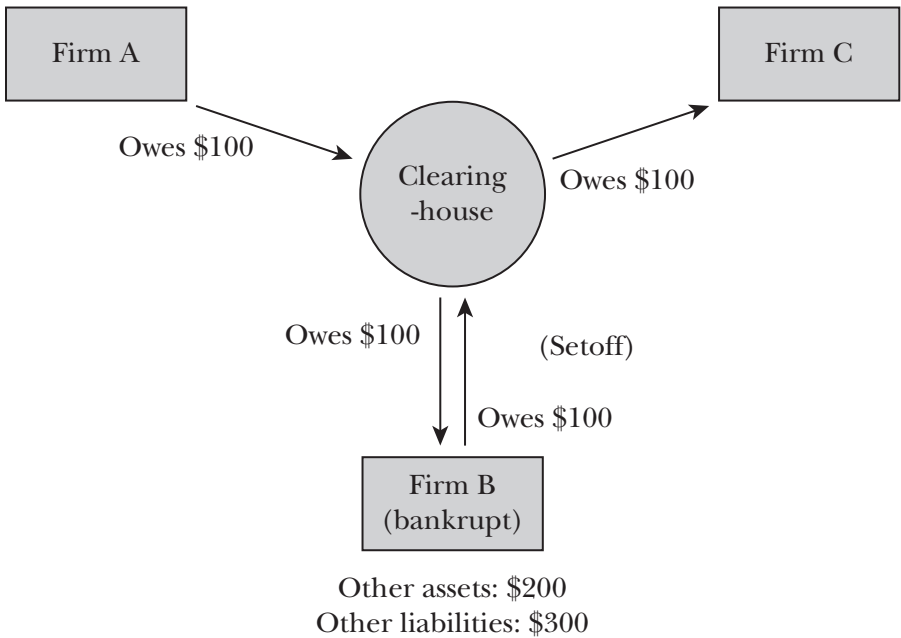


FIGURE 2. OPEN THREE-FIRM EXAMPLE WITH CLEARINGHOUSE



The legal basis for netting is a provision of the Bankruptcy Code that allows creditors to exercise contractual setoff rights. As noted above, when a debtor files for bankruptcy, parties who owe it money normally must pay their debts into the bankruptcy estate for the benefit of the debtor's general creditors.¹⁰ But an exception applies if the party who owes money *to* the debtor is also owed money *by* the debtor. In that case, and assuming it has a contractual right to do so, the party may offset the amount it is owed against the amount it owes, and then hand over (or, if it is owed more than it owes, put in a claim for) the difference.¹¹ In this way, a debt owed to the debtor by one of its creditors effectively serves as security for that creditor's own claim against the debtor.¹² This means that the creditor has a prior claim on one of the debtor's assets, namely the debt the creditor itself owes. If the debtor is insolvent, this prior claim allows the creditor to recover more than it would if it had to share that asset on a pro rata basis with the rest of the debtor's unsecured creditors.¹³ And because the division of an insolvent debtor's assets is zero-sum, the larger recovery for the creditor who sets off necessarily means smaller recoveries for the rest.

Importantly, the Bankruptcy Code's allowance for setoffs applies only to debts that are "mutual,"¹⁴ meaning that they run between the debtor and a single counterparty.¹⁵ Consider again the three-firm example with bilateral trading, depicted in Figure 1. When Firm B enters bankruptcy and becomes obligated to pay \$100 to Firm C, Firm A is not permitted to use that debt to cancel its own obligation to pay \$100 into Firm B's bankruptcy estate. The party whom the debtor owes (Firm C) is different than the party who owes the debtor (Firm A).¹⁶

¹⁰ *Id.* § 542(b).

¹¹ *Id.* §§ 542(b), 553(a).

¹² See John C. McCoid II, *Setoff: Why Bankruptcy Priority?*, 75 VA. L. REV. 15, 32 (1989) (comparing setoff to a security interest).

¹³ See *In re Elcona Homes Corp.*, 863 F.2d 483, 485 (7th Cir. 1988) (Posner, J.) (describing how setoff increases the recovery of the creditor who sets off).

¹⁴ 11 U.S.C. § 553(a); *Westinghouse Credit Corp. v. D'Urso*, 278 F.3d 138, 149 (2d Cir. 2002) (ruling that the mutuality requirement is satisfied only when debts are "due to and from the same persons in the same capacity" (citation and internal quotation marks omitted)).

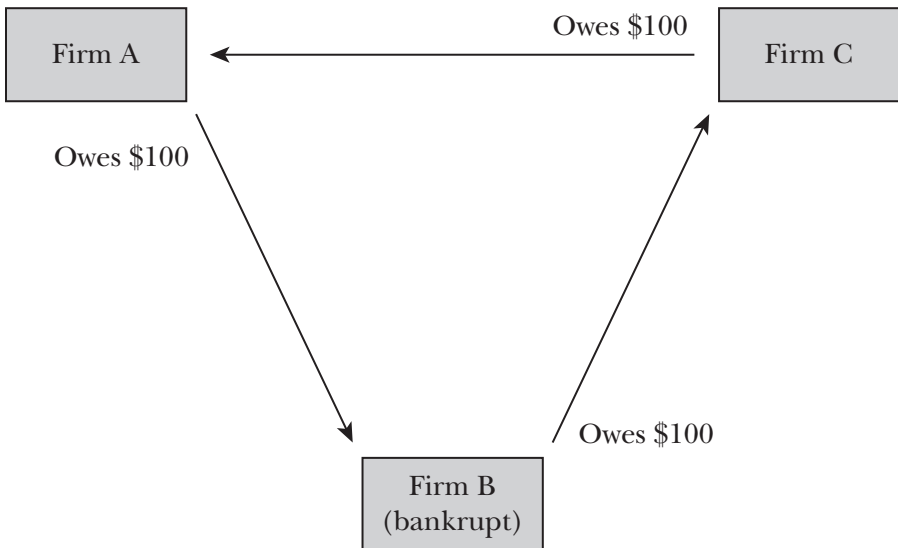
¹⁵ Another condition is that a party may not set off a claim against the debtor that the party acquired *after* the debtor filed for bankruptcy. 11 U.S.C. § 553(a)(2)(A) (2012). This condition effectively prevents the mutuality requirement from being satisfied through post-petition claims trading.

¹⁶ See, e.g., *In re SemCrude, L.P.*, 399 B.R. 388, 393-94 (Bankr. D. Del. 2009) (refusing to enforce a multiparty setoff agreement because "[a]llowing a creditor to offset a debt it owes to one corporation against funds owed to it by another corporation—even a wholly-owned subsidiary—would . . . constitute an improper triangular setoff under the [Bankruptcy] Code.").

A clearinghouse makes multiparty netting possible because it transforms its members into a single counterparty for setoff purposes. If the claims among Firms A, B, and C are centrally cleared (as depicted in Figure 2), then Firm A does not owe \$100 to Firm B; rather, it owes \$100 to the clearinghouse, which owes \$100 to Firm B. And Firm B does not owe Firm C \$100; rather, it owes \$100 to the clearinghouse, which owes \$100 to Firm C. Therefore, when Firm B enters bankruptcy, it has a pair of offsetting \$100 obligations with a single counterparty, the clearinghouse. Because the obligations are now mutual, the Bankruptcy Code permits them to be set off and hence cancelled. The debts that remain are Firm A’s \$100 debt to the clearinghouse and the clearinghouse’s \$100 debt to Firm C, and the first can be applied toward repaying the second. Firm C recovers 100 cents on the dollar, to the detriment of Firm’s B outside creditors.

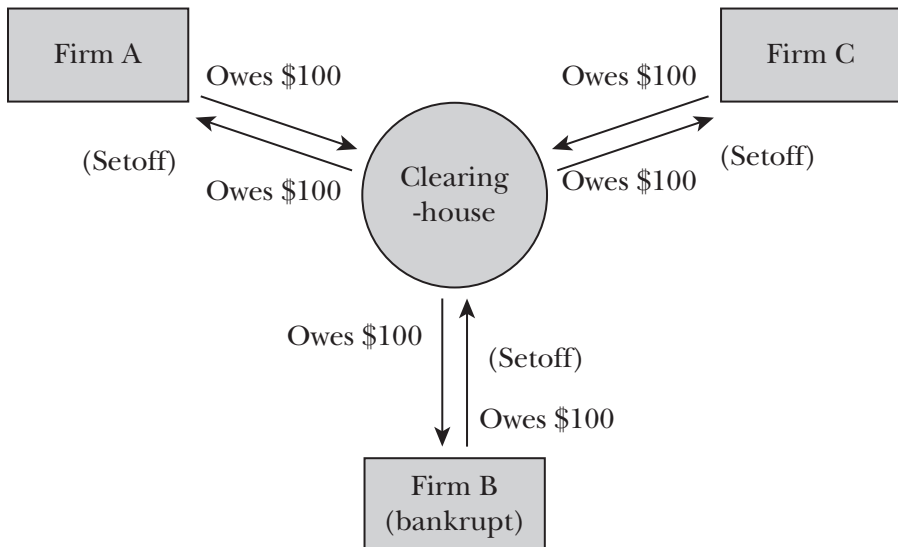
The higher payout that clearinghouse members obtain through multiparty netting could also be achieved through traditional forms of collateral, such as securities. To see this, consider again the three-firm example in which Firm A owes Firm B \$100, Firm B owes Firm C \$100, and the contracts are bilateral. To close the loop among the firms, we will now assume that Firm C also has a bilateral contract with Firm A on which Firm C owes \$100. (For future reference, this will be the “closed-circuit” example, as contrasted with the earlier example, which is “open.”)

FIGURE 3. CLOSED-CIRCUIT EXAMPLE, BILATERAL TRADING



To ensure that each party will recover in full in case of default, Firm A could post a \$100 Treasury bond to secure its debt to Firm B, Firm B could post a \$100 Treasury bond to secure its debt to Firm C, and Firm C could post a \$100 Treasury bond as security for Firm A. In this way, three \$100 bonds would be needed to secure the three contracts. If we add a clearinghouse, however, the bonds become unnecessary. Firm A no longer needs to post a \$100 bond to reassure Firm B of repayment because Firm B knows that, if Firm A fails, then Firm A's contracts will cancel out, and Firm C's \$100 debt to Firm A will effectively become payable to Firm B instead. Firm B therefore has no net exposure, just as was true when Firm A's \$100 obligation to Firm B was fully secured by a bond. By the same logic, Firms A and C have no net exposure either. Their obligations within the clearinghouse—which, again, are assets from the perspective of the parties to whom they are owed—serve as substitute collateral, making it unnecessary for the firms to tie up capital in Treasury bonds or other securities.

FIGURE 4. CLOSED-CIRCUIT EXAMPLE WITH CLEARINGHOUSE



Importantly, the fact that multiparty netting frees up capital does not mean that it thereby increases recoveries for a failed member's outside creditors. Netting reduces the need for traditional collateral only to the extent that it prevents outside creditors from recovering from a different asset—namely, a debt owed to the failed member. Thus, regardless of whether the clearinghouse members' priority is

achieved through netting or collateral, their larger recoveries leave less value for outside creditors.¹⁷

These examples show that netting through clearinghouses does not increase the sum of creditor recoveries; rather, netting makes it cheaper for a debtor to privilege some creditors over others. Without netting, a debtor's main option for privileging select creditors is to pledge safe assets as security, which may require it to tie up capital in traditional forms of collateral such as Treasury bonds. But this mechanism for granting priority entails two costs: an opportunity cost to the extent that the assets serving as collateral pay lower risk-adjusted returns than those the debtor could obtain elsewhere; and the transaction costs of posting the collateral. By reducing the need for traditional collateral, netting avoids these costs.¹⁸ Netting is secured lending on the cheap.

Because it reduces the cost of privileging some creditors over others, netting might seem to be socially efficient—that is, it might seem to increase total wealth. But netting has other consequences that must be considered. Since netting redistributes wealth when a debtor is insolvent, efforts to promote it could fairly be described as a type of rent-seeking. And, per standard economic theory, rent-seeking reduces total social wealth to the extent that seekers expend resources trying to exact a wealth transfer and would-be losers expend resources trying to block it.¹⁹ By making rent-seeking cheaper for the seekers, netting might produce a comparatively larger increase in defensive spending by the would-be losers, leading to a net loss of social wealth. Thus, to conclude that netting is socially efficient, we need a reason to think that it does more than just make it easier for a debtor to favor some creditors over others.

¹⁷ As an illustration, consider the perspective of the outside creditors of Firm B. In the case without the clearinghouse (shown in Figure 3), Firm B posts a \$100 Treasury bond to assure Firm C of a full recovery. That bond will be unavailable to Firm B's outside creditors if Firm B fails because then Firm C will seize the bond and apply it in satisfaction of its \$100 claim against Firm B. On the other hand, what is available to Firm B's outside creditors is the \$100 debt owed to Firm B by Firm A, a debt that is fully secured by a different Treasury bond. Therefore, Firm B's transactions with Firms A and C have no net effect on the recoveries of Firm B's outside creditors. If instead we have a clearinghouse (Figure 4), the \$100 in capital that otherwise would be tied up in a Treasury bond pledged to Firm C will now presumably be held in another form in Firm B's estate. But the \$100 owed by Firm A will no longer be available to Firm B's outside creditors if Firm B fails, as this will be set off against Firm B's \$100 debt to Firm C. So, again, the effect on Firm B's outside creditors of Firm B's transactions with Firms A and C is a wash.

¹⁸ See Craig Pirrong, *The Economics of Clearing in Derivatives Markets: Netting, Asymmetric Information, and the Sharing of Default Risks Through a Central Counterparty* 26 (Jan. 8, 2009) (Working Paper) [hereinafter Pirrong, *Economics of Clearing*], available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1340660.

¹⁹ See RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 45 n.4 (8th ed. 2011).

2. *Margin Collection*

In each of the three-firm examples discussed so far, the clearinghouse member that fails has had a “matched” book, meaning that its in-house claims against other members exactly equal its in-house debts. Although clearinghouse members normally prefer to maintain matched books, occasional imbalances due to price fluctuations and other factors are unavoidable. Therefore, as a second line of defense against losses, clearinghouses require members to post collateral, or “margin,” on their in-house contracts.²⁰ Margin typically consists of high-grade securities that, under normal market conditions, can quickly be sold for cash.²¹

To see how margin collection works, consider again the example in which Seller sells a cattle future to Buyer and the trade is cleared by the clearinghouse backing the Chicago Mercantile Exchange. To protect itself against counterparty risk, the clearinghouse may require both Seller and Buyer to post “initial” margin when they enter into their contract.²² Subsequently, the market price of cattle may rise above the contract price, pushing Seller “out of the money” and exposing the clearinghouse to the risk that Seller will fail and the clearinghouse will have to step in and fulfill the obligation to Buyer. If this exposure exceeds the value of Seller’s initial margin and is not offset by Seller’s other in-house positions, the clearinghouse will require Seller to post additional, “variation” margin.²³ Conversely, if the market price of cattle falls back to the contract price, Seller may be allowed to take back some of its collateral, as the risk to the clearinghouse will have abated. If the price falls further, Buyer may then have to post variation margin.

Clearinghouse positions are typically “marked to market” in this way at least daily, subjecting members to margin calls that they must satisfy to continue trading.²⁴ If a member cannot make a margin call, its in-house contracts immediately terminate.²⁵ The clearinghouse then nets out the member’s in-house positions and liquidates posted collateral to the extent of any shortfall.²⁶

²⁰ See CME GRP., CME CLEARING FINANCIAL SAFEGUARDS 7 (2012), available at <http://www.cmegroup.com/clearing/files/financialsafeguards.pdf>.

²¹ *Id.* at 9 (describing acceptable collateral as including cash, U.S. Treasury bonds, foreign sovereign debt instruments, and stocks).

²² See Sean J. Griffith, *Governing Systemic Risk: Towards a Governance Structure for Derivatives Clearinghouses*, 61 EMORY L.J. 1153, 1182 (2012).

²³ See *id.*

²⁴ CRAIG PIRRONG, THE INEFFICIENCY OF CLEARING MANDATES, POLICY ANALYSIS 9 (2010) [hereinafter PIRRONG, INEFFICIENCY].

²⁵ See CME GRP., *supra* note 20, at 15–18.

²⁶ See *id.*

Because a party to a contract enjoys the first claim to collateral posted by its counterparty, margin collection is, like netting, a mechanism by which a clearinghouse achieves loss externalization on behalf of members. But it is a more expensive mechanism given the opportunity costs and administrative inconvenience of holding and posting traditional collateral, which is one reason why members generally try to maintain matched books. It also is important to note that a central counterparty is not needed for margin collection (as it is for multiparty netting): bilateral contracts can be (and usually are) secured by traditional collateral as well. Clearinghouse members delegate collateral collection to the clearinghouse not from legal necessity but because the clearinghouse is in the best position to calculate each member's liability to the other members after multiparty netting is taken into account.

B. Loss Mutualization (for Members and Customers)

If netting and posted collateral together prove inadequate to cover a failed firm's in-house debts, the clearinghouse turns to its last line of defense against losses: its guaranty fund. Each member must make a large contribution to the guaranty fund upon joining the clearinghouse.²⁷ When the fund is tapped, the clearinghouse draws first from the failed member's account and then pro rata from the accounts of the remaining members,²⁸ who must promptly replenish them.²⁹

By drawing on the guaranty fund, the clearinghouse mutualizes among surviving members any losses that were not externalized through netting and margin collection. Thus, to the extent of the fund's value, the members collectively guarantee their residual in-house debts. Why would trading firms want to guarantee each other's contracts in this way? One possibility is that loss externalization is highly valuable to members, who therefore may want to ensure that the clearinghouse will be able to continue operating even if a member with large out-of-the-money positions fails. A second answer applies when the clearinghouse backs a securities or commodities

²⁷ See Clearing Requirement Determination Under Section 2(h) of the CEA, 77 Fed. Reg. 74,284, 74,293 (Dec. 13, 2012) (to be codified at 17 C.F.R. pts. 39, 50) (indicating that CME and IntercontinentalExchange (ICE) Clear Credit, both of which clear credit default swaps, require each of their members to contribute at least \$50 million to their respective guaranty funds). At LCH.Clearnet, the reserve fund is called the "clearing fund." LCH.CLEARNET, LCH.CLEARNET: A GENERAL INTRODUCTION TO RISK MITIGATION 10.

²⁸ See Clearing Requirement Determination Under Section 2(h) of the CEA, 77 Fed. Reg. at 74,322 (describing the order in which clearinghouses draw upon fund sources in case of a member's default).

²⁹ Members may also have to make new contributions if the assets in the guaranty fund lose value. CME GRP., *supra* note 20, at 9 (describing how new members are subject to potential contribution requirements at least monthly).

exchange, as many do.³⁰ In that setting, a system of mutual guarantees allows trades to be executed automatically at the best offered price regardless of the creditworthiness of the member making the offer.³¹ And the requirement that members contribute to the guaranty fund prevents them from free riding on the system of mutual guarantees, as otherwise they might not maintain liquidity reserves large enough to enable them to honor their obligations as guarantors.

In addition to trading on their own accounts, clearinghouse members—most of which are investment banks and brokerages—typically execute trades on behalf of customers.³² And members collectively guarantee these customer contracts as well in order to protect customers from the credit risk of individual members.³³ Consider again the example in which Seller sells a cattle future to Buyer, but assume now that Seller sells the future on behalf of a customer, a rancher who wants to hedge against the risk of a drop in cattle prices. Assume further that the price of cattle falls—yielding a gain for the rancher on the contract—but Seller fails before paying the rancher what he is owed. Without the clearinghouse, the rancher might have to submit a proof of claim to Seller’s bankruptcy proceeding. The resulting delay, and likely reduction, in the rancher’s payout would undermine the future’s value as a hedging device.³⁴ But because Seller is a clearinghouse member, the clearinghouse assumes responsibility for all of its customer contracts when it fails and hence will pay the rancher the full amount of his claim.³⁵ Or, if the contract has not yet expired, the clearinghouse will arrange for a different member to act as the rancher’s broker. In these ways, the clearinghouse builds public confidence in trading markets, to the common benefit of the dealer firms that serve as market intermediaries.

