Ben S Bernanke: Clearinghouses, financial stability, and financial reform

Speech by Mr Ben S Bernanke, Chairman of the Board of Governors of the Federal Reserve System, at the 2011 Financial Markets Conference, Stone Mountain, Georgia, 4 April 2011.

The original speech, which contains various links to the documents mentioned, can be found on the US Federal Reserve System's website.

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I am pleased to speak once again at the Federal Reserve Bank of Atlanta's Financial Markets Conference. This year's conference covers an interesting mix of topics bearing on the vital ongoing global debate on how best to prevent and respond to financial crises.

Tonight I would like to discuss post-crisis reform as it relates to a prominent part of our financial market infrastructure – namely, clearinghouses for payments, securities, and derivatives transactions. This audience, I know, recognizes the importance of what is often called the "plumbing" of the financial system – a set of institutions that very safely and efficiently handles, under most circumstances, enormous volumes of financial transactions each day. Because clearinghouses and other parts of the financial infrastructure fared relatively well during the crisis – despite moments of significant stress – the public debate on financial reform has understandably focused on the risks posed by so-called too-big-to-fail financial firms, whose dramatic failures or near failures put our financial system and economy in dire jeopardy. Nevertheless, the smooth operation and financial soundness of clearinghouses and related institutions are essential for financial stability, and we must not take them for granted.

Importantly, title 8 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) contains provisions aimed at improving the transparency, resilience, and financial strength of clearinghouses, which the act calls *financial market utilities*. Recognizing the systemic importance of clearinghouses, title 8 also challenges U.S. regulatory authorities to improve and better coordinate their oversight of these institutions. Moreover, to put into effect the macroprudential or systemic approach to regulation and oversight encouraged by the Dodd-Frank Act, regulators will have to work to gain greater insight into the complex linkages among clearinghouses as well as those between clearinghouses and the financial firms that rely on and support them.

The development of clearinghouses and their economic rationale

Clearinghouses have been around a long time and have been used for many types of transactions, yet virtually all clearinghouses perform certain basic functions. Notably, by centralizing and standardizing specific classes of financial transactions, clearinghouses reduce the costs and operational risks of clearing and settlement among multiple market participants. In many cases they also act as a guarantor of transactions – the counterparty to every trade – thereby helping to reduce counterparty credit and liquidity risks. However, the flip side of the centralization of clearing and settlement activities in clearinghouses is the concentration of substantial financial and operational risk in a small number of organizations, a development with potentially important systemic implications. Because the failure of, or loss of confidence in, a major clearinghouse would create enormous uncertainty about the status of initiated transactions and, consequently, about the financial positions of clearinghouse participants and their customers, strong risk management at these organizations as well as effective prudential oversight is essential.

A historical perspective is helpful for understanding the economics of clearinghouses and the implications of their operations for financial stability. The first important clearinghouse in the United States, the New York Clearing House, was founded by New York City's commercial banks in 1853 to streamline the clearing and settling of checks. By one account, before the New York Clearing House was set up, the clearing and settlement process involved employees from 60 banks crisscrossing each other's paths through the city streets to present checks, a time-consuming process filled with "confusion, disputes and unavoidable blunders."[1] The establishment of the clearinghouse improved the situation almost immediately, resulting in significant savings in time, effort, and financial costs.[2] By the late 19th century, check clearinghouses had been established across the United States.[3] Large segments of the financial system came to rely on the efficiency and integrity of daily settlements by the clearinghouses. Indeed, as these institutions developed, the roles of clearinghouses and clearinghouse associations – the groups of firms that used and supported individual clearinghouses – went well beyond purely operational functions: In the years prior to the establishment of the Federal Reserve, to increase public confidence in banks, clearinghouse associations at times took on quasi-governmental supervisory functions – for example, by examining the financial condition of members rumored to be experiencing difficulties – and even served at times as lender of last resort to individual clearinghouse members.

