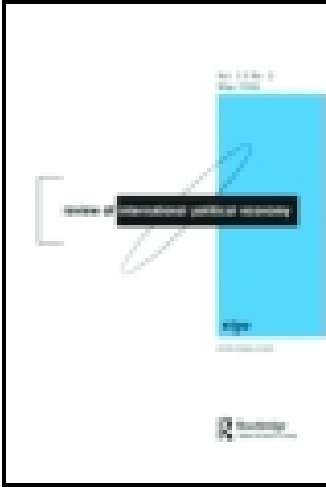


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# What were they thinking? The Federal Reserve in the run-up to the 2008 financial crisis

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## ABSTRACT

The Federal Reserve (the Fed) is responsible for monitoring, analyzing and ultimately stabilizing US financial markets. It also has unrivalled access to economic data, high-level connections to financial institutions, and a large staff of professionally trained economists. Why then was it apparently unconcerned by the financial developments that are now widely recognized to have caused the 2008 financial crisis? Using a wide range of Fed documents from the pre-crisis period, particularly the transcripts of meetings of the Federal Open Market Committee (FOMC), this paper shows that Fed policymakers and staff were aware of relevant developments in financial markets, but paid infrequent attention to them and disregarded significant systemic threats. Drawing on literatures in economics, political science and sociology, the paper then demonstrates that the Fed's intellectual paradigm in the years before the crisis focused on 'post hoc interventionism' – the institution's ability to limit the fallout should a systemic disturbance arise. Further, the paper argues that institutional routines played a crucial role in maintaining this paradigm and in contributing to the Fed's inadequate attention to the warning signals in the pre-crisis period.

## KEYWORDS

Federal Reserve; Fed; financial crisis; financial innovation; regulation; free-market ideology; organizational routines; constructivism.

## 1. INTRODUCTION

The explosive growth of subprime mortgages and credit derivatives played a central role in the 2008 financial crisis, magnifying the systemic

risks associated with the housing bubble in the United States (e.g., Engelen *et al.*, 2011). Regulators have been criticized for failing to appreciate the dangers, and for not working to avoid the crisis, even if they could not have predicted its precise timing, or completely prevented it (e.g., Buitier, 2012; Gorton, 2012; Johnson and Kwak, 2010; Roubini and Mihm, 2010). Little work has been done, however, on exactly *why* regulatory agencies did not seem sufficiently concerned, even though prominent commentators and media sources were raising alarms at the time (e.g., Borio and White, 2004; Buffett, 2003; Rajan, 2005). While the study of Barth *et al.* (2012) is an exception, it covers a range of regulatory agencies rather than providing an in-depth analysis of particular institutions. In this paper we conduct an analysis focusing on the Federal Reserve (the Fed) to reveal and explain the institution's thinking in the run-up to the crisis – where 'thinking' means both the research the Fed was generating, and the policy debates that were being carried out by its main decisionmaking body, the Federal Open Market Committee (FOMC).

The focus on the Fed is worthwhile for several reasons. The Fed is arguably the most powerful and prestigious economic agency in the world with unique 'epistemic authority' (Obstfeld *et al.*, 2010; Rosenhek, 2012). Although in the pre-crisis period the Fed shared regulatory oversight of the financial sector with the Federal Deposit Insurance Corporation (FDIC) and the Office of the Comptroller of the Currency (OCC), it nonetheless had authority over bank-holding companies. Crucially, the Fed has been responsible for oversight of systemic financial stability in the US economy. One of its core mandates is 'maintaining the stability of the financial system and containing systemic risk that may arise in financial markets' (Federal Reserve, 2005a), and the Gramm-Leach-Bliley Act of 1999 recognized it as the 'umbrella regulator' of the financial system (Mayer, 2001).<sup>1</sup> As the Fed's arguably most famous former Chairman, Alan Greenspan, emphasized in a speech after the crisis, '[a]side from the setting of the federal funds rate and the management of its investment portfolio, the Board [of the Fed] has always had a responsibility to address systemic risk' (Greenspan, 2010: 19).<sup>2</sup>

The Fed was well-positioned to monitor and study financial markets in the pre-crisis period. It employed around 500 professional economists, many from top PhD programs, ostensibly providing it with greater analytical capabilities than any other US regulatory agency for examining economic and financial developments. It has had unique access to information from the US financial sector, via its 2500 supervisory staff as well as its top officials with multiple formal and informal contacts within the financial sector. In short, the Fed was in a privileged situation to assess unfolding events in the pre-crisis period.