II

THE DEBATE OVER MANDATORY CLEARING

Before the 2008 financial crisis, the choice whether to use a central counterparty was mostly left to dealer firms and to the exchanges

³⁰ See Pirrong, *Clearinghouse Cure*, *supra* note 5, at 45 (“The Minneapolis Grain Exchange established the first modern clearinghouse for futures in 1891, and other futures exchanges in the United States adopted clearing in the years between 1891 and 1925.”).

³¹ *Id.* at 46; accord Nathan Goralnik, *Bankruptcy-Proof Finance and the Supply of Liquidity*, 122 *YALE L.J.* 460, 503 (2012) (arguing that a swaps clearinghouses can make markets more “liquid”—meaning that would-be sellers can more easily find buyers, and vice-versa—by allowing market participants to disregard counterparty default risk).

³² Pirrong, *Economics of Clearing*, *supra* note 18, at 15–16.

³³ PIRRONG, *INEFFICIENCY*, *supra* note 24, at 9 (“[Clearinghouse] members effectively insure the customers against default.”).

³⁴ See Pirrong, *Economics of Clearing*, *supra* note 18, at 57.

³⁵ *Id.* at 17; accord CME GRP., *supra* note 20, at 15 (describing how customer accounts are handled upon a member’s default).

they organized. This state of affairs changed in 2010 with the enactment of Dodd-Frank and its clearing mandate for swaps contracts. Legislative history explains the mandate as a response to the bailouts of two major players in the market for credit default swaps: Bear Stearns and AIG. Federal officials feared that bankruptcy filings by these firms would destabilize the broader financial system. But the use of taxpayer funds to keep the firms afloat was politically unpopular, leading Congress to enact a statute that aims to protect the financial system by other means.³⁶ Whether clearinghouses can in fact stabilize the financial system has been the subject of a broad scholarly debate, with skeptics raising concerns that cast serious doubt on the arguments advanced so far by the clearing mandate's advocates.

A. From Bailouts to Mandate

Although the first financial clearinghouses backstopped trading in commodities futures,³⁷ clearinghouses are now used in the trading of more complex derivatives as well.³⁸ An example is SwapClear, which backs over fifty percent of the trading in interest rate swaps.³⁹ During the 2008 financial crisis, however, trading in one important type of derivative remained entirely bilateral: the credit default swap.⁴⁰ That type of swap provides protection against the risk that a debt security will default.⁴¹ Under the contract, the protection buyer agrees to make quarterly payments, analogous to insurance premiums, to the counterparty, the protection seller.⁴² The seller agrees in return that if one of the debt securities named in the contract defaults, the seller will pay the buyer the difference between the security's face value and its post-default value.⁴³ While credit default swaps were originally developed to protect against default risk on corporate

³⁶ S. REP. NO. 111-176, at 1 (2010) (stating that Dodd-Frank's goals are to improve accountability and transparency in the financial sector and to protect the American taxpayer).

³⁷ See Pirrong, *Clearinghouse Cure*, *supra* note 5, at 45.

³⁸ *Id.* at 45-46.

³⁹ See LCH.CLEARNET, http://www.lchclearnet.com/swaps/swapclear_for_clearing_members/ (last visited Mar. 2, 2014). In an interest rate swap, one party makes periodic payments based on a fixed interest rate, and the counterparty makes return payments based on a variable interest rate, such as LIBOR. The swap is cash-settled each period based on the rate difference. John D. Finnerty & Kishlaya Pathak, *A Review of Recent Derivatives Litigation*, 16 FORDHAM J. CORP. & FIN. L. 73, 82 (2011).

⁴⁰ See Chander & Costa, *supra* note 1, at 640.

⁴¹ *Id.* at 649, 668.

⁴² Houman B. Shadab, *Guilty By Association? Regulating Credit Default Swaps*, 4 ENTREPRENEURIAL BUS. L.J. 407, 431 (2010). The analogy between credit default swaps and insurance is imperfect because the protection buyer need not own the debt instruments referenced in the contract. See M. Todd Henderson, *Credit Derivatives Are Not "Insurance,"* 16 CONN. INS. L.J. 1, 18-19 (2009).

⁴³ This describes a cash-settled credit default swap. Another settlement option is physical delivery, whereby the protection buyer gives the defaulted debt security to the

bonds, by 2008 there also were large markets for credit default swaps referencing government bonds and mortgage-backed securities.⁴⁴

At the beginning of 2008, several large Wall Street firms served as dealers in credit default swaps, matching buyers with sellers and often serving as the counterparties to each.⁴⁵ Among the most active dealers was the investment bank Bear Stearns.⁴⁶ Credit markets lost confidence in Bear after it announced deep losses on investments in mortgage-backed securities,⁴⁷ and it was on the verge of filing for bankruptcy when it was purchased by JPMorgan Chase in March 2008.⁴⁸ The Federal Reserve (Fed) encouraged the sale by agreeing to accept the risk that some of Bear's mortgage-linked investments would continue to lose value.⁴⁹ In exchange for this federal assistance, JPMorgan agreed to assume responsibility for all of Bear's derivatives counterparties and customers.⁵⁰

Even though Bear had more than a trillion dollars in open swap positions when it was sold to JPMorgan,⁵¹ it had generally maintained a matched derivatives book and therefore had little net exposure on these contracts.⁵² Bad mortgage investments, not credit default swaps, were the reason that Bear lost access to private credit. But credit default swaps were the reason that federal officials considered the investment bank "too big to fail." In April 2008, Fed Chairman Ben

protection seller in exchange for a payment equal to the security's face value. *See* Shadab, *supra* note 42, at 432.

⁴⁴ *See* Chander & Costa, *supra* note 1, at 639 n.1.

⁴⁵ *See* Shadab, *supra* note 42, at 432–34 (describing participants in the market for credit default swaps before the 2008 crisis).

⁴⁶ *See* René M. Stulz, *Credit Default Swaps and the Credit Crisis*, 24 J. ECON. PERSP. 73, 82 (2010) (stating that the notional value of Bear's credit default swap positions was \$2.25 trillion).

⁴⁷ *Bear Stearns Reports First-Ever Quarterly Loss*, DEALBOOK (Dec. 20, 2007, 8:19 AM), <http://dealbook.nytimes.com/2007/12/20/bear-reports-steep-but-expected-4th-quarter-loss/> (describing heavy investments by two internal Bear hedge funds in home mortgages).

⁴⁸ *The Economic Outlook: Hearing Before the Joint Econ. Comm.*, 110th Cong. (2008) (statement of Ben S. Bernanke, Chairman, Fed. Res. Sys.), http://www.jec.senate.gov/public/?a=Files.Serve&File_id=9991d366-42be-40c8-be88-15745c8089c5 (stating that on March 13, 2008, Bear advised government officials that it would have to file for protection under Chapter 11 the next day); David Ellis & Tami Luhby, *JPMorgan Scoops up Troubled Bear*, CNNMONEY (Mar. 17, 2008, 3:07 PM), http://money.cnn.com/2008/03/16/news/companies/jpmorgan_bear_stearns/ (describing how JPMorgan acquired Bear after Bear suffered a "classic" run on the bank).

⁴⁹ The Fed lent \$29 billion to a special purpose entity that used these funds plus \$1 billion lent by JP Morgan to buy a pool of risky Bear Stearns assets. If the assets had proven to be worth less than their purchase price, the losses after the first billion would have been borne by the Federal Reserve. In fact, the assets appreciated, and within five years the entity had fully repaid the principal on the Federal Reserve loan plus \$765 million in interest. *See Maiden Lane Transactions*, FED. RESERVE BANK OF N.Y., <http://www.newyorkfed.org/markets/maidenlane.html> (last visited Mar. 3, 2014).

⁵⁰ *Bear Sterns: No Picnic*, ECONOMIST, Mar. 29, 2008, at 95.

⁵¹ *See* Stulz, *supra* note 46, at 82.

⁵² *Id.* at 83.

Bernanke told Congress that Fed officials had feared that Bear's bankruptcy would bring about a "chaotic unwinding of positions" that would imperil the firm's "thousands of counterparties."⁵³ This concern for counterparties explains why the Fed insisted that JPMorgan assume responsibility for all of Bear's derivatives positions and customers.

Two months after it helped save Bear Stearns, the Fed began advocating that trading in credit default swaps be moved onto clearinghouses.⁵⁴ Before these efforts could bear fruit, however, another major player in credit default swaps—insurance giant AIG—ran out of cash and came to the brink of bankruptcy. AIG had acted mostly as a protection seller rather than as a dealer, and in the years leading up to the crisis was the biggest seller of default protection on debt securities backed by subprime mortgages.⁵⁵ During that period, AIG enjoyed a triple-A credit rating, which induced protection buyers to excuse it from posting initial margin on its contracts.⁵⁶ When, however, both AIG and the securities referenced in its swaps suffered ratings downgrades, the protection buyers made large collateral calls.⁵⁷ AIG could not satisfy them, primarily because it had used much of its working capital to buy mortgage-backed securities, the market for which was distressed due to a sustained drop in house prices.⁵⁸ To keep AIG afloat, the Fed extended an \$85 billion line of credit in September 2008;⁵⁹ subsequent bailout measures increased the government's total commitment to AIG and its swaps counterparties to \$182 billion.⁶⁰

The bailouts of Bear Stearns, AIG, and other big financial institutions offended Americans all along the political spectrum.⁶¹

⁵³ *The Economic Outlook: Hearing Before the Joint Econ. Comm.*, *supra* note 48; Simon Boughey, *After Bear Stearns Scare, Fed Pushes Banks to Form Central Clearing House for CDS Market*, EUROWEEK, June 13, 2008, at 64; Yalman Onaran, *Fed Aided Bear Stearns as Firm Faced Chapter 11, Bernanke Says*, BLOOMBERG (Apr. 2, 2008, 1:20 PM), <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a7coicThgaEE>.

⁵⁴ Chander & Costa, *supra* note 1, at 663.

⁵⁵ See Richard Squire, *Shareholder Opportunism in a World of Risky Debt*, 123 HARV. L. REV. 1151, 1184–85 (2010).

⁵⁶ *Id.* at 1184.

⁵⁷ *Id.* at 1187.

⁵⁸ See James Bullard et al., *Systemic Risk and the Financial Crisis: A Primer*, FED. RES. BANK OF ST. LOUIS REV., Sept.–Oct. 2009, at 403 (describing the drop in house prices and rise in foreclosures through 2008).

⁵⁹ Tami Luhby, *Fed in AIG Rescue—\$85B Loan*, CNNMONEY (Sept. 17, 2008, 10:21 AM), <http://money.cnn.com/2008/09/16/news/companies/AIG/>.

⁶⁰ Michal Darila, *US Treasury Makes Billions on AIG's Bailout*, WBP ONLINE (Sept. 11, 2012, 5:41 AM), <http://wbponline.com/Articles/View/8011>.

⁶¹ The AIG bailout was "heavily criticized from both the left and the right." *Id.*; see also Mary Williams Walsh, *A.I.G. Lists Firms to Which It Paid Taxpayer Money*, N.Y. TIMES, Mar. 16, 2009, at A1, A14 ("[T]axpayers may have a hard time accepting that so many marquee financial companies—including some American banks that received separate government

Unsurprisingly, Congress's main regulatory response to the crisis—the Dodd-Frank Act—contains several provisions that purportedly make bailouts obsolete. One such provision is the clearing mandate, which directs the Commodities Futures Trading Commission (CFTC) and Securities and Exchange Commission (SEC) to designate categories of swaps for required central clearing.⁶² Dodd-Frank's Senate Report quotes Chairman Bernanke for the proposition that “[m]aking derivatives safer is a very important part of solving too-big-to-fail.”⁶³ The report further asserts that the bilateral swaps issued by Bear and AIG were unsafe because they were not backed by adequate collateral.⁶⁴ Clearinghouses are to prevent similar problems in the future by enforcing strict margin requirements, which according to the report are “[t]he main tool for regulating contagion and systemic risk.”⁶⁵ To ensure that margin requirements are sufficiently stringent, Dodd-Frank directs the Fed to issue clearinghouse “risk management standards,”⁶⁶ and it empowers the SEC and CFTC to translate them into binding rules.⁶⁷ Credit default swaps are surely the primary target, but the mandate's definition of “swap” is much broader, as it also encompasses interest rate swaps, currency swaps, debt and equity swaps, and commodity swaps of various types.⁶⁸

Although legislative history emphasizes the supposed role of under-collateralization in the 2008 crisis, the clearing mandate's academic proponents have not staked their case on that historical claim. Their reticence is understandable, as the notion that inadequate collateral justifies the clearing mandate is subject to criticism on several

help and others based overseas—benefit[ted] from government money.”). In addition, the Troubled Asset Relief Program (TARP), under which the Treasury Department could spend up to \$700 billion to rescue the financial system, was, in the words of one journalist, as “unpopular as a screaming toddler.” Steve Chiotakis, *How Did TARP Become So Unpopular?*, MARKETPLACE (Oct. 1, 2010, 9:15 AM), <http://www.marketplace.org/topics/business/follow-money/how-did-tarp-become-so-unpopular>. Even the Treasury's website admits that “TARP remains deeply unpopular—for understandable reasons.” See *About Financial Stability: Facts About TARP*, OFFICE OF FIN. STABILITY, U.S. DEP'T OF THE TREASURY (July 13, 2012), <http://www.treasury.gov/initiatives/financial-stability/about/pages/plan.aspx>.

⁶² Dodd-Frank Wall Street Reform and Consumer Protection Act § 723(a)(2), 7 U.S.C. § 2 (2012); § 763(a), 17 U.S.C. § 78c-3 (2012). An exemption for end-users applies to swaps used by non-financial firms “to hedge or mitigate commercial risk.” *Id.* § 723(a)(2).

⁶³ S. REP. NO. 111-176, at 29 (2010).

⁶⁴ The report theorizes that AIG “would have had less incentive to enter into such large positions” if “market participants or regulators [had] demanded more capital.” *Id.* at 30. Turning to Bear Stearns, the report argues that under-capitalization caused systemic risk by enabling the firm to use derivatives in order to “hide leverage.” *Id.*

⁶⁵ *Id.* at 33. A *Wall Street Journal* editorial is quoted for the proposition that “[p]utting nearly all derivatives through clearinghouses, with tough margin rules, could do away with most of the under-collateralization.” *Id.* at 31.

⁶⁶ Dodd-Frank Act § 805(a)(1), 12 U.S.C. § 5464(a)(1) (2012).

⁶⁷ *Id.* § 805(a)(2)(A).

⁶⁸ *Id.* § 721(a)(47)(A).

grounds, the most obvious being that regulators do not need a central counterparty in order to set collateral levels. Indeed, while Dodd-Frank exempts some types of swaps from the clearing mandate, it still subjects them to collateralization rules enforced directly by regulatory agencies.⁶⁹ Uncleared swaps are also subject to reporting requirements,⁷⁰ calling into question the importance of clearinghouses as information-gathering mechanisms, another potential benefit of the mandate that the Senate report mentions.⁷¹ It is possible that compliance with strict margin rules is easier to verify if contracts are channeled through a clearinghouse, but the report does not claim such a benefit for central clearing or estimate its magnitude. Another objection to the margin-collection rationale for the clearing mandate is that collateral can become unreliable in a financial crisis, a problem discussed in Part IV.

Instead of margin collection, the mandate's academic proponents have focused on the two other clearinghouse functions described in Part I: multiparty netting and loss mutualization. In emphasizing these traditional clearinghouse functions, however, the proponents have needed a theory to explain why trading in credit default swaps remained bilateral even after trading in most other financial derivatives had moved to clearinghouses. If multiparty netting and loss mutualization provide benefits to users of credit default swaps that exceed their costs, then central clearing of those swaps should have come about by private initiative. Why, then, was a government directive necessary?⁷²

One possible answer, now being tested in the courts, is that trading in credit default swaps was dominated by a few large dealers who

⁶⁹ See *id.* § 731; § 764(a).

⁷⁰ *Id.* § 731.

⁷¹ S. REP. NO. 111-176, at 33–35 (2010). The idea is that clearinghouses, by sitting at the intersection of trading activity, can encourage competitive trading by collecting and publishing data on market prices and trading volumes. See, e.g., Jeremy C. Kress, *Credit Default Swaps, Clearinghouses, and Systemic Risk: Why Centralized Counterparties Must Have Access to Central Bank Liquidity*, 48 HARV. J. ON LEGIS. 49, 69 (2011) (“A [clearinghouse] could improve transparency in . . . derivative markets by, for instance, publishing pricing and volume information.”). Information gathering is not, however, a benefit of central clearing per se, as the same result can be achieved if market participants register with an over-the-counter data hub that aggregates and publishes trading information. See PIRRONG, *Economics of Clearing*, *supra* note 18, at 62. Before the 2008 crisis, the Depository Trust and Clearing Corporation's Trade Information Warehouse served this function in the market for credit default swaps. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-397T, SYSTEMIC RISK: REGULATORY OVERSIGHT AND RECENT INITIATIVES TO ADDRESS RISK POSED BY CREDIT DEFAULT SWAPS 20 (2009), available at <http://www.gao.gov/assets/130/121774.pdf>. While participation in that data hub is voluntary, *id.*, Congress could require it by statute, thereby accomplishing the same information-gathering benefit the Senate report attributes to mandatory clearing.

⁷² See PIRRONG, *INEFFICIENCY*, *supra* note 24, at 2 (arguing that mandatory clearing can be justified only by market failure).

resisted central clearing as a threat to their oligopolistic profits.⁷³ Rather, however, than treating clearinghouses as devices for promoting competition, both the Senate report and the clearing mandate's academic proponents have argued that central clearing can reduce systemic risk, meaning the risk of a crisis that sees the nearly simultaneous failures of numerous financial institutions.⁷⁴ As a historical matter, *systemic* failures (within the financial system) often precede deep *systematic* downturns (in the general economy), suggesting that systemic risk entails large negative externalities.⁷⁵ For this reason, many academic commentators, including this one, believe that financial institutions lack sufficient incentives to reduce systemic risk on their own, making some amount of government regulation desirable.⁷⁶ Meanwhile, scholars such as Craig Pirrong and Mark Roe have argued that, regardless of whether systemic risk justifies financial-sector regulation as a general matter, mandatory swaps clearing is just as likely to *increase* systemic risk as reduce it.⁷⁷ To set a

⁷³ The lawsuits allege a conspiracy among swaps dealers to maintain inflated profits by reducing price transparency and creating barriers to entry. See Andrew Harris, *MF Global Unit Sues 11 Banks over CDS Market*, BLOOMBERG (July 30, 2013, 1:04 PM), <http://www.bloomberg.com/news/2013-07-30/mf-global-unit-sues-11-banks-over-cds-market.html>; see also Clearing Requirement Determination Under Section 2(h) of the CEA, 77 Fed. Reg. 74,284, 74,298 (Dec. 13, 2012) (to be codified at 17 C.F.R. pts. 39, 50) (noting commentary from Citadel, a hedge fund, arguing that central clearing of credit default swaps "will remove a significant barrier to entry for alternative swap market liquidity providers and will enable smaller entities to compete on more equal terms").

⁷⁴ See, e.g., Franklin R. Edwards & Edward R. Morrison, *Derivatives and the Bankruptcy Code: Why the Special Treatment?*, 22 YALE J. ON REG. 91, 91 (2005) (defining systemic risk as "the risk that multiple major financial market participants will fail at the same time"); George G. Kaufman & Kenneth E. Scott, *What Is Systemic Risk, and Do Bank Regulators Retard or Contribute to It?*, 7 INDEP. REV. 371 (2003) ("[S]ystemic risk in banking is evidenced by high correlation and clustering of bank failures . . .").