In the securities and derivatives markets, the story unfolded a bit later and was more complex than in the case of checks. Nevertheless, many of the essential themes are the same. In 1892, on the centennial of the famous Buttonwood Agreement, the New York Stock Exchange took its first steps to improve clearing and settlement by creating a clearinghouse for limited types of brokers' trades.[4] Faced with growing volumes of trading and the associated clearing costs after World War I, the New York Stock Exchange took a further step in 1920 by establishing the Stock Clearing Corporation; this new clearinghouse reduced the number of checks needed for settlements by up to 90 percent and the volume of funds and credit needed by 70 percent or more.[5]

It was not until the dramatic increase in equity trading volumes in the late 1960s, however, that backlogs of trading tickets, confirmations, and delivery instructions caused the infamous "paperwork crisis" that led the exchange to curtail trading hours and close on Wednesdays for six months in order to manage the situation.[6] The paperwork crisis represented more than a set of operational problems for financial institutions and other market participants. Unprocessed instructions and delivery failures also increased the financial risks faced by many firms, leading to supervisory concerns about the ability of firms to control and monitor their securities holdings and exposures and to manage their financial positions appropriately.

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1 See J.S. Gibbons (1859), *The Banks of New-York, Their Dealers, the Clearing House, and the Panic of 1857* (New York: D. Appleton & Co), pp. 292–295.

2 See Gibbons, *Banks of New-York*, in note 1, pp. 307–308; and U.S. Office of the Comptroller of Currency (1920), Annual Report, vol. 2 (Washington: Government Printing Office, December), p. 849. Table 97 of the Annual Report, for example, contains time-series data on the settlement balances and the value of check exchanges for the New York Clearing House from 1854 to 1920. Other tables provide select contemporaneous data for a large number of check clearinghouses.

3 See U.S. National Monetary Commission (1910), "Clearing Houses and Credit Instruments: Including Clearing-House Methods and Practices by J.G Cannon; The Use of Credit Instruments in Payments in the United States by David Kinley," *Publications of National Monetary Commission*, vol. 6 (Washington: Government Printing Office).

4 Twenty-four stockbrokers met on May 17, 1792, under a sycamore, or buttonwood, tree to sign the agreement establishing what later became the New York Stock Exchange.

5 See New York Stock Exchange (1930), *Report of the President: May 1st, 1929–May 1st, 1930* (New York: NYSE), pp. 66–68.

6 See U.S. Securities and Exchange Commission (1971), *Study of Unsafe and Unsound Practices of Brokers and Dealers: Report and Recommendations (Pursuant to section 11 (h) of the Securities Investor Protection Act of 1970)* (Washington: Government Printing Office), pp. 13–14.

These risks clearly needed to be addressed. Pressed by the Congress and regulators, the industry began in the mid-1970s to establish central securities depositories and central counterparties (CCPs) to immobilize paper certificates, encourage multilateral netting of trades, reduce pre-settlement risk through the guarantee of trades, and conduct securities settlements through "book entries" to electronic records. The result of these efforts was a set of critical electronic infrastructures to centralize and coordinate clearing and settlement, including the establishment of CCPs to provide settlement guarantees and reduce counterparty risk.

The market for government securities saw reforms as well, following the failures in the early 1980s of several smaller government securities dealers and increasing concerns about the integrity of clearing in that market. In 1986, authorities and market participants developed a CCP for over-the-counter (OTC) government securities trades to augment bilateral clearing, at the time the dominant practice. Today, this CCP is part of the Fixed Income Clearing Corporation, a subsidiary of The Depository Trust & Clearing Corporation.

In the case of exchange-traded derivatives, the significant benefits of clearinghouses likewise became apparent over time. The Chicago Board of Trade (CBOT), now part of the CME Group, was established in 1848. After various experiments to manage the paperwork associated with growing trading volumes, the CBOT established a clearinghouse in 1883. Although the role of the clearinghouse was initially limited, it significantly reduced back-office work and the amount of funds and credit needed by its members.[7] In 1925, the members of the CBOT set up a full-fledged and independent central counterparty – The Board of Trade Clearing Corporation, now called The Clearing Corporation – to provide the guarantee and settlement functions that are familiar today.[8] Risk-management tools such as margining systems and default funds were adopted to backstop the guarantee provided by the clearinghouse. The use of CCPs for exchange-traded derivatives continues to evolve. For example, a new CCP that combines the clearing of futures on Eurodollars and U.S. Treasury securities with positions in fixed-income instruments, New York Portfolio Clearing, launched in March.