Were Fed staff and policymakers aware of and concerned about financial innovations and their implications for systemic risk? What factors

explain the Fed's perspective on the pre-crisis developments? Given the Fed is required by law to make publicly available a range of internal documents from which its thinking can be, at least partially, traced, we are able to address these questions through a combination of qualitative and quantitative analysis of Fed documents. We particularly focus on the FOMC transcripts, which are released with a five-year delay. Although previous research has extensively used the FOMC transcripts (e.g., Chappell et al., 2005; Hayford and Malliaris, 2005; Meade and Thornton, 2011; Schonhardt-Bailey, 2013), to our knowledge, this paper is the first to analyze these transcripts in depth to explore the Fed's pre-crisis thinking. In general, there has been scant research on the Fed's thinking in the years preceding the crisis.<sup>3</sup>

We find that there was definitely awareness at the Fed, both in research and policy discussions, of a potential housing bubble, and of the risks of new financial instruments and practices. However, this awareness seemingly never reached the 'critical mass' necessary to trigger sustained attention or concern. Strikingly, research and policy deliberation very infrequently touched on the financial activities that are now known to have led to the collapse.

Previous works have posited a number of reasons for the failure of regulators to understand the dangers posed by the housing bubble and mortgage securitization, including: regulatory capture, free-market ideology, use of mathematical models with little relevance for actual financial developments, and a narrow focus on inflation-targeting (e.g., Johnson and Kwak, 2010; Roubini and Mihm 2010; Barth *et al.*, 2012; Engelen *et al.*, 2011; Stiglitz, 2011). In the case of the Fed, there is no evidence of capture in the narrow sense of corruption and bribery, and we find that the roles of ideology as well as the influence of abstract economics models were more complicated than often suggested. It is too simplistic to characterize Fed policymakers and research staff as blindly following free market ideology or abstract theoretical models. In particular, there was recognition within the FOMC, including by Greenspan, that bubbles could occur and financial actors could underestimate risks. In this regard, even 'cognitive capture', namely the Fed's deference to the financial sector, is difficult to substantiate (Buitier, 2012; Barth *et al.*, 2012). Further, inflation-targeting by itself does not adequately explain the Fed's infrequent attention to financial threats, and the Fed has always placed price stability, low unemployment, and economic growth on 'equal footing' (Schonhardt-Bailey, 2013, 19).

We stress two interrelated aspects of the Fed's functioning that the literature does not adequately address. First, the Fed policymaking was characterized by a dominant paradigm, which we call 'post hoc interventionism'. Post hoc interventionism held that bubbles were difficult to spot correctly, and that if a bubble developed, it could effectively be

controlled after it had burst. Further, preventative pricking of bubbles could lead to an unnecessary economic contraction. Thus, monetary policy, instead of aiming at bubbles, should focus on flexible inflation targeting. Post hoc interventionism explains in part the Fed's de-emphasis on financial stability in favor of inflation targeting.