⁷⁵ CARMEN M. REINHART & KENNETH S. ROGOFF, *THIS TIME IS DIFFERENT: EIGHT CENTURIES OF FINANCIAL FOLLY* 165 (2009) (showing that banking crises are associated with sharp reductions in economic output); Kathryn Judge, *Fragmentation Nodes: A Study in Financial Innovation, Complexity, and Systemic Risk*, 64 STAN. L. REV. 657, 663 (2012) ("It has long been recognized that a failure in the functioning of the financial system imposes significant externalities, adversely affecting persons far removed from the financial institutions at the core of the crisis.").

⁷⁶ Judge Richard Posner states the argument as follows:

It is because the banking industry is inherently risky that it can collapse without careful macroeconomic management by government, and it is because it is critical to a modern economy that if it does collapse, it can bring the rest of the economy down with it, as September 2008 proved.

RICHARD A. POSNER, *THE CRISIS OF CAPITALIST DEMOCRACY* 251 (2010); accord Judge, *supra* note 75, at 663 ("The long and deep recession that arose out of the 2007–2009 financial crisis served as a powerful reminder of these externalities and hence of the value of regulations that reduce systemic risk.").

⁷⁷ Pirrong, *Economics of Clearing*, *supra* note 18, at 54 ("[T]here are many channels by which formation of a [clearinghouse] affects systemic risk, and some of these tend to *increase* systemic risk."); Mark Roe, *Systemic Costs of Derivatives' Priorities*, 63 STAN. L. REV. 539, 586–87 (2011) (describing ways a clearinghouse may increase systemic risk).

foundation for this debate, the next subpart reviews the main theories of systemic risk, illustrated through examples from the 2008 crisis.

B. Sources of Systemic Risk

The tendency for financial institutions to collapse in rapid succession during crises implies that their solvency levels tend to be tightly correlated. Scholars have identified two reasons this might be the case. The first is the financial sector's particular vulnerability to the bursting of asset bubbles, especially those involving housing.⁷⁸ Banking crises in developed economies often follow steep drops in real-estate prices, a connection that makes sense given banks' central role in mortgage lending.⁷⁹ When systemic risk results from parallel investments by financial institutions in overpriced assets, those institutions' failures are correlated in time but do not cause each other; rather, they result from a common shock—the collapse in asset values.

A second theory of correlated solvency levels in the financial sector is based on the observation that financial institutions are often among each other's largest creditors.⁸⁰ Such interconnections mean that one financial institution's insolvency could set off a domino effect by imposing losses on other financial institutions that leave them insolvent as well.⁸¹ In this way, interconnections among financial institutions are imagined to be a source of "contagion," whereby one firm's failure directly causes others rather than merely correlating with them in time.⁸²

While common or overlapping investments may suggest why the financial sector is prone to multi-firm failures, they do not explain the other distinctive feature of a financial crisis, which is its suddenness. In, for example, a declining industry—in which we would expect several competitors to fail—bankruptcies are often staggered over several years. In a financial crisis, by contrast, groups of financial institutions often come to the brink within days of each other. To explain the suddenness of financial crises, another characteristic of financial institutions must be noticed, which is their heavy reliance on short-term

⁷⁸ Kaufman & Scott, *supra* note 74, at 372, 381; *see also* Judge, *supra* note 75, at 693 ("Financial crises are often preceded by a bubble in which one or more classes of assets are traded at prices far in excess of their fundamental values.").

⁷⁹ *See* REINHART & ROGOFF, *supra* note 75, at 142.

⁸⁰ *See* Kathryn Judge, *InterBank Discipline*, 60 UCLA L. REV. 1262, 1281–83 (2013) (describing how large fractions of the loan portfolios of major investment banks consist of credit extended to other financial institutions); Kaufman & Scott, *supra* note 74, at 372 (describing "chain reaction" credit failures).

⁸¹ Kaufman & Scott, *supra* note 74, at 373; *see also* Edwards & Morrison, *supra* note 74, at 101 (describing critically a theory whereby systemic risk results from "a chain reaction of insolvencies").

⁸² *See* Roe, *supra* note 6, at 1653 (describing "contagion risk" as resulting from financial-sector interconnections).

credit. This reliance means that financial institutions can fail quickly for lack of cash if their short-term creditors suddenly stop lending.

The financial sector relies heavily on short-term credit because one of its main economic functions is to provide maturity transformation: to channel funds from short-term lenders to long-term borrowers.⁸³ Thus, many households and firms have cash that they are willing to lend only on the condition that they can get it back promptly if desired. At the same time, many households and firms also want to borrow cash that they will not have to pay back right away. The financial sector serves the economy by borrowing from the first group and lending to the second.⁸⁴ Maturity transformation is most evident in the traditional banking sector, which accepts “demand” deposits (which the depositor can withdraw at any time) and, to turn a profit, invests the proceeds in long-term assets such as mortgages.

An important consequence of maturity transformation is that banks must operate with low *cash ratios*: small cash holdings relative to their short-term liabilities.⁸⁵ A low cash ratio is not a problem as long as new deposits roughly equal withdrawals over any given period. If, however, many depositors suddenly suspect that the bank is headed for failure, they may run on it, trying to withdraw their money at the same time. Because most of the bank’s cash will be tied up in long-term assets, it may be unable to repay all of the run’s participants and therefore may have to shut its doors.⁸⁶ The logic of a run is that, once a bank appears doomed, its depositors would rather receive a full payout immediately than take the risk of a partial, delayed payout after the bank enters bankruptcy or receivership.

Runs are especially pernicious because they can shutter a bank or other financial institution even if it is solvent, meaning that its operating profits would have been sufficient to repay all of its debt if a large portion of that debt had not come due more quickly than expected.⁸⁷ In other words, the entity fails not because it had too much debt, but because there was a mismatch between when its assets produced cash and when its debts became payable. To be sure, a financial institution

⁸³ See RICHARD SCOTT CARNELL, JONATHAN R. MACEY & GEOFFREY P. MILLER, *THE LAW OF FINANCIAL INSTITUTIONS* 40 (5th ed. 2013) (“A financial intermediary can invest in a portfolio of illiquid assets and then offer investors liquid claims on its own assets.”).

⁸⁴ *Id.* (“This conversion of illiquid investments into liquid ones yields significant benefits for investors.”).

⁸⁵ See RICHARD A. BREALEY & STEWART C. MYERS, *PRINCIPLES OF CORPORATE FINANCE* 827 (6th ed. 2000) (defining “cash ratio”).

⁸⁶ POSNER, *supra* note 76, at 43; Judge, *supra* note 75, at 664.

⁸⁷ See Douglas W. Diamond & Phillip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401, 402 (1983) (describing how even a solvent bank can be shuttered by a run); Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 199 (2008) (noting how bank runs during the Great Depression “caused many otherwise solvent banks to default”).

that is being run upon can try to sell its long-term assets to raise cash quickly. But buyers may be hard to find on short notice, forcing the institution to sell at “fire sale” prices that reflect a deep discount to the assets’ fundamental value.⁸⁸ As a result, the sales proceeds may be insufficient to repay creditors while leaving enough cash to cover daily operations. Notably, a solvent financial institution could not be broken by a run if it could use assets other than cash to repay creditors. Therefore, the institution’s failure is ultimately due to a lack of liquidity, even if the initial cause was a loss of creditor confidence.

Why would creditors lose confidence in a solvent financial institution? One scenario is that one financial institution’s collapse causes creditors to fear, accurately or otherwise, that others invested heavily in the same overpriced assets or lent heavily to the institution that failed. In this way, fears relating to the first two sources of systemic risk (sector-wide investments in overpriced assets, and domino-effect insolvencies) contribute to the third source (illiquidity). Moreover, once a run is underway, creditors have an incentive to participate regardless of what they think about the institution’s fundamental solvency, because they know that, at a minimum, they will temporarily lose access to their money when the institution fails.⁸⁹

The tendency for creditors to lose confidence even in solvent financial institutions demonstrates the role of uncertainty in systemic risk.⁹⁰ Uncertainty can be understood as an aspect of the illiquidity factor, as a firm with sufficient cash need not fear a temporary loss of creditor confidence.⁹¹ The combination of illiquidity and uncertainty in a financial crisis is, like interconnectedness, a mechanism of contagion, because the failure of one financial institution can trigger runs that quickly bring down others.⁹²

⁸⁸ Schwarcz, *supra* note 87, at 214. For a self-liquidating asset such as a security or mortgage, the fundamental value is the discounted present value of the cash flows that the asset is expected to generate. This is the price that the asset should fetch if sold under normal market conditions.

⁸⁹ Diamond & Dybvig, *supra* note 87, at 401–02.

⁹⁰ See Judge, *supra* note 75, at 696–97 (describing how “[l]ack of information” contributes to systemic risk by making investors more cautious after “underappreciated risks” manifest).

⁹¹ Kaufman & Scott, *supra* note 74, at 374 (noting how during a crisis an “uncertainty discount” contributes to “liquidity problems”).

⁹² Kathryn Judge has described how a combination of illiquidity and uncertainty was a source of distress for many firms during the 2008 crisis:

Without investment banks’ excessive reliance on . . . short-term financing, for example, the reverberations of the systematic loss of information about the value of the assets underlying [mortgage-backed securities] . . . would likely not have been as severe. At the same time, without information loss, investment banks’ reliance on short-term financing might not have been so problematic, and the magnitude of the 2007–2009 financial crisis might have been much smaller.

Judge, *supra* note 75, at 701.

Importantly, the level of doubt about a financial institution's solvency need not be particularly high for its short-term creditors to decide to demand their money back. All that is required is that the interest rate on the financial institution's short-term debt be inadequate to compensate creditors for their estimate of the default risk, an estimate that is likely to be revised upward during a crisis.⁹³ It follows that, in the typical financial crisis, more financial institutions will suffer liquidity shortages than are actually insolvent.⁹⁴

Not only do runs force financial institutions to sell assets at fire-sale prices, but the causation also goes the other way, with fire sales setting off runs. This type of contagion can occur if the firms being run upon try to raise cash by selling a type of security that is widely used in the economy as collateral. If the forced selling occurs on a large enough scale, the influx of supply will push the security's market price below its fundamental value,⁹⁵ triggering margin calls on the contracts that the security is used to secure. And if counterparties cannot meet those margin calls, perhaps because of a general liquidity shortage, then the contracts will be terminated and the previously posted collateral will be sold, depressing market prices further.⁹⁶ In addition, firms that hold the depressed security as an investment will suffer declines in the market values of their balance sheets, which could touch off runs by short-term creditors that, in turn, cause more fire sales.⁹⁷ We might call this succession of forced asset sales the "fire-sale price spiral." It is a manifestation of the role of illiquidity in systemic risk, as cash shortages set the spiral in motion by forcing firms to sell assets on a distressed basis.

Fears relating to illiquidity are perhaps the primary means by which a financial crisis damages the real (nonfinancial) economy. The mere threat of a run will cause financial institutions to hoard cash by calling in loans and refusing to make new ones.⁹⁸ As a result, businesses may be unable to borrow in the short term to meet payrolls or

⁹³ To be sure, the firm can offer to pay more interest, and this does indeed sometimes occur during a crisis. See Kathryn Judge, *Three Discount Windows*, 99 CORNELL L. REV. 795, 817 (2014) (citing evidence that banks offer "increasingly attractive interest rates" during a crisis "as a way of retaining and attracting deposits"). But a sudden increase in the offered interest rate may only contribute to perceptions that the firm is insolvent. And if short-term creditors are sufficiently risk-averse, there may be no interest rate that can both induce them to continue lending and permit the firm to turn a profit. See Kaufman & Scott, *supra* note 74, at 374 (noting that "in periods of great uncertainty and stress" many creditors "will not lend at almost any rate").

⁹⁴ See Kaufman & Scott, *supra* note 74, at 373-74.

⁹⁵ See *supra* note 88.

⁹⁶ See PIRRONG, *INEFFICIENCY*, *supra* note 24, at 28.

⁹⁷ See Roe, *supra* note 6, at 1647.

⁹⁸ Jose Berrospide, *Liquidity Hoarding and the Financial Crisis: An Empirical Evaluation*, BANK FOR INT'L SETTLEMENTS 3 (Apr. 2012), <http://www.bis.org/bcbs/events/bhbibe/berrospide.pdf>.

buy inventory. Greater uncertainty leads to more cash hoarding and hence a worse liquidity shortage. It follows that reducing uncertainty and keeping cash in circulation are among the most important regulatory objectives in a financial crisis.

Policymakers have long understood that maturity transformation leaves traditional banks susceptible to debilitating runs. During the Great Depression, Congress tried to calm skittish depositors by creating the Federal Deposit Insurance Corporation (FDIC), which insures checking and savings accounts.⁹⁹ Starting in the 1970s, however, another group of financial institutions began acting like traditional banks, borrowing short term and investing the proceeds in relatively illiquid assets.¹⁰⁰ These are the so-called “shadow” banks whose ranks include the investment banks and broker-dealers whose distress made headlines in 2008.¹⁰¹ For many shadow banks, the equivalent of the demand deposit is the repurchase agreement, or “repo,” which functions like an overnight secured loan.¹⁰² Repos usually are rolled over for long periods, which is why shadow banks can use them to fund long-term investments. The party in the lending position can, however, refuse to renew the repo at any time, effecting the equivalent of a cash withdrawal.¹⁰³ Because they engage in maturity transformation,¹⁰⁴ shadow banks have relatively low cash ratios; they therefore can quickly fail if their repo counterparties and other creditors lose confidence. But, at least officially, no government entity insures these firms’ short-term obligations.

Each of the three sources of systemic risk identified here (common shocks, domino-effect insolvencies, and illiquidity) was evident in the crisis of 2008. The common-shock factor is illustrated by the failures or near-failures of eight large financial institutions that had invested heavily in mortgage-backed assets: AIG, Bear Stearns, Fannie Mae, Freddie Mac, Lehman Brothers, Merrill Lynch, Wachovia, and Washington Mutual.¹⁰⁵ The value of these firms’ balance sheets was tied to residential housing prices, which peaked in mid-2006 and

⁹⁹ Judge, *supra* note 93, at 827 (describing how Congress created the FDIC in 1933 “to improve bank stability by discouraging runs”).

¹⁰⁰ See Gary Gordon & Andrew Metrick, *Regulating the Shadow Banking System*, BROOKINGS PAPERS ON ECON. ACTIVITY 269-79 (Fall 2010) (describing the rise of shadow banking).

¹⁰¹ *Id.* at 261–62 (describing investment banks, money-market mutual funds, and mortgage brokers as “shadow” banks).

¹⁰² See *id.* at 276 (describing repos as a “deposit-like product”).

¹⁰³ *Id.* at 279.

¹⁰⁴ See Andrei Shleifer, *comment on Gary Gordon & Andrew Metrick*, *Regulating the Shadow Banking System*, BROOKINGS PAPERS ON ECON. ACTIVITY 298 (Fall 2010) (arguing that the defining feature of the shadow banking system is maturity transformation through securitization and repos).

¹⁰⁵ See Bullard et al., *supra* note 58, at 404; *Lehman Brothers Files for Bankruptcy, Scrambles to Sell Key Business*, CNBC (Sept. 15, 2008, 3:26 AM), <http://www.cnbc.com/id/26708143>.

had dropped more than twenty percent by October 2008.¹⁰⁶ Domino-effect insolvencies, in turn, were illustrated when Lehman Brothers filed for bankruptcy and defaulted on its debts, thereby causing the insolvency of Reserve Primary, a money-market fund that had bought large amounts of Lehman-issued commercial paper.¹⁰⁷ Reserve Primary's failure, in turn, triggered runs on other money-market funds, all of which were fundamentally solvent—thereby illustrating the illiquidity factor and its relationship to uncertainty.¹⁰⁸

Illiquidity's role in systemic risk is illustrated more broadly by the runs that both traditional banks and shadow banks suffered in 2008 after the surge in mortgage defaults caused markets to fear that these institutions were insolvent. Depositor runs led the FDIC to arrange buyouts of Wachovia and Washington Mutual, two of the nation's largest commercial banks.¹⁰⁹ And runs by repo counterparties and other short-term investors ended the independent existence of the investment banks Bear Stearns, Lehman Brothers and Merrill Lynch.¹¹⁰ Because they were not eligible for FDIC receivership, the only formal resolution option for investment banks was bankruptcy. But federal officials considered bankruptcy an unacceptable outcome for large financial institutions during the crisis—the conspicuous exception was Lehman Brothers—and therefore decided to infuse them with cash to keep them afloat. In exchange for its money, the government typically took preferred shares that bailout recipients were not permitted to buy back until they could demonstrate that they were neither illiquid nor insolvent.¹¹¹ Because the bailouts added to recipients' cash

¹⁰⁶ See *S&P/Case-Shiller 20-City Composite Home Price Index*, S&P DOW JONES INDICES (2013), <http://us.spindices.com/indices/real-estate/sp-case-shiller-20-city-composite-home-price-index> (showing an index peak of 206.7 in April 2006 and a drop to 156.3 in October 2008); see also Bullard et al., *supra* note 58, at 403 (“The financial crisis of 2008–09—the most severe since the 1930s—had its origins in the housing market.”).

¹⁰⁷ See Bullard et al., *supra* note 58, at 408.

¹⁰⁸ “[W]hen the Reserve Primary Fund, a large money market mutual fund, halted investor redemptions after the net asset value of its shares fell below \$1 in September 2008, share redemptions rose sharply at other money market mutual funds. Although most money market mutual funds had ample reserves and good assets, investors interpreted the troubles of the Reserve Primary Fund (which held a large amount of Lehman Brothers debt) as a possible indicator of problems at other mutual funds.” *Id.*

¹⁰⁹ See Robin Sidel et al., *WaMu is Seized, Sold Off to J.P. Morgan*, in *Largest Failure in U.S. Banking History*, WALL ST. J., Sept. 26, 2008, at A1; Press Release, Federal Deposit Insurance Corporation, Citigroup Inc. to Acquire Banking Operations of Wachovia (Sept. 29, 2008), available at <http://www.fdic.gov/news/news/press/2008/pr08088.html>.

¹¹⁰ See Gordon & Metrick, *supra* note 100, at 279 (stating that the “core problem in the financial crisis was a run on repos”).

¹¹¹ See U.S. DEP'T OF THE TREASURY, OFFICE OF FIN. STABILITY, TROUBLED ASSET RELIEF PROGRAM: FOUR YEAR RETROSPECTIVE REPORT 1, 6, 8 (2013), available at <http://www.treasury.gov/initiatives/financial-stability/reports/Documents/TARP%20Year%20Retrospective%20Report.pdf> [hereinafter DEP'T OF THE TREASURY, TARP RETROSPECTIVE] (describing TARP's investments in AIG through the “Capital Purchase Program” and “Targeted Investment Program” as taking the form of preferred shares).

holdings but not their short-term debts, they raised the financial sector's overall cash ratio, alleviating the liquidity pressure that is the by-product of maturity transformation.

Since 2008, profits have recovered in the financial sector, and its large bailout recipients have been able to pay back the government in full, with interest.¹¹² Indeed, taxpayers have made a net profit on the financial-sector bailouts (as contrasted with those for the auto industry).¹¹³ The implication is that the distressed market conditions of 2008 reflected primarily a problem of illiquidity rather than fundamental insolvency, and that most financial institutions needed only a temporary increase in their cash ratios to weather the crisis. The central role of illiquidity in the crisis is further shown by the large increase in excess cash reserves held by banks nationwide in 2008 and 2009.¹¹⁴ Thus, while very few of them were insolvent, the banks nonetheless felt compelled to hoard cash to hedge against the risk that uncertainty would cause their depositors and other short-term creditors to run.

In evaluating each of the mechanisms through which the clearing mandate's advocates and critics argue that clearinghouses either reduce or exacerbate systemic risk, it is important to specify the source of systemic risk the mechanism purportedly targets. Thus, by describing clearinghouses as enforcers of stricter collateral-posting rules,¹¹⁵ Dodd-Frank's Senate Report implies that clearinghouses prevent domino-effect insolvencies.¹¹⁶ The clearing mandate's academic proponents also focus on the risk of domino-like insolvencies, but unlike the Senate report they mostly argue that clearinghouses reduce this risk through their traditional netting and loss-mutualization functions. The clearing mandate's skeptics, meanwhile, have identified ways in which netting and loss mutualization can increase systemic risk, perhaps most importantly by weakening the incentive for derivatives counterparties to monitor each other for excessive risk taking. Notably, neither the proponents nor the skeptics have addressed the relationship between systemic risk and illiquidity, despite that factor's central role in the events of 2008.