Clearinghouses and financial crises

As clearinghouses developed, their resilience – in particular, their ability to manage their liquidity and ensure the integrity of transactions under stressed conditions – was tested by financial shocks and crises. I'll briefly discuss three historical episodes that tested the financial infrastructure: the financial panic of 1907, the 1987 stock market crash, and the recent crisis. Although the clearinghouses of the time survived all of these episodes, in each case the problems they faced demonstrated potential vulnerabilities and a need for reform. More generally, these episodes warn us to remain vigilant and to guard against complacency; complexity and change in the financial system will continue to present new challenges to stability, as they have in the past.

I noted earlier the development of clearinghouses for checks in cities around the country in the second half of the 19th century. In the financial panic of 1907, which involved depositor runs on banks and trust companies in New York and elsewhere, check clearinghouses struggled to obtain the liquidity needed to complete daily settlements. To avoid settlement

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7 See The Clearing Corporation (2011), *A History: Trusting, Growing, Leading, Clearing* (Chicago: Board of Trade Clearing Corporation).

8 For a summary discussion of the historical development of Chicago futures clearing arrangements and their challenges, see Randall S. Kroszner (1999), "Can the Financial Markets Privately Regulate Risk?: The Development of Derivatives Clearinghouses and Recent Over-the-Counter Innovations," in "The Role of Central Banks in Money and Payments Systems," ed. David E. Altig, part 2 (special issue), *Journal of Money, Credit and Banking*, vol. 31 (August), pp. 596–618.

failures and address a wider need for liquidity, including liquidity being demanded by the anxious depositors of troubled banks, many clearinghouses followed a practice that sprang up shortly after the founding of the New York Clearing House. Specifically, members of the clearinghouse, as a group, issued collateralized loans in the form of "clearinghouse loan certificates" to those members that were short of liquidity needed for settlements; in a real sense, the clearinghouse served as a private-sector lender (or liquidity provider) of last resort. Some clearinghouses even issued small-denomination certificates that circulated widely outside the clearinghouse as a substitute for currency.[9] Although these measures were helpful, demands grew for public action to address the problem of recurrent panics. These demands ultimately led to the formation of the Federal Reserve in 1913, in part to act as a liquidity provider of last resort as well as to strengthen the supervision of state-chartered banks.

Eighty years later, the 1987 stock market crash provided a market wide test for securities and derivatives clearinghouses, as well as their members, banks, and related institutions.[10] Surging volumes of trades and extraordinary price volatility during the week of October 19th created errors and delays in confirming stock trades, severe operational and financial stress at clearing members, and heavy liquidity demands throughout the financial markets.[11] In the derivatives markets, multiple intraday margin calls were made to protect the clearinghouses, but banks sometimes delayed making key payments to and from the clearinghouses, adding to the uncertainty. Meanwhile, the clearinghouses themselves apparently absorbed significant amounts of intraday liquidity from the markets by collecting, but not always paying out, so-called variation margin – payments that investors were required to make as the values of their holdings plunged. In reviewing the episode, the Brady Commission noted that although the clearinghouse system avoided defaults, investor uncertainties about the viability of the clearinghouses, as well as about the ability of major broker-dealers to meet their obligations, intensified market fluctuations and panic.[12] In response, the public and private sectors worked together to address the weaknesses that had been revealed – for example, by clarifying the obligations that clearinghouses, clearing members, and settlement banks must assume and by bolstering the liquidity and security of the financial resources of clearinghouses.[13]

In 2008, clearinghouses and their members were again tested by significant financial shocks, both in the United States and abroad. Although the events of 2008 were not centered in equity-related markets, the measures taken after 1987 no doubt contributed to the resilience of clearing arrangements in the securities and derivatives markets. The official sector's support arrangements for financial firms and markets, including the Federal Reserve's

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[9] See National Monetary Commission, "Clearing Houses," in note 3, pp. 75–136. For a more modern account, see Gary Gorton and Donald J. Mullineaux (1987), "The Joint Production of Confidence: Endogenous Regulation and Nineteenth Century Commercial-Bank Clearing Houses," *Journal of Money, Credit and Banking*, vol. 19 (November), pp. 457–68.