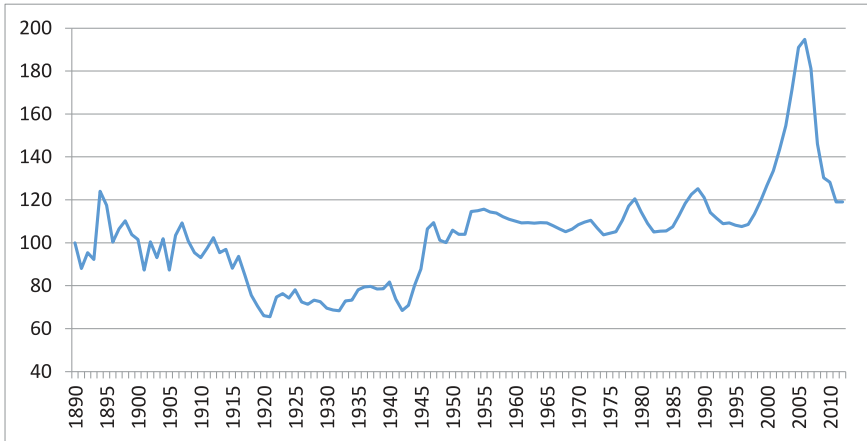
Second, we argue that the Fed's institutional structure, conventions, and routines were crucial in maintaining post hoc interventionism as well as in undermining the impact of contrary events and dissenting opinions, as suggested by the literature on institutional pathologies in sociology and political science (e.g., Barnett and Finnemore, 1999; Vaughan, 1999; Hopf, 2010; Lombardi and Woods, 2008; Powell and DiMaggio, 1991; Weaver, 2008). This constructivist literature, to our knowledge, has not previously been applied to the Fed.

The paper starts by reviewing the financial causes of the crisis (Section 2), followed by an in-depth analysis of FOMC transcripts and other Fed documents in the pre-crisis period (Section 3). It then assesses the literature explaining the Fed's limited attention to financial risks (Section 4) before turning to the roles of 'post hoc interventionism' and institutional routines in inhibiting the Fed's ability to understand the dangers posed by new financial developments (Section 5). The conclusion summarizes and outlines an agenda for future research (Section 6).

## 2. CAUSES OF THE FINANCIAL CRISIS: A BRIEF OVERVIEW

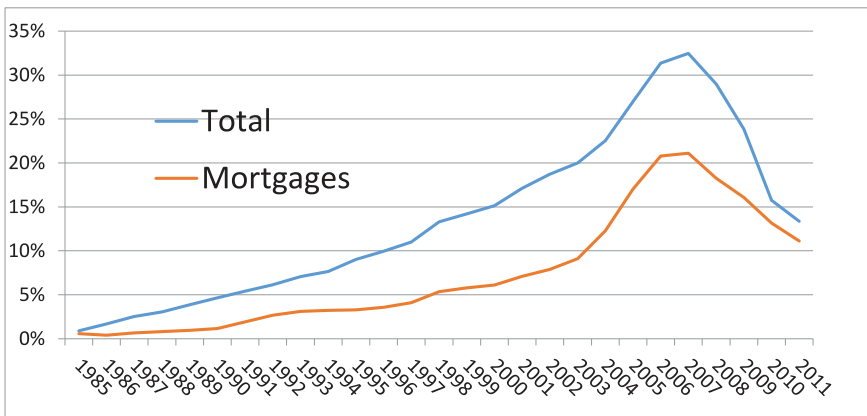
Although the causes of the crisis are multifaceted (Helleiner, 2011; Kotios and Galanos, 2012; Krugman and Wells, 2010), scholars generally agree that a boom and bust in housing markets, fuelled by leverage, securitization and structured finance, played a central role (e.g., Engelen *et al.*, 2011; Gorton, 2012; Johnson and Kwak, 2010; Roubini and Mihm, 2010).<sup>4</sup> The collapse of the housing market was, thus, the proximate cause of the crisis. Figure 1 demonstrates the historically unprecedented rise and fall of US housing prices in the 2000s.