¹¹² See Richard Squire, *Insolvency vs. Illiquidity in the 2008 Crisis and the Congressional Imagination*, in *CRISI FINANZIARIA E RISPOSTE NORMATIVE: VERSO UN NUOVO DIRITTO DELL'ECONOMIA?* 93–116 (Andrea Guaccero & Marco Maugeri, eds. 2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2392914.

¹¹³ See DEP'T OF THE TREASURY, TARP RETROSPECTIVE, *supra* note 111, at ii.

¹¹⁴ See Berrospide, *supra* note 98, at 32–33 (documenting a large increase in bank holdings of cash and other liquid assets).

¹¹⁵ See *supra* text accompanying notes 64–67.

¹¹⁶ See S. REP. NO. 111-176, at 32–33 (2010).

C. The Debate over Netting

Most of the post-crisis debate about the relationship between clearinghouses and systemic risk has focused on the implications of multiparty netting. According to several clearing-mandate proponents, netting mitigates systemic risk by reducing losses to other clearinghouse members when one member fails. This argument is advanced most prominently in a 2010 report by fifteen financial economists called the Squam Lake Group.¹¹⁷ The report asserts that when a clearinghouse can use netting to cancel out a group of counterparties' positions, each counterparty "poses no risk to anyone, including the clearinghouse."¹¹⁸ Other scholars have made similar claims, arguing that netting reduces overall losses when a counterparty fails.¹¹⁹

The numerical examples in Part I show why such arguments are incomplete: netting in fact externalizes losses instead of reducing them. Thus, to the extent that netting increases recoveries for clearinghouse members, it does so by decreasing nonmember recoveries by the same total amount.¹²⁰ As Craig Pirrong and Mark Roe both argue, netting is best conceptualized as a mechanism that changes creditor priorities without reducing total losses when a debtor fails.¹²¹ Roe further observes that clearinghouse netting builds upon the bankruptcy allowance for setoffs and that scholars have long recognized that setoffs redistribute losses rather than reducing them.¹²²

A more sophisticated pro-mandate argument based on netting's impact on creditor losses would acknowledge netting's redistributive nature but assert that netting nonetheless reduces systemic risk on the assumption that clearinghouse members are more likely than their outside creditors to be financial institutions. The underlying assumption is not implausible, as most clearinghouse members are brokerages and investment banks,¹²³ while outside creditors include nonfinancial claimants such as employees, trade creditors, and

¹¹⁷ KENNETH R. FRENCH ET AL., *THE SQUAM LAKE REPORT: FIXING THE FINANCIAL SYSTEM* 111–15 (2010).

¹¹⁸ *Id.* at 113.

¹¹⁹ See, e.g., Chander & Costa, *supra* note 1, at 639, 675 ("Netting of positions would lead to reduction of overall exposure . . ."); Kress, *supra* note 71, at 68 (claiming that netting causes a drop in "the aggregate level of exposure . . . , thereby mitigating counterparty and systemic risks").

¹²⁰ See *supra* text accompanying notes 6–9.

¹²¹ See Pirrong, *Clearinghouse Cure*, *supra* note 5, at 47; Roe, *supra* note 6, at 1667.

¹²² Roe, *supra* note 6, at 1667 (citing McCoid, *supra* note 12, at 32–39); see also *In re Elcona Homes Corp.*, 863 F.2d 483, 485 (7th Cir. 1988) (Posner, J.) (noting that setoff "advances[s] one unsecured creditor over another merely because the first happens also to owe money to their common debtor").

¹²³ PIRRONG, *INEFFICIENCY*, *supra* note 24, at 8 ("Clearinghouses almost always have members who are trading firms, and often large ones, including brokerages and banks.").

industrial firms that use derivatives to hedge business risks. Pirrong anticipates this revised version of the pro-netting argument but rejects it, observing that many outside creditors harmed by netting are also financial institutions, including repo counterparties, traders of non-cleared derivatives, and bank lenders.¹²⁴ Roe further observes that members' outside creditors typically include money-market funds, which are particularly vulnerable during a crisis.¹²⁵ Their vulnerability was illustrated when the bankruptcy of Lehman Brothers led directly to the insolvency of Reserve Primary.¹²⁶ For these reasons, Pirrong and Roe argue, the purely redistributive effect of netting seems unlikely to achieve a large reduction in the overall level of systemic risk.¹²⁷

Besides casting doubt on the benefits that the clearing mandate's proponents attribute to netting, Pirrong argues that netting actually exacerbates systemic risk by reducing collateralization costs.¹²⁸ As described in Part I, netting makes it cheaper for a debtor to give priority to select creditors because it avoids the costs of holding and posting traditional collateral. The priority that netting accords swaps counterparties acts like a subsidy, encouraging more swaps to be issued.¹²⁹ The consequence could be higher levels of systemic risk due to increased interconnectedness among financial institutions and higher leverage through the types of contingent liabilities that swaps create.¹³⁰

D. The Debate over Loss Mutualization

While most of the clearing mandate's proponents have emphasized netting, a few have also claimed that loss mutualization among clearinghouse members can stabilize the financial system, again by preventing domino-effect insolvencies.¹³¹ The theory is that the

¹²⁴ Pirrong, *Clearinghouse Cure*, *supra* note 5, at 49.

¹²⁵ Roe, *supra* note 6, at 1682.

¹²⁶ See *supra* text accompanying notes 107–08.

¹²⁷ Pirrong, *Clearinghouse Cure*, *supra* note 5, at 49 (noting that netting redistributes losses rather than reducing them and that “[t]he systemic effect of this redistribution is ambiguous”); Roe, *supra* note 6, at 1681.

¹²⁸ Pirrong, *Economics of Clearing*, *supra* note 18, at 59.

¹²⁹ Pirrong, *Clearinghouse Cure*, *supra* note 5, at 50 (“[R]eductions in collateral that would likely accompany the formation of a clearinghouse would actually tend to encourage firms to trade more, as with a clearinghouse the netting of positions saves collateral, allowing a larger scale of trading activity for a given amount of liquid capital.”); cf. Edwards & Morrison, *supra* note 74, at 118 (observing how the Bankruptcy Code’s special treatment of derivatives, which “redistributes wealth from ordinary creditors to derivatives counterparties,” likely contributed to the growth of swaps markets in the 1990s).

¹³⁰ Pirrong, *Clearinghouse Cure*, *supra* note 5, at 50.

¹³¹ See Kress, *supra* note 71, at 65 (“From a systemic perspective, it is generally preferable for a large number of parties to experience small losses than for a small number of interconnected parties to experience large losses.”).

manner in which a clearinghouse spreads losses among its members “prevents an insolvent party’s trading partners from absorbing acute, potentially catastrophic defaults.”¹³²

Once again, the case for the clearing mandate has been subject to strong rebuttals. Pirrong observes: “If interconnectedness among big financial institutions is the source of a systemic risk problem, creating a central counterparty is an odd way to ‘solve’ it. After all, a [clearinghouse] is a formalized interconnection among big financial institutions.”¹³³ Described concretely, loss mutualization means that a clearinghouse takes the net in-house losses occasioned by one member’s insolvency and, through the guaranty fund, divides them pro rata among the surviving members. The result is that some members lose more, and others less, than if they had traded with the insolvent firm bilaterally. And there is no general reason to assume that the members whose losses are thereby reduced will be both systemically more important and closer to insolvency than the members whose losses are thereby increased. As is true of netting, loss mutualization redistributes losses rather than avoiding them, making it difficult to see how systemic risk is reliably reduced.

A somewhat different argument for clearinghouses based on loss mutualization has been advanced by Adam Levitin, who theorizes that a clearinghouse’s primary systemic virtue is its capacity to absorb losses when a dealer firm fails.¹³⁴ Levitin argues that a properly designed and maintained guaranty fund makes a clearinghouse a “fortress of capital.”¹³⁵ To the extent, however, that a clearinghouse holds capital that its members would otherwise hold individually, the impact on the members’ creditors is again zero-sum: more assets are available for in-house creditors but fewer are available for each member’s outside creditors. Levitin might be implying that the guaranty fund effectively acts like (or on behalf of) a prudential regulator, forcing members to hold more of their assets in liquid form than they would otherwise. By analogy, bank regulators seek to reduce systemic risk by requiring banks to hold minimum cash reserves. But there is a limit to how much of its capital a firm can tie up in an unproductive cash buffer and still turn a profit.¹³⁶ It is not clear how this constraint is alleviated

¹³² *Id.*; accord Adam J. Levitin, *Response: The Tenuous Case for Derivatives Clearinghouses*, 101 GEO. L.J. 445, 462 (2013) (arguing that a clearinghouse “disperses excess losses among . . . members, thereby lessening the impact on any one of them”).

¹³³ Pirrong, *Clearinghouse Cure*, *supra* note 5, at 49.

¹³⁴ Levitin, *supra* note 132, at 462.

¹³⁵ *Id.* at 448.

¹³⁶ See Jonathan Macey, *Reducing Systemic Risk: The Role of Money Market Mutual Funds as Substitutes for Federally Insured Bank Deposits*, 17 STAN. J.L. BUS. & FIN. 131, 165 (2011) (“Reserve requirements constitute a significant tax on the operation of depository institutions because they do not generate income.”).

if the cash is held not by the firm itself but rather by a clearinghouse on its behalf. Once again, the source of value creation, as opposed to value transfer, is unclear.

Pirrong and Roe both also note that the clearing mandate's proponents ignore the other way that clearinghouses spread losses: by guaranteeing customer trades. Because a clearinghouse reassigns a failed member's customer contracts to other members, the customers recover more than they would if their only recourse were to the failed member's bankruptcy estate. As contrasted with clearinghouse members, many customers are end-users, who use derivatives to hedge business risk. Because most end-users are not financial institutions, mutualization of customer losses appears to increase systemic risk by shifting losses up rather than down the systemic-risk gradient.¹³⁷

Finally, the clearing mandate's critics argue that both loss externalization (through netting and collateral collection) and loss mutualization could contribute to systemic risk by weakening the link between each member's insolvency risk and its trading costs. Thus, firms in a bilateral trading market will normally monitor counterparty default risk and require riskier counterparties to pay higher interest rates or post more collateral.¹³⁸ This market discipline means that counterparties can reduce their trading costs by lowering their perceived insolvency risk.¹³⁹ And a firm that has reduced its insolvency risk, for example by avoiding concentrated investments in risky assets (such as mortgage-backed securities), is less likely to be either a source or a victim of contagion in a crisis.¹⁴⁰ But loss externalization and mutualization weaken counterparties' incentive to discipline each other because they cause each clearinghouse member to bear, at most, only a fraction of the counterparty risk on its in-house positions.¹⁴¹

In theory, the clearinghouse could attempt to impose the type of discipline that firms in a bilateral market would impose on each other

¹³⁷ See Pirrong, *Economics of Clearing*, *supra* note 18, at 57 (noting that the practice whereby "members provide performance guarantees to non-members" can increase systemic risk if "dealer-members are systemically more important than the non-members").

¹³⁸ See *id.*, at 17–18 (noting how counterparties in bilateral markets can vary collateral demands based on firm-specific default risk, thereby avoiding the type of moral hazard created by clearinghouse collateralization rules); *accord* PIRRONG, *INEFFICIENCY*, *supra* note 24, at 15 (noting how private firms specialize in developing risk models that increase trading profits).

¹³⁹ Recall how protection buyers excused AIG from posting initial margin as long as it retained its triple-A credit rating. See *supra* text accompanying note 56.

¹⁴⁰ Of course, when there is sector-wide misvaluation of assets—the paradigm of systemic risk from an asset bubble—financial firms are unlikely to discipline each other adequately even in their bilateral contracts.

¹⁴¹ See PIRRONG, *INEFFICIENCY*, *supra* note 24, at 17.

directly.¹⁴² But clearinghouse employees may lack the incentive and expertise to analyze counterparty credit risk effectively. A clearinghouse does not trade on its own account and hence has less opportunity to recoup investments in sophisticated risk models.¹⁴³ And members will naturally be reluctant to share their best risk models with clearinghouse employees for fear of discovery by other members, among whom are often their biggest competitors.¹⁴⁴

The relative inferiority of clearinghouses at assessing credit risk helps explain why they typically follow mechanical margin-posting rules.¹⁴⁵ For example, clearinghouses require that variation margin be adjusted daily based on formulas that consider the market values of each member's cleared positions and posted collateral but typically ignore the performance of the rest of members' balance sheets.¹⁴⁶ At first blush, such an approach seems blinkered, as losses on assets held outside the clearinghouse could cause a member to default on its in-house obligations. But this mechanical approach minimizes the discretion of clearinghouse employees, who presumably lack the knowledge and motivation to exercise discretion effectively. Mechanical rules also make it harder for a member to influence clearinghouse employees to the member's relative advantage, for example by permitting it to operate with an unmatched book.

* * * * *

This Part has shown how concerns raised by skeptics cast doubt on the arguments that previously have been advanced in support of the clearing mandate. Aspects of those arguments may survive: for example, it may be true that, on average, clearinghouse members are more systemically important than their outside creditors and therefore that the redistributive impact of netting may somewhat reduce the risk in a crisis that financial institutions will become insolvent. But even if that is right, there are countervailing ways in which clearinghouses can increase systemic risk: for example, both loss externalization and loss mutualization undermine monitoring discipline and thus encourage financial institutions to make risky investments that, if

¹⁴² See Roe, *supra* note 6, at 1694–95 (“Whether the clearinghouse reduces systemic risk in this setting depends largely on whether the clearinghouse employees are better than [the member’s] management at understanding the market moves in the relevant trades.”).

¹⁴³ See PIRRONG, *INEFFICIENCY*, *supra* note 24, at 15.

¹⁴⁴ *Id.* at 14–15.

¹⁴⁵ See Craig Pirrong, *Clearing and Collateral Mandates: A New Liquidity Trap?*, 24 J. APPLIED CORP. FIN. 67, 70 (2012) (describing the “more mechanical nature of [clearinghouse] margining methodologies”) [hereinafter Pirrong, *Clearing and Collateral Mandates*].

¹⁴⁶ See *id.* (“[W]ith clearing, the variation margining process is substantially more rigid than is typical in bilateral transactions.”); PIRRONG, *INEFFICIENCY*, *supra* note 24, at 17 (noting that traditional clearinghouses “do not vary risk pricing (i.e., collateral levels) to reflect the balance-sheet risks specific to each member”).

they sour, could trigger a crisis. After reviewing the arguments for and against the clearing mandate advanced so far, it would be easy to agree with the critics that the mandate is as likely to increase systemic risk as reduce it.

III CENTRAL CLEARING AS A SOURCE OF LIQUIDITY AND CERTAINTY

This Part seeks to move the debate over clearinghouses beyond their purely redistributive consequences by identifying an economic benefit of central clearing that is not zero-sum in its impact on creditors. That benefit is faster cash payouts when a trading firm fails. Faster cash payouts are a result of multiparty netting, but they differ from the advantages that other scholars have claimed for netting, in two respects. First, the faster payouts achieved by netting represent a Pareto improvement: netting causes some creditors to be paid more quickly without causing others to be paid less quickly. Second, fast cash payouts avoid damage to the financial sector resulting from illiquidity, a source of systemic risk largely ignored in prior clearinghouse scholarship. The clearinghouse accelerates cash payouts by engaging in liquidity partitioning: it cordons off a portion of a bankrupt firm's cash assets and short-term liabilities, and it applies the first toward immediate repayment of the second. As a result, clearinghouse members are spared the liquidity shock that they might otherwise suffer when one of their counterparties files for bankruptcy. Thus, like a government bailout, the clearinghouse improves the financial sector's overall cash ratio, but it does so by improving the allocation of cash already in private hands.

The rest of this Part is divided into four subparts. The first describes the problem of payout delay in bankruptcy and shows how the setoff right, the basis for multiparty netting, helps overcome it. The second describes how bankruptcy changes the allocation of cash in the particular setting of a derivatives market in which contracts are bilateral. The third shows how introducing a clearinghouse speeds up payouts, thereby reallocating cash in a way that helps stabilize the financial sector by improving its overall cash ratio. The final subpart makes two points about the risk that a clearinghouse itself will fail: it shows how liquidity partitioning makes a clearinghouse more stable than its members; and it describes how, if a clearinghouse nonetheless were to fail, it could still reduce illiquidity during a crisis.

A. Bankruptcy, Delay, and Setoff

To determine how much to pay each of a debtor's creditors, a bankruptcy proceeding must do two things. First, it must assign a

value to the debtor's assets, either through sales that convert the assets to cash (if a liquidation) or through a court-approved valuation based on projections of the debtor's post-bankruptcy performance (if a reorganization).¹⁴⁷ Second, the proceeding must determine the amount of the debtor's liabilities, which requires collecting all creditors' proofs of claim and resolving any challenges to their enforceability.¹⁴⁸ Given these requirements, it is difficult to think of a slower rule for distributing value to creditors than the pro rata rule. That rule pays each creditor based on the ratio between the creditor's claim and the debtor's total liabilities. It follows that *all* liabilities must be confirmed and valued before *any* creditor can be paid.¹⁴⁹ Despite this drawback, the pro rata rule is the bankruptcy system's default formula for calculating creditor payouts.¹⁵⁰

The Bankruptcy Code does permit several exceptions to the pro rata rule. In particular, it allows for the enforcement of various asset-partitioning arrangements that override the pro rata rule to give a creditor a prior claim to a particular debtor asset.¹⁵¹ Perhaps the most obvious example is the secured loan, which the Bankruptcy Code enforces in the sense that it honors secured creditors' prior

¹⁴⁷ In the Chapter 11 system, parties negotiate over a reorganization plan based on their expectations of the value that the court will assign the debtor if an agreement cannot be reached. See 11 U.S.C. § 1129(b) (2012) (allowing the bankruptcy court to approve a plan over an investor class's objection if the investors are to receive a payout that, in the court's estimation, equals at least their payout entitlement under both the absolute priority rule and the pro rata rule).

¹⁴⁸ Grounds for challenging a creditor's claim include that it is duplicative, unenforceable because the creditor breached the loan agreement, untimely, or resulted from a fraudulent transfer. See, e.g., Sara Randazzo, *Dewey Estate Moves to Shed Dozens of Creditors' Claims*, AM LAW DAILY (Oct. 31, 2012) (describing attempts by a debtor in possession to invalidate "several dozen" claims on various grounds).

¹⁴⁹ Richard Squire, *The Case for Symmetry in Creditors' Rights*, 118 YALE L.J. 806, 836 (2009).

¹⁵⁰ See 11 U.S.C. § 726(b) (providing in liquidation for pro rata distribution among unsecured creditors of the same bankruptcy rank); *id.* § 1123(a)(4) (requiring that a proposed reorganization plan treat all class members equally).