[10] For an analytical perspective on the development of central counterparties and their functions in the context of the 1987 stock market crash, see Ben S. Bernanke (1990), "Clearing and Settlement during the Crash," *Review of Financial Studies*, vol. 3 (1), pp. 133–51.

[11] See U.S. Securities and Exchange Commission (1988), *The October 1987 Market Break: A Report by the Division of Market Regulation, U.S. Securities and Exchange Commission* (Washington: Government Printing Office, February); and U.S. Commodity Futures Trading Commission (1988), *Follow-Up Report on Financial Oversight of Stock Index Futures Markets during October 1987* (Washington: CFTC, January).

[12] See Presidential Task Force on Market Mechanisms (1988), *Report of the Presidential Task Force on Market Mechanisms* (Washington: Government Printing Office, January), pp. 52–53. The task force was headed by Nicholas Brady.

[13] For a discussion of potential reform initiatives. see Working Group on Financial Markets (1988), *Interim Report of the Working Group on Financial Markets submitted to the President of the United States* (Washington: Government Printing Office, May).

discount window lending and special liquidity programs, also indirectly eased liquidity pressures on the clearinghouses. In the global foreign exchange market, CLS Bank International, a system that began operating in 2002 with the purpose of addressing settlement risk, is widely credited with maintaining confidence for continued interbank trading and settlement of foreign exchange.

Overall, the historical record shows that clearinghouse arrangements have generally withstood even severe crises. This solid performance reflects good planning and sound institutional structures but also some degree of good luck, as crises have also revealed important vulnerabilities, vulnerabilities which prompted subsequent reforms by both the private and public sectors. Clearly, if we do not want to put all our trust in continued good fortune, we will have to continue to be proactive in identifying and remedying weaknesses in these critical infrastructures.

Clearinghouses and financial reform

Broadly speaking, the recent financial reform legislation bears on the future structure and role of clearinghouses in two different ways. First, it aims to increase the resilience of these critical institutions against severe financial shocks, the issue that I have emphasized thus far. Second, it also encourages the greater development and use of clearinghouses to address weaknesses identified in other parts of the financial system. Of course, increased reliance on clearinghouses to address problems in other parts of the system increases further the need to ensure the safety of clearinghouses themselves. As Mark Twain’s character Pudd’nhead Wilson once opined, if you put all your eggs in one basket, you better watch that basket.

The theme of expanded use of clearinghouses as a tool to address other problems in the system is perhaps best illustrated by the derivatives provisions of the Dodd-Frank Act. Prior to the crisis, some of the same economic forces that had led to the development of clearinghouses for other instruments were already pushing industry participants toward greater use of clearinghouses for OTC derivatives transactions. For example, as one response to the growth of the market for interest rate swaps in the early 1990s, a clearinghouse was created in London in 1999 that, by the onset of the financial crisis, was handling a major portion of interdealer activity in those swaps.[14] Also, in the years leading up to the crisis, the Federal Reserve Bank of New York initiated joint efforts with other regulators and market participants to improve clearing arrangements for credit default swaps. However, for several reasons, the willingness of market participants to move all derivatives transactions to clearinghouses was limited. Notably, many believed that the standardization of derivatives contracts that is needed for multilateral clearing imposed too high a cost on end users with needs for customized arrangements. Market participants also were concerned that the establishment of clearinghouse guarantees might require implicit subsidies from clearinghouse members with stronger credit to those with weaker credit.

These calculations, however, were substantially changed by the galvanizing events of 2008, notably the development of large and uncertain counterparty credit risks in many bilateral derivatives agreements. On the heels of the crisis, the Group of Twenty countries endorsed a policy of mandatory central clearing for standardized OTC derivatives. The aim was to reduce systemic risk in the financial system more broadly as well as to improve the transparency of the OTC derivatives markets. In the United States, title 7 of the Dodd-Frank Act incorporated a mandatory clearing policy for standardized derivatives. Other major countries are following suit. In the spirit of keeping a close eye on the basket, as dependence

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[14] See Committee on Payment and Settlement Systems and the Euro-Currency Standing Committee of the Central Banks of the Group of Ten Countries (1998), *OTC Derivatives: Settlement Procedures and Counterparty Risk Management* (Basel, Switzerland: Bank for International Settlements, September) http://www.bis.org/publ/cpss27.pdf.

on clearinghouses grows, private-sector participants and regulators will need to review risk-management and member-default procedures for financial market utilities to ensure that they meet high standards of safety.