The boom in sub-prime lending and securitization in the United States marked the pre-crisis period. Figure 2, using data from the Fed's own flow of funds accounts illustrates the boom in securitization, showing asset-backed securities (ABSs) outstanding as a share of GDP. Mortgage-backed securities (MBS) account for the preponderance of ABS, amounting to about a fifth of the GDP at the 2007 peak. This period also included a massive increase in MBSs issued by private institutions, which made greater use of sub-prime mortgages than the MBSs issued by the traditional Government Sponsored Enterprises (GSEs), which had predominantly consisted of prime mortgages (Figure 3; Johnson and Kwak 2010: 144–6).

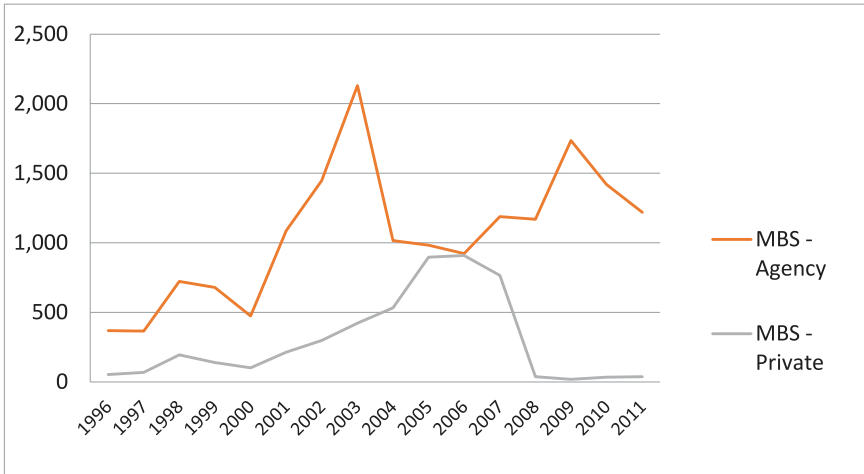


**Figure 1** US Case-Shiller housing price index, inflation adjusted, 1890–2012  
 Source: Robert Shiller’s website.

Although there is nothing inherently risky about securitization, even of sub-prime mortgages – securitization can be an effective way of spreading and diversifying risks –, the low quality of sub-prime mortgages and the complexity of financial instruments contributed to the accumulation of systemic risk leading up to the 2008 crisis. Mortgages increasingly included adjustable rates (ARMs) as well as ‘teaser’ rates and even NINJA loans (no income no job no assets) (Mason and Rosner, 2007). At the same time, MBSs consisting of pools of mortgages were split into tranches with differing levels of risk: senior (about 80 per cent of the



**Figure 2** US asset backed securities outstanding, share of GDP (%)  
 Source: Authors’ calculations from the Federal Reserve Flow of Funds accounts.



**Figure 3** US total mortgage-related security issuance \$ (billion USD)

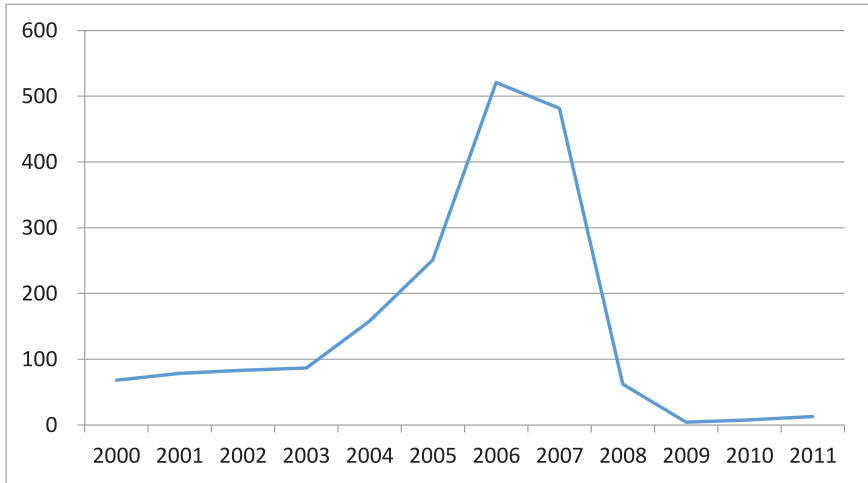
Source: Securities Industry and Financial Markets Association.