¹⁵¹ See Henry Hansmann & Reinier Kraakman, *The Essential Role of Organizational Law*, 110 YALE L.J. 387, 393–96 (2000) (introducing the term "asset partitioning" and identifying several legal arrangements that produce it, including corporations, partnerships, and secured loans). Early work on asset partitioning described how it can make it cheaper for creditors to monitor debtors. *Id.* at 399–404; see also Richard A. Posner, *The Rights of Creditors of Affiliated Corporations*, 43 U. CHI. L. REV. 499, 509–16 (1976) (describing how the corporate rule of limited shareholder liability can reduce the costs of evaluating credit risk). A partitioning arrangement will, however, tend to generate monitoring efficiencies only if it is "symmetrical," meaning that it gives each creditor group a prior claim to a distinct pool of assets. Squire, *supra* note 149, at 814–35. The corporation form has this quality. *Id.* at 812. By contrast, monitoring efficiencies are unlikely to result from an arrangement that is, like the setoff right, "asymmetrical," meaning that it gives a creditor both a prior claim to a distinct debtor asset and a pro rata claim to the debtor's remaining assets. *Id.* at 811. Asymmetrical arrangements can, however, still create economic value by accelerating payouts to the creditors with the prior claims. *Id.* at 836.

claim to their collateral.¹⁵² And, as the discussion in Part I makes clear, the setoff right is an asset-partitioning arrangement as well. Thus, setoff overrides the pro rata rule by giving one creditor a prior claim to a particular debtor asset, namely the creditor's own unpaid debt to the debtor. Scholars have long recognized that this prior claim redistributes value to the setoff creditor.¹⁵³ But they have found it difficult to justify this outcome,¹⁵⁴ at least on efficiency grounds.¹⁵⁵

A source of efficiency becomes apparent, however, if we shift the focus from the *amounts* of creditor payouts to their *timing*. By giving the setoff creditor a prior claim to a particular debtor asset, the setoff right avoids the delay inherent in the pro rata rule. The value of that asset can be distributed to the creditor once the creditor's claim is confirmed, regardless of the amount of the debtor's other liabilities.¹⁵⁶ To be sure, the distribution takes the form not of a cash payout but rather of cancellation of the creditor's own payment obligation. Yet the practical effect is the same: without setoff, the creditor would have to pay cash *into* the estate and then wait to be repaid a pro rata share of that cash along with the debtor's other creditors.

This faster payout for the setoff creditor will almost always represent a Pareto improvement, meaning that setoff will not cause the debtor's remaining creditors to be paid any less quickly. Regardless of whether setoff is allowed, the other creditors will be paid at the end of

¹⁵² See, e.g., 11 U.S.C. § 506(a)(1) (giving creditors a secured claim to the extent of the value of their collateral); *id.* § 1129(b)(2)(A)(i) (requiring that a class of secured creditors that has rejected a reorganization plan receive cash payments worth at least the amount of their secured claims).

¹⁵³ See, e.g., McCoid, *supra* note 12, at 15 ("It is hardly news that setoff . . . is preferential in effect.")

¹⁵⁴ See, e.g., *id.* at 39–41 (raising but ultimately dismissing as inadequate various potential "functional" justifications for setoff); *accord In re Elcona Homes Corp.*, 863 F.2d 483, 486 (7th Cir. 1988) (Posner, J.) (noting that setoffs are recognized under state law for their "procedural convenience—the consolidation of offsetting claims in the same suit" but that this consideration may have little relevance in federal bankruptcy law given the collective nature of the proceeding).

¹⁵⁵ In his seminal work on the setoff right, John McCoid suggested that the right might be justified in terms of fairness (rather than efficiency) between creditor and debtor in the particular context of a bankruptcy proceeding in which the debtor's debts will not be discharged, which leaves creditors who are not allowed to set off facing "uncertainty [about] whether and when payment might be made." McCoid, *supra* note 12, at 23. McCoid did not address how setoff accelerates payouts even when all debts will ultimately be discharged or how this benefit is a source of economic efficiencies.

¹⁵⁶ Two prior articles on asset partitioning introduced the general idea that partitioning arrangements (which, as this Article observes, includes the setoff right) can accelerate creditor payouts in bankruptcy proceedings. See Henry Hansmann, Reinier Kraakman & Richard Squire, *Law and the Rise of the Firm*, 119 HARV. L. REV. 1335, 1346 (2006) (identifying reduced bankruptcy administration costs and faster proceedings as a benefit of asset partitioning); Squire, *supra* note 149, at 835 (analyzing how various forms of asset partitioning accelerate creditor payouts by overriding the pro rata rule).

the bankruptcy proceeding, which typically takes at least a year (and often several) to complete.¹⁵⁷ The requirements that make a lengthy process necessary—that the debtor’s noncash assets be sold or valued, and that its total liabilities be calculated—are not avoided or simplified if some creditors are denied setoff rights at the beginning.

The distinction between the zero-sum impact of the setoff right (emphasized by previous commentators) and its positive impact on payout speed (emphasized here) becomes clearest if we make the assumption that the debtor is, despite its bankruptcy filing, solvent. In that case, setoff will have no impact on the distribution of losses, as all of the debtor’s creditors will eventually be repaid in full. But it will still reduce delay, accelerating payouts to some creditors without slowing down payouts to the rest.

While setoff avoids the delay inherent in the pro rata rule, it normally is not instantaneous. The other source of delay is the Bankruptcy Code’s automatic stay, under which creditors cannot exercise setoff rights until they obtain permission from the bankruptcy court.¹⁵⁸ The Code recognizes an exception, however, when the offsetting obligations arise from derivatives contracts, including swaps.¹⁵⁹ In that case, creditors can exercise contractual setoff rights immediately when the debtor files its bankruptcy petition.

Faster bankruptcy payouts provide general economic benefits: they reduce uncertainty about the value of creditor claims, and they create value whenever a debtor is being liquidated and its capital can earn higher returns if reinvested elsewhere, a safe general assumption given that the firm has failed.¹⁶⁰ But faster payouts will be especially valuable if the recipients are financial institutions who are in danger of failing during a crisis for lack of liquidity. Under those circumstances, faster payouts reduce systemic risk by correcting the tendency for bankruptcy to misallocate cash during a financial crisis. The next subpart begins the explanation of this systemic benefit by describing how bankruptcy misallocates cash in a derivatives market in which contracts are bilateral.

B. Bankruptcy and Liquidity in a Bilateral Market

Bankruptcy can exacerbate a liquidity crisis. When a company files for bankruptcy protection, the automatic stay suspends its

¹⁵⁷ See Richard M. Hynes & Steven D. Walt, *Why Banks are not Allowed in Bankruptcy*, 67 WASH. & LEE L. REV. 985, 1050 (2010) (reporting that the average bankruptcy case of a large public corporation lasts just under eighteen months).

¹⁵⁸ See 11 U.S.C. § 362(a)(7) (2012).

¹⁵⁹ *Id.* § 556 (commodities and forward contracts); *id.* § 560 (swaps); see also *id.* § 362(b)(17) (specifying that the automatic-stay exemption applies to swap contract setoff rights).

¹⁶⁰ See Squire, *supra* note 149, at 835–36.

payment obligations to creditors,¹⁶¹ effectively increasing the duration of its short-term debts. If its short-term creditors include financial institutions, the resulting liquidity shock could cause them to fail as well. At the same time, firms that owe money to the debtor must pay cash into the bankruptcy estate, even though bankruptcy actually reduces the debtor’s need for cash by suspending its debt repayment obligations and making it easier for the debtor to borrow. In this way, bankruptcy misallocates cash during a financial crisis, increasing the risk that otherwise solvent financial institutions will fail.

The liquidity problem created by bankruptcy can be illustrated using the open, three-firm example from Part I, in which Firm A owes \$100 on a bilateral derivatives contract to Firm B, and Firm B owes \$100 on an identical contract to Firm C. We will now assume that all three firms are “shadow banks”: financial institutions that engage in maturity transformation but whose short-term debts are not FDIC-insured.

TABLE I. SELECTED BALANCE-SHEET ITEMS, PRE-BANKRUPTCY

	<i>Firm A</i>		<i>Firm B</i>		<i>Firm C</i>	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
<i>Liquid/ Short-term</i>	\$100 cash	\$100 debt to B	\$100 claim on A	\$100 debt to C	\$100 claim on B	Repos. etc.
<i>Illiquid/ Long-term</i>						

The table shows balance-sheet items that are relevant to the analysis of bankruptcy’s impact on liquidity. Firm A has cash,¹⁶² and it has a short-term liability to Firm B. Firm B, in turn, has a current asset (its short-term claim against Firm A), which is matched by its short-term liability to Firm C. Finally, Firm C has a short-term claim against Firm B, and it has short-term debts such as repos, reflecting its status as a maturity transformer. (Indeed, Firm C may have a short-term liability that precisely matches its claim against Firm B, which would be the case if it is acting as an intermediary on a derivatives position between Firm B and an end-user.) Notably, these assets and liabilities are matched not just in amount but also in duration, with short-term liabilities counterbalanced by cash and other liquid (current) assets.

¹⁶¹ 11 U.S.C. § 362(a).

¹⁶² This could be actual currency or, more likely, a \$100 balance in a demand deposit account at a commercial bank that is a member of the Federal Reserve System. A positive balance in a bank account is generally considered a form of cash and thus would be included in Firm A’s cash ratio. See JOHN DOWNES & JORDAN ELLIOT GOODMAN, *DICTIONARY OF FINANCE AND INVESTMENT TERMS* 78 (4th ed 1995) (defining “cash” as “paper currency and coins, negotiable money orders and checks, and bank balances”).

Now we will consider, as we did in Part One, what happens when Firm B files for bankruptcy.¹⁶³ The bankruptcy filing causes Firm B's contract with Firm A to terminate and makes Firm A's \$100 debt immediately payable.¹⁶⁴ Accordingly, Firm A pays its cash into Firm B's estate in satisfaction of its debt, removing both items from Firm A's balance sheet.

TABLE 2. SELECTED BALANCE-SHEET ITEMS, BILATERAL CONTRACTS

	Firm A		Firm B		Firm C	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
<i>Liquid/ Short-term</i>	[Cash sent to B]	[Paid]	\$100 cash			Repos. etc.
<i>Illiquid/ Long-term</i>				IOU to C	IOU from B	

The effect of the bankruptcy on Firm B's and Firm C's balance sheets is more complicated. Even though bankruptcy terminates Firm B's derivatives contract with Firm C, the automatic stay suspends Firm C's ability to collect on the resulting unsecured claim against Firm B.¹⁶⁵ Thus, instead of receiving cash, Firm C receives, in effect, a bankruptcy IOU that is a liability on Firm B's balance sheet and an asset on Firm C's. Its value is uncertain, as is its duration, save that it is unlikely to be paid in the short term. The claim will be paid according to the pro rata rule, which as noted above is a very slow way to calculate creditor payout entitlements. The delay that the pro rata rule can introduce when the debtor is a financial company is illustrated by the Lehman Brothers bankruptcy, which did not see its first payouts to unsecured creditors until more than three years after it began.¹⁶⁶

As Table 2 indicates, bankruptcy has produced durational mismatches on the balance sheets of both Firm B and Firm C. A liquid asset (cash) has been paid into Firm B's estate even though the practical consequence of the automatic stay is that Firm B no longer has any short-term, pre-bankruptcy debts. Meanwhile, bankruptcy has

¹⁶³ See *supra* Figure 1.

¹⁶⁴ See 11 U.S.C. § 542(b) (providing that entities which owe matured debts to the debtor must immediately pay them to the bankruptcy trustee).

¹⁶⁵ The special exemption for derivatives allows counterparties to ignore the automatic stay for purposes of terminating contracts, setting off positions, and liquidating collateral. See *id.* §§ 560, 561. However, the stay on enforcement actions (for any remaining amount owed) remains in effect. The debate over whether these special exemptions for derivatives are justified as a policy matter is discussed in Part V.A., below.

¹⁶⁶ See Joseph Checkler, *Lehman's First Bankruptcy Payout: \$22.5 Billion*, WALL ST. J. (Apr. 11, 2012, 1:33 PM), <http://online.wsj.com/news/articles/SB10001424052702304356604577337862433054558>.

pushed back the maturity of an asset of Firm C, exacerbating the mismatch that already characterizes its balance sheet due to its role as a maturity transformer. Firm C therefore suffers a liquidity shock. If it is running low on cash, perhaps because a financial panic has frozen credit marks and its short-term creditors are running, its inability to collect from Firm B could cause it to fail. Indeed, Firm C's status as a creditor of Firm B will increase its creditors' propensity to run because they will be uncertain about how Firm B's failure will affect Firm C's solvency and liquidity.

Could Firm C convert its bankruptcy claim to cash more quickly by selling it to a third party? In theory the answer is yes, but in practice this is unlikely to be an attractive option. The claim is an illiquid asset because its ultimate value is highly uncertain: the value will be based on the outcome of a bankruptcy proceeding that is likely to take years to complete. Prospective buyers therefore would be unwilling to buy the claim at its true expected value until they had spent time investigating Firm B's assets and liabilities and the likely legal issues in its bankruptcy proceeding. But time is something that Firm C will lack if all of its short-term creditors are demanding their money back. Thus, to convert the claim to cash quickly, Firm C would probably have to sell it at a deep discount not only to its face value but also to a reasonable estimate of its expected value. Such a sale would do little for Firm C's liquidity problem and might also threaten its solvency. The fact that a financial crisis is underway, and therefore that many prospective buyers will be especially reluctant to part with cash, will only tend to deepen the price discount.

Alternatively, could Firm C borrow the cash it needs to tide it over until it gets its bankruptcy payout from Firm B's estate? Under normal circumstances the answer should again be yes, but in a financial crisis the situation changes. Firm C's status as a creditor of a failed firm will make potential lenders suspect that it too is now insolvent. And any potential lender would rationally fear that its loan proceeds will be siphoned off by Firm C's short-term creditors in a run, forcing Firm C into bankruptcy and leaving the lender with a delayed bankruptcy payout. These factors increase Firm C's reliance on its \$100 claim against Firm B as a source of short-term funding, a source that bankruptcy denies.

While Firm C will probably find it difficult to engage in new borrowing, the same is not true of Firm B. Once a debtor files a bankruptcy petition, the automatic stay raises a barricade around its assets, reassuring post-petition lenders that their loan proceeds will not be drawn off in a run. And to protect post-petition lenders against the risk that the debtor is insolvent, the Bankruptcy Code gives them priority over pre-petition creditors in the division of the debtor's

assets.¹⁶⁷ The Code grants this priority so that the debtor can raise funds to pay its administrative claimants: the utilities, employees, trade creditors, lawyers, and accountants whose inputs a debtor consumes while in bankruptcy. For these reasons, a financial institution that has entered bankruptcy's safe haven during a crisis will usually be considered much more creditworthy than the financial institutions that remain outside.¹⁶⁸ Bankruptcy's capacity to increase a firm's creditworthiness is the reason that Lehman Brothers, despite being brought to its knees by a lack of liquidity, was able to obtain a new, \$450 million loan a few days after it filed for bankruptcy.¹⁶⁹

The three-firm example has demonstrated how bankruptcy misallocates cash during a financial crisis. Bankruptcy requires the payment of cash into the estate of the failed firm (Firm B), whose relative demand for cash is low due to the automatic stay and the priority granted to post-petition lenders. At the same time, bankruptcy denies cash to the debtor's short-term creditors (Firm C), whose demand for cash is high because of the risk that they will suffer a run. The example shows that if the economy is suffering a liquidity crisis, a bankruptcy filing by a firm with short-term debts to financial institutions will make the problem worse.

At first it might seem that Firm B's bankruptcy has made the financial sector more liquid in one respect: it has brought about the discharge of Firm A's short-term debt to Firm B, thereby reducing the denominator of the financial sector's overall cash ratio. But the analysis is incomplete until we consider what happens to the cash that Firm A has paid into Firm B's estate. One possibility is that the trustee will use the cash to pay administrative claimants, thereby displacing cash that the estate would have raised for this purpose through post-petition borrowing. But administrative claimants usually are not financial institutions; therefore, payments to them do not improve the financial sector's overall liquidity position. Alternatively, the trustee will simply hold onto the cash until it starts repaying Firm B's unsecured creditors.¹⁷⁰ Cash holdings by bankruptcy estates can be quite large: four years into the Lehman Brothers bankruptcy, the

¹⁶⁷ See 11 U.S.C. § 364(b) (allowing post-petition borrowing that is classified as an administrative expense); *id.* § 507(a) (prioritizing administrative expenses over prepetition unsecured claims). The Code also empowers the bankruptcy judge to give a post-petition lender a "priming" lien that is senior to the liens of pre-petition secured creditors. See *id.* § 364(d).

¹⁶⁸ See Kenneth Ayotte & David A. Skeel, Jr., *Bankruptcy Law as Liquidity Provider*, 80 U. CHI. L. REV. 1557, 1589–90 (2013) (describing how administrative priority for post-petition lenders alleviates debtor liquidity shortages).

¹⁶⁹ See Lehman Bros. Holdings, Inc., Current Report (Form 8-K), at 2 (Sept. 16, 2008), available at http://www.implu.com/releases/2008/20080922/14063/implu_viewer.

¹⁷⁰ As observed in note 162, *supra*, this cash could take the form of currency, but it is more likely to be a positive balance in a demand deposit account at a commercial bank.

estate still held \$14.3 billion in restricted cash, including \$10.9 billion in a fund reserved for paying unsecured claims.¹⁷¹

What the bankruptcy trustee is *not* likely to do is use the cash to make new loans or otherwise engage in maturity transformation. This certainly will be true if the debtor is liquidating, in which case its operations effectively cease except to the extent necessary to wind down its affairs. And even if the debtor is trying to reorganize, it is unlikely to engage in new lending during a financial crisis. Thus, regardless of whether the trustee holds the cash in a reserve fund or uses it to pay administrative claimants, the cash will effectively have left the financial sector upon entering the bankruptcy estate, not to reenter (in whole or part) until the proceeding is completed and creditors are repaid.¹⁷² For these reasons, Firm A's discharge of its short-term debt to Firm B will not improve the financial sector's overall cash ratio, as it will decrease the numerator (cash holdings) by the same amount it decreases the denominator (short-term debts). Combined with the increase in the duration of Firm C's claim against Firm B, the overall effect of Firm B's bankruptcy is to make the financial sector less liquid than it was before.

C. Multiparty Netting as a Liquidity Source

If, on the other hand, the bankrupt firm's contracts are centrally cleared, then its counterparties are spared a liquidity shock, and the financial sector's liquidity position is unambiguously improved. Recall from Part I that when a clearinghouse is introduced into the three-firm example, it can use its setoff right to cancel the obligations running to and from Firm B.¹⁷³ As a result, Firm A's cash payment does not enter Firm B's bankruptcy estate; rather, the clearinghouse intercepts the cash and relays it directly to Firm C. The effect on the three firms' balance sheets is shown in Table 3.

¹⁷¹ Linda Sandler, *Lehman, Affiliates Had \$14.3 Billion in Restricted Cash*, BLOOMBERG (Oct. 31, 2012, 9:52 AM), <http://www.bloomberg.com/news/2012-10-31/lehman-affiliates-had-14-3-billion-restricted-cash-correct.html>.

¹⁷² If the debtor is being liquidated instead of reorganized, its cash will reenter the financial sector at the end of the bankruptcy proceeding only to the extent it is used to repay financial-sector creditors.

¹⁷³ See *supra* Figure 2.

TABLE 3. SELECTED BALANCE-SHEET ITEMS, CLEARED CONTRACTS

	Firm A		Firm B		Firm C	
	Assets	Liabilities	Assets	Liabilites	Assets	Liabilities
Liquid/ Short-term	[Cash sent to C]	[Paid]	[Set off]	[Set off]	\$100 cash	Repos. etc.
Illiquid/ Long-term						

Through multiparty netting, the clearinghouse has prevented the double durational mismatch that Firm B’s bankruptcy caused when the contracts were bilateral. The short-term liabilities owed by Firms A and B have both been discharged, and no new debts have been created. Meanwhile, the cash that started with Firm A remains in the financial sector: it is now with Firm C, which is better able to survive a creditor run as a result. Like a bailout, the clearinghouse has increased the financial sector’s overall cash ratio, but it has done so by making better use of cash already in private hands. And, by fixing the amount of Firm C’s recovery immediately, the clearinghouse has reduced uncertainty about Firm C’s own solvency, decreasing the chances that a run on Firm C will begin in the first place.¹⁷⁴

Another way to understand the liquidity benefit of central clearing is to observe that the clearinghouse saves a debtor’s pre-bankruptcy, short-term creditors from being forced to serve as lenders to the bankruptcy estate.¹⁷⁵ Without the clearinghouse, the automatic stay effectively forces Firm C to extend Firm B’s estate \$100 in credit for the duration of the bankruptcy proceeding. Such an involuntary loan might be systemically unproblematic if Firm C is not itself suffering a liquidity shortage. But there is no general reason to assume that this is the case; Firm C’s known status as a creditor of a bankrupt firm implies that the opposite will be more likely. Introducing a clearinghouse forces Firm B to raise any cash it needs for administrative expenses from post-petition lenders, who lend voluntarily. And we can be confident that a firm that is willing to lend is not suffering its own liquidity shortage. In this way, the clearinghouse shifts the burden of

¹⁷⁴ When discussing the benefits of FDIC insurance for demand deposits, Richard Hynes and Steven Walt made the same general point about the banking system, noting that “[s]peed provides two closely related benefits: liquidity and confidence in the banking system.” See Hynes & Walt, *supra* note 157, at 1008. FDIC insurance is like a government bailout in that it involves a cash injection from a government entity to achieve these benefits, as contrasted with the clearinghouse’s method of obtaining these benefits through more efficient allocation of cash in private hands.