As I mentioned, strengthening the financial infrastructure is indeed a key theme of the Dodd-Frank Act. Title 8 addresses several prudential issues associated with clearing and settlement. One important provision provides additional authority for U.S. regulators to set enhanced and consistent risk-management standards for systemically important financial market utilities, taking into consideration relevant international standards and existing prudential requirements. Another provision encourages more intensive supervision of clearinghouses (including required annual examinations) along with strengthened cooperation among the relevant regulatory agencies. And, as in other major countries, Dodd-Frank permits systemically important financial market utilities to apply for accounts at the central bank (in the U.S. context, at the Federal Reserve Banks) and to obtain payment services. These utilities could also be given access to emergency credit if private-sector sources are exhausted, under terms set by the Board and subject to authorization by the Board in consultation with the Secretary of the Treasury.

As is well understood, the existence of emergency credit facilities for financial market utilities could give rise to moral hazard (for example, in the form of insufficient attention by clearinghouses to establishment of private-sector liquidity arrangements in advance of a crisis). To minimize moral hazard concerns, the Federal Reserve believes it essential that the regulatory regime for these institutions include strong prudential requirements for credit and liquidity risk management, robust liquidity buffers, the maintenance of adequate amounts of high-quality collateral, and effective member-default procedures.

The Board is working hard to implement the new statutory provisions of title 8. We are actively collaborating with the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) on the setting of regulatory standards and plans for the supervision of financial market utilities. We have recently published for comment proposed risk-management standards that would apply to financial market utilities that would be supervised by the Board under title 8. These standards track the existing standards published in the Board's Payment System Risk Policy, which in turn are based on existing international standards.

For the longer term, the Federal Reserve is working closely with the SEC and the CFTC as well as securities regulators and central banks from more than 20 other countries to revise and strengthen the existing international standards for the major types of financial market utilities. This work is being carried out by the Committee on Payment and Settlement Systems and by the Technical Committee of the International Organization of Securities Commissions. These two committees published new international standards for public consultation in March. We hope that the regulatory agencies in the United States, and those in other major countries, can adopt a single set of enhanced risk-management standards that will apply to all systemically important financial market utilities globally.

Coordination among regulators, both within and between countries, is especially important in light of the increasing interdependencies among financial market utilities around the world.[15] What was once a landscape of numerous, separate clearinghouses that operated largely independently from one another has now become dominated by fewer and larger clearinghouses supporting more integrated markets and consolidated, global financial firms. Moreover, the same globally active banks participate in all of the major clearinghouses, and

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[15] Reflecting on these changes, a 2008 report by the Bank for International Settlements Committee on Payment and Settlement Systems noted the extensive scope of interdependencies among these financial market utilities. See Committee on Payment and Settlement Systems (2008), *The Interdependencies of Payment and Settlement Systems* (Basel, Switzerland: BIS, June) http://www.bis.org/publ/cpss84.pdf.

the major clearinghouses often rely on similar sets of banks for payment services, funding, settlement, and emergency liquidity. In such a world, problems at one clearinghouse could have significant effects on others, even in the absence of explicit operational links. The need for strong risk management and oversight will only increase as we go forward.

Conclusion

Clearinghouses around the world generally performed well in the highly stressed financial environment of the recent crisis. However, we should not take for granted that we will be as lucky in the future. Past crises, including the financial panic of 1907 and the 1987 stock market crash, led to significant reforms and improvements in clearing and settlement that paid off in subsequent periods of financial stress. Given the growing interdependencies among clearinghouses, along with the new mandates for central clearing, now is a good time to reflect on the lessons of the recent crisis and consider whether further improvements are possible.

For more than a century, financial stability has depended on the resilience under stress of clearinghouses and other parts of the financial infrastructure. As we rely even more heavily on these institutions in the United States and around the world, we must do all that we can to ensure their resilience, even as our financial system continues to evolve rapidly and in ways that we cannot fully predict. In short, I think Pudd'nhead Wilson would agree that that is one important basket.