pool), mezzanine (15–20 per cent) and equity (about 3 per cent). The senior tranche was viewed as very safe, and typically evaluated as AAA by the credit ratings agencies, since a default rate of 20 per cent was viewed as extremely unlikely.<sup>5</sup> Equity or mezzanine tranches of MBSs were tranching into CDOs, which were in turn tranching again into CDO squared or even CDO cubed. Then, the senior tranches of CDOs would often receive high ratings, despite their origins in the equity tranches of the original MBS, under the faulty assumption that the low correlation of defaults would continue indefinitely (MacKenzie, 2011). Figure 4 shows that the global value of CDO issuance accelerated markedly in 2004, approximately doubling from 2003, and nearly doubling again in each of 2005 and 2006 before dropping off slightly in 2007 and then collapsing in 2008.<sup>6</sup>

Significantly increasing systemic risk, credit default swaps (CDS) allowed holders of structured products to insure against default (Stulz, 2010). Figure 5 shows the explosion of the notional value of CDS outstanding in 2005–2007, reaching a peak of nearly \$60 trillion. For instance, as we now know, American International Group's (AIG's) heavy issuance of CDSs raised systemic risk by lowering the perceived risks of holding structured products, but in fact increasing the vulnerability of AIG and the financial system as a whole. Moreover, these new derivative products were traded on over-the-counter (OTC) markets with limited transparency.

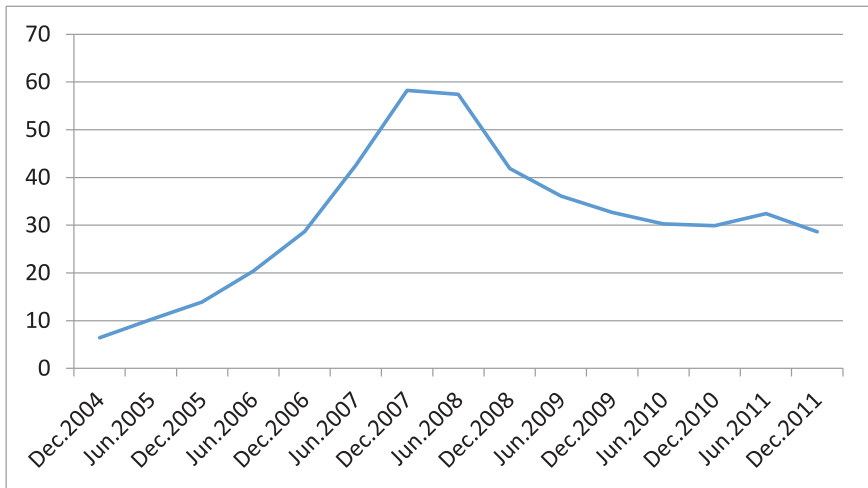
This bonanza of securitization happened in an environment of deregulation in financial markets (e.g., Jacobs and King, 2009; Johnson and





**Figure 4** Global CDO issuance, annual (\$ billion)  
 Source: Securities Industry and Financial Markets Association.

Kwak, 2010; Roubini and Mihm, 2010). In 1996, the Fed allowed banks to reduce capital requirements on assets against which they had purchased CDS insurance (Barth *et al.*, 2012). The assessment of risks of derivatives was entrusted to the credit rating agencies (Helleiner, 2011; Levine,



**Figure 5** Global credit default swaps outstanding, \$ Trillion  
 Source: Bank for International Settlements.

2008). The 1999 Gramm-Leach-Bliley Act removed the remaining separations between commercial and investment banking (Helleiner, 2011). The same year, the President's Working Group on Financial Markets (PWGFM), which included Fed Chairman Alan Greenspan, 'recommended that custom derivatives be exempted from federal regulation' (Johnson and Kwak, 2010). The Commodity Futures Modernization Act of 2000 formalized this recommendation. Overall, deregulation decreased the transparency of market transactions and created an environment permissive to the growth of reckless financial transactions (e.g., Barth *et al.*, 2012; Gorton, 2012; Johnson and Kwak, 2010; Roubini and Mihm, 2010).