¹⁷⁵ See Ayotte & Skeel, *supra* note 168, at 1623 (“The automatic stay on ordinary creditors functions as a coerced loan, . . . as does the debtor’s ability to halt payments to its creditors.”)

the debtor's liquidity requirements to those lenders that can best bear it.

The Lehman Brothers bankruptcy is again useful to cite, here as an illustration of how clearinghouses can stabilize markets by increasing the speed and certainty of creditor payouts during a crisis. When it filed for bankruptcy, Lehman was a major trader in options, futures, and interest-rate swaps, all of which were centrally cleared, and in credit default swaps, which were not.¹⁷⁶ Clearinghouses resolved Lehman's cleared positions promptly without suffering disruptions attributable to illiquidity or asset fire sales.¹⁷⁷ By contrast, collateral posted to Lehman by the firm's credit default swap counterparties was still trapped in the estate several years after the bankruptcy filing, while other swap counterparties waited to be paid.¹⁷⁸ And the credit default swap market suffered disruptive price volatility immediately after the bankruptcy filing because of uncertainty about the identity of Lehman's counterparties and how much they would lose.¹⁷⁹

Not only does a derivatives clearinghouse speed up payouts to members, but it also simplifies the work of the failed member's bankruptcy trustee, which could translate into faster payouts for the outside creditors as well. Continuing with the three-firm example, multiparty netting via the clearinghouse means that Firm B's bankruptcy trustee does not have to enforce the estate's claim against Firm A, nor does she have to confirm and process Firm C's proof of claim. In a division of administrative labor, these tasks are handled by the clearinghouse instead. With fewer assets and creditors to sort out, the trustee may be able to complete her work more quickly, permitting faster payouts for Firm B's general creditors. While these outside creditors' total recoveries may be reduced by netting's redistributive effect (if Firm B is insolvent), the loss may be partly neutralized because of the time value of money and reduced administrative costs. The example shows how multiparty netting redistributes insolvency risk but not illiquidity risk; rather, it creates value by preserving liquidity that otherwise would be lost through bankruptcy.

While just about any asset-partitioning arrangement has the potential to accelerate creditor payouts, only a subset will reduce

¹⁷⁶ Chander & Costa, *supra* note 1, at 655–56.

¹⁷⁷ *See id.* at 655–56 (noting that clearinghouses resolved Lehman's futures and options positions within one week); Will Acworth, *The Lessons of Lehman: Reassessing Customer Protections*, FUTURES INDUSTRY, Jan./Feb. 2009, at 36 (noting that the clearinghouse LCH.Clearnet “was able to wind down more than 66,000 Lehman swap transactions in less than [one] month”).

¹⁷⁸ *See* Chander & Costa, *supra* note 1, at 657.

¹⁷⁹ *See id.* (citing Matthew Goldstein & David Henry, *Lehman: One Big Derivatives Mess*, BLOOMBERG BUSINESSWEEK (Oct. 7, 2008), <http://www.businessweek.com/stories/2008-10-07/lehman-one-big-derivatives-mess>).

systemic risk by providing the liquidity-partitioning benefits described here. Thus, the arrangement must cordon off short-term obligations to pay cash to a bankrupt debtor, and it must apply the cash toward prompt repayment of the debtor's short-term obligations to financial institutions. If the obligations to pay cash to the debtor are not short-term, then the bankruptcy might not cause cash to be misallocated, as the bankruptcy case could end before the obligations come due. And if the debt repaid does not consist of short-term obligations to financial institutions, then its repayment does not spare the financial sector a liquidity shock.

These observations suggest that a derivatives clearinghouse is particularly well situated to reduce systemic risk through liquidity partitioning. As noted in Part I, most derivatives contracts require that a termination payment be made immediately when one party files for bankruptcy. Unusually, the payment has to be made even if it is owed to, rather than by, the bankrupt party.¹⁸⁰ (By contrast, most debt agreements do not accelerate payment obligations if the lender rather than the borrower files for bankruptcy.¹⁸¹) For this reason, the obligations that a derivatives clearinghouse sets off are short-term in both directions. In addition, clearinghouse members are almost always financial institutions; therefore, the accelerated cash payouts they receive via the clearinghouse will almost always improve the financial sector's cash ratio. To be sure, faster payouts will not alone be sufficient to save a clearinghouse member that is actually insolvent rather than merely illiquid. As, however, the events of 2008 suggest, illiquidity rather than insolvency is the primary threat to most financial institutions during a financial crisis.¹⁸²

D. Liquidity Partitioning and Clearinghouse Stability

To this point the analysis has assumed that a failed clearinghouse member never pulls down the clearinghouse along with it. But of course a clearinghouse could fail in a severe crisis, potentially reducing liquidity by trapping cash in its own bankruptcy estate. Indeed, numerous critics have argued that the clearing mandate does little to reduce the likelihood of future bailouts because a derivatives clearinghouse would itself be the ultimate "too-big-to-fail" financial entity in a crisis.¹⁸³ But these critics have not considered how liquidity

¹⁸⁰ See *supra* text accompanying note 7.

¹⁸¹ Bankruptcy accelerates the debtor's own debts in the sense that they become payable at the end of the bankruptcy process unless the debtor is reorganized and the debt is reinstated. Therefore, bankruptcy often reduces the duration of the debtor's long-term debts, even while it effectively increases the duration of any short-term debts that would have come due before the case was completed.

¹⁸² See *supra* text accompanying notes 112–14.

¹⁸³ See Roe, *supra* note 6, at 1692 n.123 (collecting sources).

partitioning, besides accelerating cash payouts, also tends to stabilize a clearinghouse. Thus, history shows that clearinghouses are much more stable than their members, including during financial crises. And liquidity partitioning is a key reason for this stability, as it prevents clearinghouses from engaging in the type of maturity transformation that leaves their members vulnerable to liquidity shortages. Moreover, even if a clearinghouse were to fail, it would still expand netting opportunities and thus could still reduce illiquidity and uncertainty in the financial sector.

Clearinghouse failures are rare.¹⁸⁴ No clearinghouse in the United States has ever defaulted, despite financial crises that have brought down large clearinghouse members.¹⁸⁵ The 2008 crisis was no exception: all clearinghouses avoided financial distress, including those that cleared Lehman Brothers' options, futures, and interest rate swaps.¹⁸⁶ One reason that clearinghouses are stable is that members like Lehman tend to be dealers that maintain matched books. The clearinghouse encourages matched books by requiring members with unbalanced positions to post variation margin, which is costly.¹⁸⁷ For this reason, a failed member's liability to the clearinghouse tends to be small. Indeed, not only did Lehman's bankruptcy impose no net losses on clearinghouses, but they were able to return collateral that Lehman had posted.¹⁸⁸

Another reason that clearinghouses are stable is that, unlike their members, they do not engage in maturity transformation. Clearinghouses accept a member's short-term debts only to the extent that the member can provide liquid assets as security, in the form of either offsetting short-term claims or liquid collateral. This is the essence of clearinghouses' liquidity-partitioning benefit described earlier: the clearinghouse partitions off liquid assets and short-term debts in equal amounts, and it uses the first to pay the second. Members' additional short-term debt—and there usually will be a large amount, due to maturity transformation—remains outside the clearinghouse. As a result, outside creditors rather than the clearinghouse bear essentially all of the risk associated with members' illiquid assets. Such assets are the source not only of liquidity risk but also of most insolvency risk, as

¹⁸⁴ Randall S. Kroszner, *Can the Financial Markets Privately Regulate Risk? The Development of Derivatives Clearinghouses and Recent Over-the-Counter Innovations*, 31 J. MONEY, CREDIT & BANKING 596, 603 (1999) (“Derivatives clearinghouses have weathered the Great Depression, the Second World War, failures of major players such as Barings, and high levels of volatility . . . without a collapse.”). One clearinghouse that did collapse was based in Hong Kong; it succumbed after the Black Monday stock market collapse of 1987. See Kress, *supra* note 71, at 50.

¹⁸⁵ Kress, *supra* note 71, at 65.

¹⁸⁶ See Acworth, *supra* note 177, at 34.

¹⁸⁷ See *supra* text accompanying note 18 (describing the costs of posting collateral).

¹⁸⁸ See Acworth, *supra* note 177, at 36; Chander & Costa, *supra* note 1, at 658.

illiquid assets tend to fluctuate in value more than liquid assets do.¹⁸⁹ By avoiding exposure to fluctuations in the value of members' illiquid assets, the clearinghouse insulates itself from most of its members' illiquidity risk and insolvency risk, which is why a member's failure almost never brings down the clearinghouse itself.

The connection between clearinghouse stability and liquidity partitioning suggests an upper bound to the total amount of debt in the economy that could usefully be backed by clearinghouses. For a clearinghouse to remain more stable than its members, it must guarantee their debts only to the extent that they can give the clearinghouse the first claim to a matching amount of highly liquid assets. If a clearinghouse instead were to guarantee all of a firm's debt, it would have to reach further down the left side of the firm's balance sheet, accepting illiquid assets as collateral. The clearinghouse would then bear the firm's insolvency risk and be less stable. At the same time, the firm's lenders would bear less of the firm's insolvency risk and would charge lower interest rates as a result. In this way, the firm's cost of credit would no longer serve as an effective check on excessive risk taking by the firm's managers. The clearinghouse could try to impose that discipline—for example, by charging a fee tied to the riskiness of a member's overall balance sheet—but there is reason to doubt that a clearinghouse would be as effective as private lenders at monitoring insolvency risk. For these reasons, the systemic benefits of central clearing that this Article has identified require that clearinghouses guarantee member liabilities only to the extent that they can be matched with highly liquid assets. Such liabilities will necessarily be only a small subset of the total debt in the economy.

Even if, contrary to precedent, a clearinghouse did fail during a crisis, it still could speed up creditor payouts and thus mitigate systemic risk attributable to illiquidity and uncertainty. To see why, consider again the closed-circuit example from Part I. If trading is bilateral (Figure 3),¹⁹⁰ Firm A must pay \$100 into Firm B's bankruptcy estate, and Firm C must submit a \$100 proof of claim. At this point Firm C might or might not pay the \$100 it owes to Firm A, but in either case \$100 in cash has been paid into a bankruptcy estate. If, however, the three trades are centrally cleared (Figure 4),¹⁹¹ they net out, and Firm A does not pay cash into B's bankruptcy estate. And, importantly, this remains true even if we make the additional assumption that the clearinghouse is itself bankrupt. All three firms have

¹⁸⁹ Indeed, an asset's tendency to fluctuate widely in value is a reason it will be illiquid, as would-be buyers have to spend more time and resources appraising the asset before they become willing to pay a price equal to a reasonable estimate of its expected value.

¹⁹⁰ See *supra* p. 867.

¹⁹¹ See *supra* p. 868.

mutual \$100 obligations with the failed clearinghouse that they can cancel pursuant to their setoff rights. Therefore, neither Firm A nor Firm C (the two solvent members) must pay cash into the bankruptcy estate of the clearinghouse or that of the failed member (Firm B).

What has happened in this example is that netting within the clearinghouse has effectively transformed an obligation to repay a debt into a type of currency. Although creditors normally must be paid in cash, they typically are happy to accept cancellation of their own short-term debts in satisfaction of their claims. And netting within a clearinghouse increases opportunities for this to occur. Consider again the closed-circuit example and imagine that the \$100 owed by Firm C is represented by an IOU that Firm C has issued and that, in a bilateral market, would be in the hands of Firm A. Because of netting, Firm A is, in effect, able to require Firm B to accept this IOU in satisfaction of Firm A's debt. And Firm B, in turn, can use the IOU to repay its \$100 debt to Firm C. The IOU is now back in the hands of its issuer and hence is cancelled. No cash has changed hands and therefore none has been paid into a bankruptcy estate. And because each transfer of the IOU has occurred through setoff rights, the transfers can be made even if the clearinghouse itself is bankrupt. This capacity for a clearinghouse to transform a debt obligation into a medium of exchange is of obvious advantage during a liquidity shortage.

On the other hand, there will be situations in which a clearinghouse's bankruptcy will reduce liquidity in a crisis. This situation is shown by the open three-firm example (Figure 2).¹⁹² Normally, the presence of the clearinghouse prevents Firm A's \$100 payment from entering Firm B's bankruptcy estate, keeping the cash available for immediate relay to Firm C. But Firm A will have to pay the cash into the clearinghouse's bankruptcy estate instead if the clearinghouse has also failed, and Firm C will have to submit a \$100 proof of claim. In this example, the failed clearinghouse provides no evident liquidity advantage over a bilateral market.

To generalize from these examples, we can say that a bankrupt clearinghouse's impact on liquidity has two components. The clearinghouse increases liquidity, notwithstanding its own bankruptcy, to the extent it allows the netting of obligations from viable members that in a bilateral market would require cash payments to bankrupt members. But the bankrupt clearinghouse *decreases* liquidity to the extent that it does not allow netting of obligations from viable members that in a bilateral market would require cash payments to other viable members. Either way, netting is the driver: the more netting

¹⁹² See *supra* p. 865.

the clearinghouse permits, the greater its capacity to reduce illiquidity and uncertainty in a crisis despite its own bankruptcy. Previous scholarship has not recognized this mechanism through which a clearinghouse can reduce systemic risk even while bankrupt.

To be sure, the notion that a clearinghouse would ever be allowed to enter bankruptcy is controversial at best. As noted, many commentators believe that a derivatives clearinghouse is the ultimate too-big-to-fail entity and therefore would surely receive funds from the government if it became distressed.¹⁹³ The relevant point here is not that these commentators are wrong, but rather that a distressed clearinghouse can be a source of liquidity beyond any bailout cash it receives. Or put another way, the netting opportunities that a failed clearinghouse would still create would reduce the amount of bailout money needed to preserve the liquidity of its members.

IV

BUT DO WE NEED THE CLEARINGHOUSE?

The previous Part identified a systemic benefit of central clearing that has been overlooked in the debate over Dodd-Frank's clearing mandate: through multiparty netting, a clearinghouse speeds up cash payouts to a bankrupt firm's counterparties, reducing systemic risk attributable to illiquidity and uncertainty. This Part considers whether mechanisms other than central clearing could be equally effective at providing fast, reliable payouts to derivatives counterparties, making a clearinghouse unnecessary. It first considers whether the same benefits could be achieved with bilateral contracts, either through posted collateral rather than multiparty netting, or by repealing provisions in the Bankruptcy Code that currently preclude multilateral netting without a central counterparty. It then considers whether another provision of Dodd-Frank—its “orderly liquidation authority” for systemically important financial companies—will supplant traditional bankruptcy in financial crises, leaving clearinghouses with little systemic value to add. In each case, the conclusion reached is that a clearinghouse is a more reliable source of liquidity, either because posted collateral can become illiquid in a crisis or because the clearinghouse maintains an orderly claims structure that operates in a mechanical and hence more predictable manner.

¹⁹³ See Roe, *supra* note 6, at 1692 n.123; see also Julia Lees Allen, *Derivatives Clearinghouses and Systemic Risk: A Bankruptcy and Dodd-Frank Analysis*, 64 STAN. L. REV. 1079, 1103 (2012) (arguing that resolution of a clearinghouse by the FDIC under its orderly liquidation authority would be a “[l]ogistical impossibility”).

A. Contractual Alternatives: Collateral

Like the setoff right, a secured loan is an asset-partitioning arrangement: it overrides the pro rata rule to give the secured creditor the first claim to the debtor's assets designated as collateral.¹⁹⁴ And while secured creditors are normally subject to bankruptcy's automatic stay, special exemptions again apply to derivatives, allowing a party who has an open derivatives contract with the debtor to seize and sell posted collateral immediately when the debtor files for bankruptcy.¹⁹⁵ Therefore, posted collateral should, like netting, speed up payouts when a derivatives dealer fails. But is collateral an equally reliable source of liquidity? If it is, then the clearing mandate was seemingly unnecessary, as regulators could achieve the systemic benefits this Article has attributed to multiparty netting by aggressively exercising their power (also created by Dodd-Frank) to require that bilateral contracts carry more collateral.¹⁹⁶

There are several reasons that posted collateral is likely to be inferior to netting as a source of financial-sector liquidity during a crisis. Thus, when liquidity protection takes the form of collateral, a bankruptcy filing still results in a misallocation of cash. Taking again the three-firm example, and assuming bilateral contracts bearing posted collateral in the form of securities, Firm A would still have to pay cash into Firm B's estate when Firm B files for bankruptcy,¹⁹⁷ which remains a bad use of cash during a crisis for the reasons given in Part III. Meanwhile, Firm C will typically be unable to pay its short-term creditors using the securities posted by Firm B; it will need actual cash instead.¹⁹⁸ Therefore, the securities will protect Firm C from a liquidity shock only if they can be sold quickly in a crisis. But a crisis is precisely when normally safe collateral often becomes difficult to sell at a price reflecting its fundamental value.¹⁹⁹ It follows that there may be

¹⁹⁴ See *supra* text accompanying notes 151–53.

¹⁹⁵ See *supra* note 159 and accompanying text.

¹⁹⁶ See Dodd-Frank Wall Street Reform and Consumer Protection Act § 731, 7 U.S.C. § 6s (2012); *id.* § 764(a).

¹⁹⁷ Recall that Firm B's bankruptcy filing terminates its contract with Firm A and requires Firm A to make a termination payment. See *supra* note 164 and accompanying text. Despite the fact that Firm B's position is secured by collateral, Firm A's payment obligation would be in cash; Firm B would seize and try to liquidate the collateral only if Firm A defaulted on this obligation.

¹⁹⁸ An exception would be if the short-term creditors are repo counterparties who are willing to accept this particular type of collateral as security. Firm C might then be able to satisfy these creditors by giving them the collateral instead of unwinding the repo.

¹⁹⁹ See Pirrong, *Clearing and Collateral Mandates*, *supra* note 145, at 69 (describing how assets used as collateral are likely to drop in value at the same time that derivatives dealers are likely to default on their contracts); Edwards & Morrison, *supra* note 74, at 102 (describing how posted collateral is likely to be of little value to counterparties during times of economic distress because "prices would have collapsed long before most had a chance to liquidate their positions").

a delay between when Firm B defaults and when Firm C finds cash buyers for its collateral. The problem will be exacerbated if a fire-sale price spiral is underway and creditors throughout the economy are trying to liquidate the same type of security.²⁰⁰ Of course, regulatory measures that increase reliance on posted collateral will only make such a price spiral more likely.²⁰¹

What is worse, reliance on collateral could mean that a fire-sale price spiral is the *cause* of Firm B's bankruptcy in the first place. Thus, if the market price of the collateral securing Firm C's contract drops, Firm B may be contractually obligated to post more, which could cause it to suffer a liquidity shock and fail even if it is otherwise solvent.²⁰² No similar problem would arise if the contracts among the three firms were centrally cleared, because then the clearinghouse would always be hedged, making collateral unnecessary. Therefore, by reducing reliance on posted collateral as protection against counterparty risk, multilateral netting decreases the likelihood of liquidity shocks caused by fluctuations in the collateral's market price.