### 3. THE FED'S AWARENESS AND CONCERN ABOUT FINANCIAL RISKS BEFORE THE CRISIS

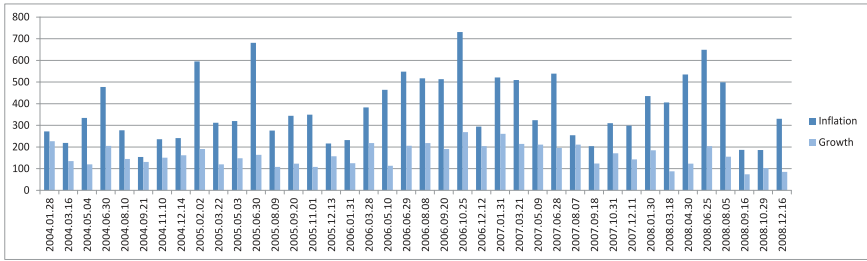
Was the Fed concerned about the explosive growth in complex financial derivatives and the boom in housing prices? Toward answering this question, this section presents both quantitative and qualitative data on the Fed's policy and research documents in the run-up to the crisis.

#### FOMC transcripts

The FOMC is the most important policymaking group at the Fed – it meets eight times a year to discuss the state of the economy and set monetary policy.<sup>7</sup> It consists of the seven Governors and 12 regional Fed Presidents, with the President of the New York Fed always having a vote along with four others voting on a rotating basis. The Fed makes FOMC transcripts and supporting documents (Greenbook, Bluebook, Beigebook and staff reports to the FOMC) publicly available with a five-year lag. These transcripts cover a one- or two-day period of extensive briefings and discussions (about 200 pages). At the time of writing of this article, transcripts were available through 2008. We concur with Schonhardt-Bailey (2013) that the FOMC transcripts provide the best method available for examining 'deliberation' and 'thinking' at the Fed.

The number of times key words related to systemic risk are mentioned in FOMC meetings provides a simple but telling indicator of the intensity of attention the FOMC paid to the core issues mentioned in the previous section. We used Atlas.ti software to count mentions of a range of terms related to systemic risk in all FOMC meetings between 2004 and 2008 and used the frequency of mentions of terms related to inflation and growth as a benchmark (see Figure 6).<sup>8</sup> Despite substantial variation, inflation-related terms usually appear hundreds of times, as do growth-related terms, though, on average, not quite as frequently.

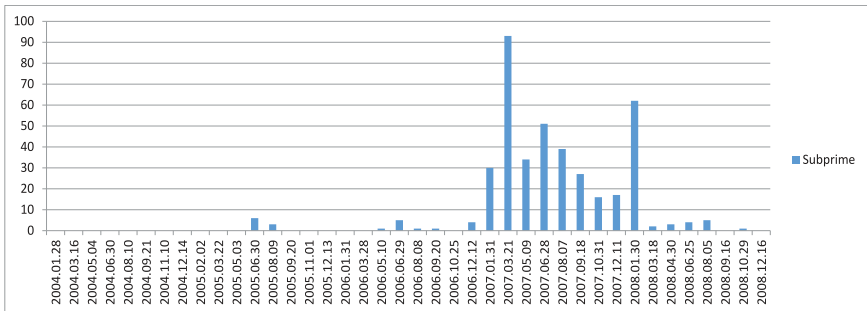
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**Figure 6** FOMC transcript word count by meeting, 2004–2008: Benchmarks: Growth and inflation  
 Source: Authors’ calculations from FOMC transcripts.

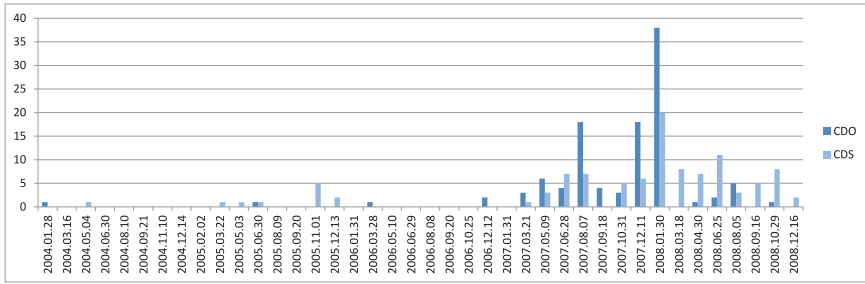
Figures 7 and 8 show that subprime mortgages and financial innovations, such as CDO and CDS, are rarely mentioned from 2004–2006. In 2007 the frequency of these terms jump when acute financial stresses emerge and the FOMC discusses the sources of the problems. The word counts drop off again in 2008 as the FOMC becomes preoccupied with crisis mitigation rather than diagnosis.

To gain a deeper understanding of FOMC thinking, we turn to a discussion of particular FOMC meetings before the crisis in 2005 and 2006 as well as the September 1998 meeting, when the Fed brokered the rescue of the hedge fund Long Term Capital Management (LTCM), which featured some of the same issues as the 2008 crisis, particularly the role of leverage and derivatives. To what extent did the FOMC members raise concerns related to the sub-prime mortgage market and the systemic weaknesses of the financial system prior to the crisis? If so, how were such concerns addressed? What were some of their conclusions regarding a potential housing bubble?



**Figure 7** FOMC transcript word count by meeting, 2004–2008: Subprime mortgages  
 Source: Authors’ calculations from FOMC transcripts.

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**Figure 8** FOMC transcript word counts of selected terms, 2003–2007 meetings  
key financial innovations

*Source:* Authors' calculations from Federal Reserve FOMC transcripts.

## FOMC discussions on the housing market and finance

### 2005 Meeting on Housing

Prior to the crisis, the most intensive FOMC discussion of the housing market and housing finance occurred in June 2005 in the context of increasing concerns in the press about the perceived housing bubble and sub-prime lending. There was also some follow-up discussion in the September 2005 meeting. The June meeting began with five staff reports on various facets of the housing market, followed by extensive discussion among the FOMC members and the staff.

Although several staff briefings acknowledged the level of public worry about the housing market and its possible bubble-like nature, they disagreed about the presence of a housing bubble. While Richard Peach, Vice President of the New York Fed, suggested that rising prices 'could be the result of solid fundamentals' (Federal Reserve, 2005b: 11), Joshua Gallin, Senior Economist in the Research and Statistics Division, warned that on the basis of historically high price-to-rent ratios 'housing prices might be overvalued by as much as 20 percent' (7). Research and Statistics Senior Economist Andreas Lehnert, like Peach, argued that these risks were overstated, as 'increasing home equity, mainly driven by rising house prices, has supported mortgage credit quality' (8). He also provided data indicating that mortgage insurance companies have a 'historically large cushion to absorb losses' (10). Glenn Rudebusch, Senior Vice President of the San Francisco Fed, noted that '[A]n asset price can, in theory at least, be separated into a component determined by underlying economic fundamentals and a non-fundamental or bubble component. . . perhaps representing irrational euphoria or pessimism' (14). He also contrasted two possible responses to a bubble: the 'standard policy' that disregards bubbles and a 'bubble policy'. While overtly taking an agnostic position, Rudebusch noted that bubbles could lead to 'broad

financial crisis and credit crunch and ...significant misallocation of resources' (16). John C. Williams, Senior Vice President of the San Francisco Fed, however, countered Rudebusch's concerns, using simulations from the Fed's macroeconomic model of the US economy, the 'FRB/US' model (discussed below).