Regulators could try to prevent liquidity shocks caused by fire-sale price spirals by requiring that derivatives be secured by only the most liquid forms of collateral, such as U.S. Treasury bonds, the price of which actually rose during the 2008 crisis.²⁰³ But the derivatives market is massive and there is only so much super-safe collateral to go around.²⁰⁴ Moreover, a rule requiring counterparties to be fastidious

²⁰⁰ See PIRRONG, *Clearing and Collateral Mandates*, *supra* note 145, at 69.

²⁰¹ See PIRRONG, *INEFFICIENCY*, *supra* note 24, at 23 (noting how multilateral netting can avoid margin "collateral/margin calls," thereby avoiding "asset fire sales," which in turn "reduces the stress on market liquidity resulting from a default").

²⁰² See PIRRONG, *Clearing and Collateral Mandates*, *supra* note 145, at 69 (noting how "margin increases during periods of heightened market volatility . . . can create destabilizing feedback effects"). Firm A would also have to post more collateral to Firm B, which Firm B might then be able to "rehypothecate" (repost) to Firm C. But such rehypothecation would leave Firm B subject to a liquidity shock if Firm A subsequent failed.

²⁰³ See *Treasury Yield Curve*, U.S. DEP'T OF THE TREASURY, <http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/Historic-Yield-Data-Visualization.aspx> (last visited Mar. 4, 2014). On the Treasury Yield Curve, compare, for example, yields on November 3, 2008, with those one year earlier.

²⁰⁴ According to the Bank of International Settlements, the "gross market value" of derivatives that were not traded through exchanges (but that nonetheless may have been centrally cleared) in June 2013 was \$20 trillion. BANK FOR INT'L SETTLEMENTS, *STATISTICAL RELEASE: OTC DERIVATIVES STATISTICS AT END-JUNE 2013*, at 2 (2013), *available at* http://www.bis.org/publ/otc_hy1311.pdf. The figure represents the cost of replacing the contracts at current market prices, *id.*, which would be approximately the same as the total termination payments that would have been due had all contracts terminated at that point, before accounting for netting. Adding exchange-traded derivatives would of course increase that amount. By way of comparison, total U.S. Treasury debt held by the public on June 30, 2013, was \$12 trillion. See *The Debt to the Penny and Who Holds It*, TREASURYDIRECT, <http://www.treasurydirect.gov/NP/debt/current> (last visited Mar. 4, 2014).

about collateral would only exacerbate a shortage of safe collateral in the rest of the economy.²⁰⁵

When comparing the systemic advantages of collateral and netting, a final point to consider is the willingness of market participants to comply with regulations. As Part I noted, traditional collateral is a more expensive source of protection against counterparty risk because it requires that capital be tied up in low-risk (and hence low-yield) securities. Parties have an incentive to avoid these costs, either by dispensing with collateral or by using securities that are riskier (and thus have higher yields). Either form of evasion increases systemic risk. Therefore, regulations requiring that derivatives carry large amount of safe collateral will invite creative efforts at evasion that could cause the regulations' effectiveness to break down in unexpected ways in a crisis. Holding other considerations constant, multiparty netting is a cheaper method of protecting counterparties against liquidity shocks,²⁰⁶ suggesting that rules encouraging netting will see higher rates of compliance and thus be more effective.

B. Contractual Alternatives: Multiparty Netting Without Clearing

Multiparty netting may be better than posted collateral at persevering liquidity in a crisis, but is a central counterparty needed for multiparty netting? As noted in Part I, a central counterparty is currently a prerequisite because the Bankruptcy Code's allowance for set-offs requires mutuality, meaning that the debts to be offset are owed between the debtor and a single counterparty.²⁰⁷ And this requirement serves an important purpose, as it establishes which creditor has the first claim to a particular debt owed to the debtor.

Without mutuality, another mechanism would be needed for resolving priority disputes when the same debt has been pledged to multiple creditors. For example, imagine that Firms B and C agree that, if Firm B files for bankruptcy, any debts that Firm A owes it on swap contracts will go toward repaying any swap-contract debts that Firm B owes Firm C. Imagine further that Firm B subsequently enters into an identical contract with Firm D. When Firm B files for

²⁰⁵ Economist Gary Gorton has shown that it was the need for new types of triple-A rated collateral that spurred the market for market-backed securities and collateralized debt obligations backed by subprime loans, the financial instruments at the center of the 2008 crisis. GARY B. GORTON, *SLAPPED BY THE INVISIBLE HAND: THE PANIC OF 2007* (2010). Replacing the clearing mandate with rules encouraging use of highly rated collateral on all swap contracts would again encourage financial alchemists to synthesize new securities.

²⁰⁶ A countervailing consideration is that central clearing requires a certain amount of standardization across contracts, which can impose costs on an end-user if the standardized version of a contract does not hedge its business risk precisely. Bilateral contracts allow for greater tailoring in this respect.

²⁰⁷ See *supra* text accompanying note 14.

bankruptcy, who gets to collect from Firm A: Firm C or Firm D? For Firm C to establish priority, it would have to have something like a secured lien on Firm A's debt. This perhaps could be accomplished through a public filing system, but the filings would become extremely complex if parties expanded them to try to create the kind of many-firm, many-contract netting arrangements that are now possible through clearinghouses. As a result, even those firms that sought in good faith to comply with their netting contracts might be unsure whom to pay when a counterparty fails, introducing the type of delay and uncertainty that feeds a liquidity crisis. Mutuality cuts through this confusion by establishing priority via possession: a creditor has the first claim only to those debts to the debtor that the creditor itself owes. In this way, mutuality is like the rule whereby a secured creditor can establish rights in collateral by taking possession of it.

As an alternative, parties could achieve multiparty netting without a central counterparty if they were allowed to satisfy the mutuality requirement by buying claims against a debtor *after* it files for bankruptcy. In other words, Firm A would buy Firm C's claim after Firm B files for bankruptcy and then set the claim off against its payment obligation. The result would seemingly be the same as that achieved by a clearinghouse: Firm A's cash would be intercepted on its way to the bankruptcy estate and rerouted to Firm C. The Bankruptcy Code precludes this result by specifying that setoff is permitted only if mutuality existed before the bankruptcy filing.²⁰⁸ Would repealing this restriction be a better way to realize the systemic benefits of multiparty netting than requiring the use of clearinghouses?

The answer is no, which becomes evident once we make the realistic assumption that Firm C would not be the only creditor vying to sell a claim to Firm A. Rather, Firm C would have a great deal of competition given that a firm's total debts almost always outweigh its own short-term claims.²⁰⁹ Thus, once Firm B filed for bankruptcy, the price of claims against it would quickly be bid down. And, problematically, creditors from outside the financial sector would bid alongside financial-sector creditors like Firm C. If those other creditors won, Firm A's cash would leave the financial sector, exacerbating rather than mitigating a liquidity crisis. And even if Firm C did prevail, it would do so only by accepting the deepest discount on its claim, thereby potentially imperiling both its liquidity and its solvency.²¹⁰ More generally, there is no guarantee that post-petition claims trading

²⁰⁸ 11 U.S.C. § 553(a)(2)(A) (2012).

²⁰⁹ The Bankruptcy Code's setoff right does not require that the debts that are set off have equal maturities.

²¹⁰ Firm C's loss would be Firm A's gain in this context, but Firm C may be under greater liquidity pressure if the market knows that it is owed money on an open contract with the bankrupt debtor, Firm B.

would occur quickly enough to reassure markets that a failed firm's financial-sector creditors will be able to sell their claims for enough cash to keep them both liquid and solvent. To the contrary, the fire-sale conditions that would arise as creditors competed to sell their claims to the bankrupt firm's own debtors would create a great deal of uncertainty about how much, and how quickly, each creditor might recover on its claim, thereby exacerbating systemic risk.

A clearinghouse avoids such a scramble for liquidity because a bankrupt member's in-house creditors are assured that they will get the benefit of any cash owed to that member by its in-house debtors. Claims are converted to cash in an orderly fashion, reducing the type of uncertainty that can trigger runs. And the assurance of payment also means that financial-sector creditors are not forced into a trade-off between how much cash they receive and how quickly they receive it, a trade-off that would only increase market anxiety about their stability.

C. "Orderly Liquidation" as a Rapid-Resolution Alternative

According to legislative history, Dodd-Frank's solution to the liquidity problems created by traditional bankruptcy is not the clearing mandate; it is the "orderly liquidation authority" (OLA) for systemically important financial institutions.²¹¹ The OLA is modeled on the FDIC's traditional receivership authority over banks whose deposit accounts the FDIC insures. Dodd-Frank's Senate Report cites congressional testimony in which FDIC Chairman Sheila Bair argued that bankruptcy is unacceptable for "systemic financial organizations" because its "timing is uncertain and the process can be complex and protracted."²¹² Bair drew a contrast with the FDIC's receivership mechanism for FDIC-insured banks, which can "resolve financial entities much more rapidly than under bankruptcy."²¹³ For the OLA to be invoked, senior federal officials must determine that a systemically important financial company is distressed and that allowing it to file for bankruptcy would tend to destabilize the financial markets.²¹⁴ The company is then to be placed into receivership with the FDIC, which will have the power to manage its affairs while seeking a

²¹¹ Dodd-Frank Wall Street Reform and Consumer Protection Act §§ 201–217, 12 U.S.C. §§ 5381–5394 (2012).

²¹² *Establishing a Framework for Systemic Risk Regulation: Hearing Before the S. Comm. on Banking, Housing & Urban Affairs*, 111th Cong. (2009) (Statement of Sheila C. Bair, Chairman, FDIC), <http://www.fdic.gov/news/news/speeches/archives/2009/spjuly2309.html>; see also S. REP. NO. 111-176, at 5 (2010) (citing Chairman Bair's statement).

²¹³ *Id.*

²¹⁴ Dodd-Frank Act § 203(b), 12 U.S.C. § 5383 (2012). If the company is a broker-dealer, the FDIC is required to appoint the Securities Investor Protection Corporation as the company's trustee. *Id.* § 205.

solution to the systemic threat.²¹⁵ Judicial review is minimal: a district court hearing a challenge to the OLA's invocation has only twenty-four hours to decide that federal officials abused their discretion; if the court fails to act in that time, receivership begins automatically.²¹⁶

Although the OLA is modeled on traditional FDIC receivership, the FDIC will not be able to follow its standard receivership approach when acting under the OLA. Under its standard approach, the FDIC closes a failed bank late on a Friday, pays another bank to accept the failed bank's deposits over the weekend, and then liquidates the failed bank's assets over the course of several years.²¹⁷ This approach would not work for a large, systemically important financial company because the FDIC could not pay other firms to assume the distressed company's liabilities without putting a large amount of taxpayer funds at risk, thereby effecting the type of bailout that Dodd-Frank is supposed to prohibit.²¹⁸

In recognition that its traditional receivership approach will not work under the OLA, the FDIC has recently announced that it intends to follow an alternative approach, which it calls a "single point of entry" strategy.²¹⁹ Under that strategy, only the parent entity of a distressed financial company would be placed in receivership.²²⁰ Subsidiaries, which presumably would hold the company's operational assets and derivatives positions, would remain outside receivership and open for business.²²¹ If the company is insolvent, the FDIC would convert a sufficient amount of the parent entity's debt to equity;²²² if illiquid, the FDIC would arrange for a short-term loan from the Treasury Department secured by a first lien on the company's assets.²²³ Importantly, derivatives counterparties would not be able to treat the parent entity's receivership as an event of default that permits them to terminate their contracts.²²⁴ After solvency and liquidity were restored, the FDIC would oversee a restructuring of the overall

²¹⁵ *Id.* § 204(b).

²¹⁶ *Id.* § 202(a)(1)(A).

²¹⁷ *See Hynes & Walt, supra* note 157, at 988–89, 1001–03.

²¹⁸ *See* Dodd-Frank Act § 214(c), 12 U.S.C. § 5394 (2012) (providing that "[t]axpayers shall bear no losses from the exercise of any authority under this title").

²¹⁹ Resolution of Systemically Important Financial Institutions: The Single Point of Entry Strategy, 78 Fed. Reg. 76,614 (Dec. 18, 2013) [hereinafter SPOE Strategy].

²²⁰ *See id.* at 76,616.

²²¹ *Id.*

²²² *See id.*

²²³ *See id.* In particular, the loans would come from the "Orderly Liquidation Fund" that Dodd-Frank established in the Treasury Department. *See id.*; Dodd-Frank Act § 210(n), 12 U.S.C. §§ 5390 (2012).

²²⁴ *See* SPOE Strategy, *supra* note 219, at 76,616 ("[C]ounterparties to most of the financial company's derivative contracts would have no legal right to terminate and net out their contracts.").

company, which might entail splitting it into smaller entities and winding down any unprofitable business lines.²²⁵

If all went to plan, this strategy would preserve liquidity by preventing the seized financial company from defaulting on its short-term debts, including its derivatives positions. Whether the derivatives contracts were bilateral or centrally cleared would then have little systemic import. But the success of the single-point-of-entry strategy depends on a number of conditions that may not hold during a financial crisis. For example, it requires that the amount of debt owed by the seized company's subsidiaries be small enough that the company as a whole can be restored to solvency through cancellation of only the parent entity's debts.²²⁶ Preventing the subsidiaries of systemically important financial companies from taking on too much debt will therefore be a regulatory challenge, and it will be made more difficult because creditors will offer lower interest rates to lend at the subsidiary level, knowing that such debt is safer under the single-point-of-entry strategy. And once a company is seized, the fact that liquidity financing from the Treasury will take the form of senior secured loans could cause unsecured creditors at the subsidiary levels to fear that they might ultimately take losses after all; they may therefore continue to run on the company despite the parent's placement into receivership. Finally, the FDIC may simply lack the manpower to pursue the strategy fully in a financial crisis if, as happened in 2008, several large companies become distressed simultaneously.

The FDIC's most recent statement on the single-point-of-entry strategy acknowledges its practical limitations and thus makes clear that the FDIC does not see the OLA as a complete bankruptcy replacement for systemically important firms.²²⁷ Rather, the OLA is described as "a back-up authority" to be used only "if no viable private-sector alternative is available" and if "a resolution through the bankruptcy process would have serious adverse effects on U.S. financial stability."²²⁸ Another reason that the OLA is likely to be used sparingly is that there are concerns about its constitutionality: commentators generally agree that the authority gives extraordinary powers to the federal officials,²²⁹ allowing them to place a firm in

²²⁵ See *id.* at 76,620.

²²⁶ See *id.* at 76,623.

²²⁷ See *id.*

²²⁸ *Id.* at 76,615.

²²⁹ See, e.g., Dodd-Frank Wall Street Reform and Consumer Protection Act § 203(a)(1)(A), (b), 12 U.S.C. § 5383 (2012) (empowering the Treasury Secretary to designate a financial firm for orderly liquidation if, after receiving a recommendation from the Fed and the FDIC, the Secretary determines that the firm has defaulted on its debts or is in danger of doing so, that it presents a systemic risk, and that other options for unwinding it would be unavailing).

receivership and replace its directors and managers in a manner that tests the limits of due process.²³⁰ Indeed, Dodd-Frank itself contemplates that the authority should be reserved for exceptional circumstances.²³¹

By observing that central clearing accelerates payouts to derivatives counterparties, this Article has shown that a well-designed clearing mandate can reduce the situations in which the OLA would need to be invoked. Thus, there may be financial institutions whose derivatives contracts are the only systemically important aspect of their business. Their other operations, even if extensive, may not involve large amounts of short-term borrowing with vulnerable financial counterparties. An example from the 2008 crisis is Bear Stearns, which the Federal Reserve seems to have considered “too big to fail” solely because of its role as a dealer in bilateral derivatives markets.²³² Mandatory clearing would allow the systemically relevant operations of such a firm to be resolved quickly in case of financial distress, making bankruptcy an acceptable mechanism for disposing of the firm’s other assets and liabilities. In this way, central clearing would be a surgical alternative to the more drastic step of FDIC receivership.

On the other hand, if the OLA were invoked, clearinghouses could still serve a systemically valuable role. This would be especially true if the single-point-of-entry strategy were unable to stabilize the seized company, perhaps because investors and counterparties refused to continue transacting with subsidiaries for fear that the company remained insolvent even after all of its parent-level debt had been converted to equity. (Because they would take the form of secured loans, cash infusions from the Treasury could solve a liquidity problem but not a fundamental insolvency problem.) In such a case, clearinghouse netting would carve out a portion of the firm’s assets and liabilities for immediate, separate resolution. The clearinghouse would thereby reduce the administrative burden on the FDIC during periods when its resources are likely to be strained. Otherwise, the subsidiaries’ counterparties would likely suffer a liquidity shock while

²³⁰ According to Kenneth Scott, the OLA “squeezes pre-seizure due process down to the vanishing point,” giving “unprecedented power and discretion to an administrative official” in a manner that goes “far beyond banking law to the point of posing serious Constitutional problems.” Kenneth Scott, *Dodd-Frank: Resolution or Expropriation?* 1 (Feb. 29, 2012) (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1673849; see also Douglas G. Baird & Edward R. Morrison, *Dodd-Frank for Bankruptcy Lawyers*, 19 AM. BANKR. INST. L. REV. 287, 296–98 (2011) (observing that the OLA raises due process concerns but concluding that it ultimately passes constitutional muster).

²³¹ See Dodd-Frank Act § 203(a), (b), 12 U.S.C. § 5383 (2012) (providing that the Treasury Secretary can recommend that the OLA be invoked only after determining that alternatives, such as bankruptcy or a private workout, would be ineffective).

²³² See *supra* text accompanying note 53.

they waited for the FDIC to process their claims and repay them from the receivership estate.

These observations suggest that central clearing of derivatives will serve both as a substitute for, and complement to, the FDIC's receivership authority under the OLA. Central clearing of derivatives will reduce the need for the OLA to be invoked. And when an OLA receivership nonetheless proves necessary, central clearing will increase its probability of success by easing the administrative burden on the FDIC as receiver.

V

IMPLICATIONS FOR LAWMAKERS AND REGULATORS

This final Part considers implications of the Article's thesis for a pair of topics that are relevant to lawmakers and regulators. The first topic is the continuing debate over whether Congress should amend (or repeal) the Bankruptcy Code's special exemptions for derivatives contracts. The second is the question of how regulators can most effectively achieve the systemic benefits of central clearing as they issue the rules that implement the clearing mandate.

A. Clearinghouse Liquidity and the Safe Harbors for Derivatives

The Bankruptcy Code grants special exemptions—often called “safe harbors”—to a debtor's derivatives counterparties.²³³ The exemptions that relate to the automatic stay have already been noted: these allow parties to terminate their derivatives contracts, exercise setoff rights, and liquidate posted collateral immediately when their counterparty files for bankruptcy.²³⁴ In addition to these automatic-stay exemptions, the Code also exempts derivatives counterparties from avoidance actions that a bankruptcy trustee can normally bring to reverse preferential and fraudulent transfers.²³⁵ Legislative history suggests that Congress enacted the safe harbors to reduce systemic risk,²³⁶ but many commentators, including this one, have questioned whether they reliably have that effect.²³⁷

²³³ In addition to derivatives, the Code accords safe-harbor treatment to repo contracts, which function like overnight secured loans. See 11 U.S.C. §§ 546(f), 559 (2012) (exempting repos from rules against fraudulent and preferential transfers and from aspects of the automatic stay). For a defense of the repo safe harbors, see Goralnik, *supra* note 31, at 489–95 (arguing that the repo safe harbors allow repos to serve like demand deposits at traditional banks).

²³⁴ See *supra* notes 159 and accompanying text.

²³⁵ See 11 U.S.C. § 546(g) (2012).

²³⁶ See Edwards & Morrison, *supra* note 74, at 93–94 (citing H.R. REP. NO. 97-420, at 1 (1982)).

²³⁷ See, e.g., Stephen J. Lubben, *Repeal the Safe Harbors*, 18 AM. BANKR. INST. L. REV. 319, 321 (2010); Mark J. Roe, *The Derivatives Market's Payment Priorities as Financial Crisis Accelerator*, 63 STAN. L. REV. 539, 541 (2011); Michael Simkovic, *Secret Liens and the Financial Crisis of*

This Article's thesis implies that at least some of the safe harbors are justified when utilized by clearinghouses in particular. The justification is strongest for the automatic-stay exemptions, because these allow a clearinghouse to declare that termination payments on a bankrupt member's contracts are due immediately, regardless of any mismatch in the contracts' underlying maturity dates. Without these exemptions, a clearinghouse could run out of cash if the bankrupt member's out-of-the-money contracts (on which the clearinghouse would have to make payments on the member's behalf) matured before the member's in-the-money contracts (on which the clearinghouse would collect from other members), even if the member's book was matched in terms of its positions' net value. And the immediate setoff right avoids uncertainty about the clearinghouse's ability to intercept cash heading toward the member's bankruptcy estate and relay it promptly to other members.

The most forceful scholarly critique of the safe harbors has been aimed not at these automatic-stay exemptions²³⁸ but rather at the exemptions from the trustee's power to avoid preferential and fraudulent transfers. Thus, Mark Roe has described how these avoidance-power exemptions encourage credit runs in the form of collateral calls.²³⁹ The paradigmatic example is AIG, which, as noted in Part II, nearly failed for lack of liquidity in 2008 because it could not satisfy aggressive collateral calls by its swaps counterparties.²⁴⁰ These counterparties had been willing to buy credit protection from AIG without asking for initial margin because they assumed that they could demand collateral later if, as happened, AIG's credit rating deteriorated.²⁴¹ Normally, collateral posted by a struggling firm is unreliable because, if the firm files for bankruptcy soon thereafter, the collateral could be recalled as a preferential or fraudulent transfer.²⁴²

2008, 83 AM. BANKR. L.J. 253, 279 (2009); David A. Skeel, Jr. & Thomas H. Jackson, Essay, *Transaction Consistency and the New Finance in Bankruptcy*, 112 COLUM. L. REV. 152, 189 (2012); Squire, *supra* note 55, at 1200–01; but see Goralnik, *supra* note 31, at 496–97 (arguing that the exemptions for derivatives are valuable because they promote the creation of “synthetic” mortgage-related products” such as collateralized debt obligations).

²³⁸ For example, Edwards and Morrison argue that the securities used as collateral typically lack firm-specific value and therefore that their immediate seizure upon a debtor's bankruptcy filing does not threaten going-concern value, which the automatic stay ostensibly exists to protect. The authors treat this argument as an “alternative justification” for the automatic-stay exemptions, unrelated to Congress's concern with systemic risk. See Edwards & Morrison, *supra* note 74, at 106.

²³⁹ Roe, *supra* note 237, at 551, 565–66. For an argument that the automatic-stay exemptions can also promote run-like behavior by counterparties, leading them to liquidate collateral in a manner that could contribute to a fire-sale price spiral, see Edwards & Morrison, *supra* note 74, at 101–03.

²⁴⁰ See discussion *supra* notes 55–57.

²⁴¹ Roe, *supra* note 237, at 551.

²⁴² See 11 U.S.C. §§ 547, 550 (2012).

Therefore, by exempting swaps from the Code's rules against eve-of-bankruptcy transfers, Congress encouraged AIG's counterparties to rely on variation margin rather than initial margin,²⁴³ leading to the type of undercapitalization that Dodd-Frank's Senate Report laments. But Dodd-Frank does not repeal these avoidance-action exemptions; to the contrary, it extends them to derivatives counterparties of firms that are seized through the FDIC's orderly liquidation authority.²⁴⁴

While this critique of the avoidance-action exemptions is forceful as applied to bilateral counterparties, it does not seem as relevant to clearinghouses, which normally do not "run" on their members. As described in Part II, clearinghouses are blinkered monitors whose mechanical margin-posting rules largely disregard members' outside affairs, requiring variation margin to be posted based solely on changes in the market values of in-house positions. If a rumor were to spread that a clearinghouse member were about to file for bankruptcy, the clearinghouse would be less likely than the typical creditor to react by aggressively demanding collateral. It follows that a clearinghouse would neither initiate nor participate in the type of run that AIG suffered in 2008, both because the clearinghouse would have demanded more initial margin (leaving it less undersecured once the market turned against the member) and because it would have been less likely to act based on rumors as contrasted with real price movements (though the former can cause the latter).

In view of netting's superiority to posted collateral as a source of liquidity in a crisis, the eligibility of clearinghouses for the automatic-stay exemptions, which enable rapid netting, seem more systemically important than their eligibility for the avoidance-action exemptions, which apply primarily to margin collection.²⁴⁵ Nonetheless, posted margin remains important as a backup source of clearinghouse liquidity given that members cannot perpetually maintain matched books.²⁴⁶ And forcing clearinghouses to return collateral after a member files for bankruptcy would reduce the clearinghouse's liquidity to the extent that the securities serving as collateral have

²⁴³ See Roe, *supra* note 237, at 566 (arguing that AIG's derivatives counterparties would have been "better incentivized to have a strong credit structure early on" had they not been able to "grab and keep eve-of-bankruptcy preferences.").

²⁴⁴ See Dodd-Frank Wall Street Reform and Consumer Protection Act § 210(c)(8)(C)(i), 12 USC § 5390 (2012).

²⁴⁵ The Code does contain a few anti-preference rules that apply to setoffs rather than transfers of assets such as collateral. Thus, the Code disallows setoff if, during the ninety days before the debtor's bankruptcy petition, the creditor's claim against the debtor was transferred to the creditor by someone other than the creditor or was incurred for the purpose of obtaining a setoff right. Once again, derivatives counterparties are exempt. See 11 U.S.C. § 553(a)(2), (3) (2012).

²⁴⁶ See *supra* Part I.A.2.

remained liquid in a crisis. (It would also be a misallocation of a liquid asset during a crisis for the reasons given in Part III.) Combined with the fact that a clearinghouse is unlikely to participate in a run on its members, these observations suggest that the avoidance-action exemptions may also be justified when utilized by clearinghouses in particular.²⁴⁷

On the other hand, this Article's thesis suggests that the safe harbors should *not* be available to nonfinancial companies, which do not engage in maturity transformation and therefore have no structural reason to need to maintain low cash ratios. By using the avoidance-action exemptions to drain liquid collateral from a financial institution, a nonfinancial company could exacerbate a financial crisis. Dodd-Frank already recognizes the relevance of the distinction between financial and nonfinancial firms by providing an end-user exemption to the clearing mandate, under which a swaps contract need not be centrally cleared if one party to the swap is not a financial institution and is using it to hedge commercial risk.²⁴⁸ The logic of this distinction implies that Congress should consider narrowing the safe harbors so that they are not available to companies that would qualify for this end-user exemption.²⁴⁹

B. Implementing the Mandate to Maximize Liquidity

Regulators are still implementing Dodd-Frank by translating its general directives into specific rules. One implication of this Article's thesis is that regulators should not adopt the Senate report's view that the primary systemic function of the clearing mandate is to increase collateral postings on swaps contracts. Collateral can become illiquid in a crisis and, through forced selling, exacerbate a fire-sale price spiral, further destabilizing the financial sector.²⁵⁰ Instead, regulators should use the clearing mandate to maximize netting opportunities, which would more reliably reduce illiquidity and uncertainty when a clearinghouse member fails.

As a general rule, netting opportunities increase with the ratio of the number of cleared contracts to the number of clearinghouses. Regulators could increase this ratio by shrinking its denominator,

²⁴⁷ Darrell Duffie also argues that clearinghouses' eligibility for the safe harbors is systemically beneficial; he emphasizes the need for clearinghouses to be able to liquidate collateral promptly. See Darrell Duffie & David Skeel, *A Dialogue on the Costs and Benefits of Automatic Stays for Derivatives and Repurchase Agreements*, in *BANKRUPTCY Not Bailout: A Special Chapter 14*, at 133 (Kenneth E. Scott and John B. Taylor eds., 2012).

²⁴⁸ See Dodd-Frank Act § 723(a)(2), 7 U.S.C. § 2(h)(7)(A) (2012); § 763(a).

²⁴⁹ Other scholars have similarly argued that the eligibility of non-financial companies for the safe harbors is particularly difficult to justify. See, e.g., Lubben, *supra* note 237, at 328.

²⁵⁰ See *supra* notes 199–200 and accompanying text.

in the extreme case by forcing all derivatives through a single clearinghouse. But competition among clearinghouses has the advantage of encouraging innovations that reduce operating costs.²⁵¹ And, as Roberta Romano has described, international variation in financial regulation can provide systemic benefits by reducing risk correlations across borders.²⁵² This benefit of international regulatory competition would be lost if all trading were confined to a single clearinghouse subject to a single regulatory regime.²⁵³

These observations suggest that the better way to raise the contracts-per-clearinghouses ratio is to increase the numerator by subjecting more categories of swaps to the clearing mandate. To date, the CFTC has designated for mandatory clearing only four categories of interest rate swaps and two categories of credit default swaps.²⁵⁴ If the mandate remains this narrow in scope, it could actually reduce rather than increase netting opportunities. Thus, in bilateral markets, pairs of counterparties can engage in multicategory netting, meaning that they can agree to net out positions across contract types if they have more than one type of mutual contract.²⁵⁵ Multicategory netting is distinct from multiparty netting, which is what central clearing makes possible. To be sure, a clearinghouse can also engage in multicategory netting if it accepts multiple contract types. But if the clearinghouse clears only a few categories, it could reduce overall netting, with the multiparty netting opportunities it creates outweighed by the multicategory netting opportunities it precludes.²⁵⁶ Therefore, the right approach to the clearing mandate is suggested by the aphorism “in for a dime, in for a dollar”: regardless of whether the mandate was a good idea as an initial matter, now that the legislative commitment has

²⁵¹ FRENCH ET AL., *supra* note 117, at 117.

²⁵² Roberta Romano, *For Diversity in the International Regulation of Financial Institutions: Critiquing and Recalibrating the Basel Architecture* 77–78 (Yale Law & Econ., Research Paper No. 452, Mar. 11, 2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2127749.

²⁵³ See Sean J. Griffith, *Substituted Compliance and Systemic Risk: How to Make a Global Market in Derivatives Regulation* 37 (2012) (unpublished article) (on file with author) (describing dangers of uniformity in international regulation of swap clearinghouses).

²⁵⁴ See Clearing Requirement Determination Under Section 2(h) of the CEA, 77 Fed. Reg. 74,284, 74,336–37 (Dec. 13, 2012) (to be codified at 17 C.F.R. pts. 39, 50). The report states that the CFTC intends to consider adding other swap categories in the future. *Id.* at 74,287.

²⁵⁵ See 11 U.S.C. § 561(a)(6) (2012) (providing safe-harbor protection for “master netting agreements” that cover securities contracts, commodities contracts, and derivatives); FRENCH ET AL., *supra* note 117, at 116–17 (noting that many parties now rely on bilateral master swap agreements that permit netting of mutual exposures across multiple contract types).

²⁵⁶ Darrell Duffie & Haoxiang Zhu, *Does a Central Clearing Counterparty Reduce Counterparty Risk?*, 1 REV. ASSET PRICING STUD. 74, 76–77 (2011) (describing how the clearing mandate could undermine bilateral cross-category netting).

been made, regulators would do more harm than good if they created a limited mandate that reduced overall netting opportunities. Regulators could widen netting opportunities not only by adding more swap categories to the mandate but also by discouraging the formation of specialist clearinghouses that clear only particular contract types.²⁵⁷

A broad mandate will also tend to ease the burden on the FDIC in the exercise of its receivership powers under the orderly liquidation authority. Because clearinghouses are themselves rapid, orderly liquidators, transferring a financial company's bilateral swaps to a clearinghouse reduces the number of assets and liabilities that the FDIC would have to evaluate when deciding how to resolve the company's difficulties in receivership. Indeed, as Part IV argued, a broad clearing mandate could keep some distressed firms out of receivership altogether, a result that should be favored by observers who question both the constitutionality and the practical implications of the wide discretion that Dodd-Frank's OLA grants federal officials.

While the clearing mandate should be broad in terms of *which* contracts it covers, a different analysis applies to the question of *whose* contracts it should cover. Although the end-user exemption has been criticized on grounds that it invites abuse by parties seeking to evade the mandate,²⁵⁸ it makes sense in theory as a means of keeping clearinghouses stable. Unlike financial companies that serve as derivatives dealers, end-users do not try to maintain matched books. Rather, they primarily use derivatives to hedge an underlying business risk. This means that an end-user's derivatives positions tend to be positively correlated, increasing the likelihood that, if the end-user is a clearinghouse member and files for bankruptcy, it will have a large debit or credit with the clearinghouse. Either could cause the clearinghouse to suffer a liquidity shock. If a debit, the clearinghouse will have to make a large cash payment to the end-user's in-house creditors, which would drain the clearinghouse of cash if the end-user's posted collateral is inadequate or cannot be sold quickly. If a credit, the clearinghouse will have to make a large cash payment to the end-user's bankruptcy estate, which could be destabilizing if the end-user's in-house counterparties fail to pay their debts promptly. Thus, to insulate clearinghouses from liquidity risk, it would make sense for regulators to encourage clearinghouses to limit membership to derivatives dealers, and to permit clearinghouses to decline contracts offered for

²⁵⁷ Almost all central clearing of credit default swaps occurs through four clearinghouses: ICE Clear Credit, ICE Clear Europe, CME Group, and LCH Clearnet Limited. Clearing Requirement Determination Under Section 2(h) of the CEA, 77 Fed. Reg. at 74,287, 74,300. These clearinghouses handle other derivatives as well, including the interest rate swaps now subject to the clearing mandate. *Id.* at 74,290, 74,300.

²⁵⁸ See *id.* at 74,284, 74,317 (discussing the potential for parties to abuse the end-user exemption to evade the clearing mandate).

clearing if one counterparty appears unlikely to be able to maintain something close to a matched book.²⁵⁹

CONCLUSION

In a financial crisis, bankruptcy solves one liquidity problem by creating others. When a firm files for bankruptcy, the automatic stay blocks the collection efforts of its creditors, alleviating the firm's immediate need for cash. But its creditors are thereby deprived of liquidity, which will imperil them if they are financial institutions that have low cash ratios and are susceptible to runs by their own short-term claimants. The result could be "contagion," with the bankruptcy of one firm producing liquidity shocks that cause other firms to fail as well.

A clearinghouse, which acts as a central counterparty for dealers in financial contracts, improves cash allocation in a crisis. When one of its members files for bankruptcy, the clearinghouse engages in *liquidity partitioning*: it cordons off cash owed to the member and a matching amount of the member's short-term debts, and it uses the first to repay the second. As a result, cash that otherwise would enter the bankruptcy estate (where demand for liquidity is low) is diverted to financial-sector creditors (whose demand for liquidity is high). Like a bailout, the clearinghouse improves the financial sector's cash ratio. It does so, however, not by increasing the numerator (cash holdings) but rather by decreasing the denominator (short-term debt). Thus, rather than injecting new funds into the economy, the clearinghouse makes better use of cash already in private hands. Not only does the clearinghouse thereby reduce illiquidity, but it also reduces uncertainty about the impact of bankruptcy on the failed firm's financial-sector creditors, decreasing the risk that they will suffer runs by their own short-term creditors.

Although Dodd-Frank's clearing mandate for swaps contracts has been the subject of a wide debate, previous commentators have overlooked the liquidity-partitioning benefits of central clearing. Instead, the clearing mandate's proponents have focused on how clearinghouses redistribute balance-sheet losses, an effect that is zero-sum in its impact on creditors. Central clearing's impact on liquidity, by contrast, constitutes unambiguous value creation: some creditors are paid

²⁵⁹ The implication is that Bear Stearns and Lehman Brothers were good candidates for clearinghouse membership but AIG was not, since the former were dealers with matched books while AIG took large, one-sided positions on the credit default swaps it sold. See *id.* The better approach with an insurer like AIG is prudential regulation (which would limit the insurer's overall balance-sheet risk), perhaps combined with a scaling back of the safe harbors as applied to uncleared swaps so that the insurer's counterparties will do more to discourage the insurer from engaging in excessive risk taking.

more quickly, and no creditors are paid more slowly, than they would be without the clearinghouse. Indeed, the clearinghouse reduces the size of the failed firm's bankruptcy estate, which eases the administrative burden on the trustee and could lead to faster payouts for non-clearinghouse creditors a well.

Liquidity partitioning is also the reason that clearinghouses have historically been much more stable than their members. Thus, many observers have argued that Dodd-Frank's clearing mandate will do little to prevent future bailouts because clearinghouses are themselves "too big to fail." But these critics overlook an important difference between clearinghouses and other financial institutions such as banks and money-market mutual funds. The latter types of institution are vulnerable during crises because they engage in maturity transformation: they borrow short-term and invest the proceeds in long-term, illiquid assets. A clearinghouse, by contrast, has a temporally matched balance sheet that consists only of short-term assets and liabilities. Critics also have not observed how even a bankrupt clearinghouse creates opportunities for multiparty netting and thereby keeps cash from becoming trapped in a bankruptcy proceeding.

By identifying faster payouts as the primary economic benefit of central clearing, this Article has revealed how Dodd-Frank's clearing mandate can work in conjunction with another one of its controversial provisions: its orderly liquidation authority for systemically risky financial companies. Legislative history indicates that the function of the orderly liquidation authority is to resolve failed firms quickly during a financial crisis. But the authority has been criticized due to the vast and largely unreviewable powers it gives government officials to seize and liquidate a firm and fire its managers, even before the firm has defaulted on its debts. Critics of the orderly liquidation authority should support a broad clearing mandate, as clearinghouses also are rapid, orderly liquidators, but they follow predictable rules for resolving claims that leave little discretion either to officials or to clearinghouse managers. In other words, clearinghouses are both substitutes for and complements to the FDIC in its role as liquidator: they can obviate seizure by the FDIC, and if a firm is seized they can reduce the FDIC's workload in resolving it.

The observation that clearinghouses create value primarily by reducing illiquidity in a crisis has important implications for the rulemakers who are implementing the clearing mandate. Those rulemakers should disregard the legislative history's view that the clearing mandate's function is to increase collateral postings; securities used for collateral can suddenly become illiquid in times of distress, as the recent crisis demonstrated. Instead, clearinghouses should be structured to maximize netting opportunities among

members, which will occur if a wide variety of contracts are cleared through relatively few central counterparties. At the same time, nonfinancial companies should not be allowed to become clearinghouse members, an observation consistent with the clearing mandate's exemption for end-users. Such companies do not engage in maturity transformation and therefore do not tend to suffer the type of liquidity shortage that a clearinghouse alleviates. Nonfinancial companies also do not maintain matched books and thus are more likely to bring down the clearinghouse with them if they fail.

Considered in the context of broader trends, greater reliance on clearinghouse netting to speed up insolvency proceedings would be consistent with the ongoing search among both market participants and policymakers for alternatives to the traditional model of business bankruptcy. Under that model, a bankrupt firm's obligations are resolved through a grand bargain that is negotiated among managers and investors. For example, the trend among market participants in the last twenty-five years has been to favor quick asset sales over drawn-out, negotiated Chapter 11 reorganizations.²⁶⁰ Among government officials, dissatisfaction with traditional bankruptcy was evident even before the 2008 crisis in Congress's decision to exempt derivatives from key Bankruptcy Code provisions.²⁶¹ And, of course, the 2008 bailouts reflected doubt among officials about the adequacy of traditional bankruptcy, as did the inclusion of the orderly liquidation authority in Dodd-Frank.²⁶² The clearing mandate is consistent with this trend, as central clearing partitions a portion of a failed firm's assets in a manner that keeps the assets outside the bankruptcy proceeding and under the control of a separate entity, the clearinghouse, that can distribute them to creditors more quickly.

²⁶⁰ See Douglas G. Baird & Robert K. Rasmussen, Reply, *Chapter 11 at Twilight*, 56 *STAN. L. REV.* 673, 678–79 (2003).

²⁶¹ See *supra* Part III.B.

²⁶² See *supra* notes 212–13 and accompanying text.