The FOMC members, like the staff, disagreed about the presence of a housing bubble. For instance, Richmond Fed President Lacker agreed with Peach that 'there are a lot of plausible stories one can tell about fundamentals that would explain or rationalize housing prices' (Federal Reserve, 2005b: 62). Chairman Greenspan explored at length whether the increases in land prices could explain the rise in house prices. William Poole, head of the St. Louis Fed, doubted the presence of a bubble altogether: 'just for the hell of it, I would like to offer the hypothesis that property values are too low rather than too high (57)'.

There were, however, also some relatively pessimistic voices. Atlanta President Jack Guynn called attention to the 'unsustainable' housing price increases in parts of Florida and added: 'my supervision and regulation staff thinks this is an accident waiting to happen' (117). Governor Edward Gramlich, one of the few at the Fed to have previously called attention to sub-prime abuses, highlighted rising foreclosures among low-income house owners: 'it is a big problem in certain neighborhoods' (72). Governor Susan Bies emphasized the radical shift towards the use of ARMs, which over the previous 12 months had gone from 16 to 50 per cent of new loans. Bies also emphasized the growing reliance on new derivatives, off-balance-sheet positions and shadow banking institutions:

What is new about it this time, though, is that a lot of these nonconforming products are being securitized by the private sector. So the real question is: Where does the market discipline kick in? And as supervisors, can we fault an institution for responding to a market need when it is offloading the loans and the risk into these types of mortgage structures [RMBS pools] that Andreas [Lehnert] has been describing? We clearly could if the financial institutions were buying the equity or mezzanine risk tranches and the risks were back on the institutions' books. But in many cases that clearly isn't what is happening. So, we have some different aspects this time around...we need to figure out where to go on some of these practices that are on the fringes. But we haven't done a sterling job...[S]ome of the risky practices of the past are starting to be repeated, and it may be that the generation of lenders now didn't live through the problems before (46).

Governor Mark Olson expressed similar concerns:

The risk exposures [in housing] seem most likely to be in the MBS market. . . It's not clear at this point if the MBS market will be an efficient distributor and disseminator of risk or if those in that market will be the last to recognize the risk that's embedded in what they are doing and know how to price it (154–5).

Boston President Cathy Minehan also wondered about 'the complications of some of the newer, more intricate, and untested credit default instruments' that might lead to system-level turmoil (123).

In the end, though, the upshot of the committee discussions was optimism about the state of the housing market. For example, Chicago President Michael Moskow complimented the presenters and added that he 'found the information comforting' (Federal Reserve, 2005b: 47). President Minehan concurred; 'I found them [the presentations] very helpful and reassuring, along the lines that Michael Moskow was discussing' (49). San Francisco President Janet Yellen, in remarks praised by several others, suggested that financial innovations enhanced the attractiveness of housing as an asset (35). Governors Guynn and Gramlich also seemed to suggest that the troubles in the housing market were localized. At the end of the second day of discussions even Governor Bies seemed optimistic: 'I'm not overly concerned. Especially with the record profits and capital in banks. I think there's a huge cushion.' (151).

#### FOMC Meetings in 2006

The FOMC extensively discussed the housing market again in December 2006 under the Chairmanship of Ben Bernanke, but the bottom line of the discussions remained optimistic. As before, some FOMC members thought that the signs from the housing market were ominous, while others were more sanguine. Governor Bies continued to voice concerns about mortgage financing risks:

One thing I am hearing from some folks who have been investing in mortgage-backed securities and may in some CDOs. . . , where they have been tranced into riskier positions through economic leverage, is the realization that a lot of the private mortgages that have been securitized during the past few years really do have much more risk than investors have been focusing on. . . So I think we could see noise in some of the mortgage-backed private deals and some of the riskier CDO economic leverage positions. . . (Federal Reserve, 2006b: 63–4; see similar comments in Federal Reserve, 2006a).

Governor Pianalto also had 'become more worried about the potential spillover of housing conditions into consumer spending from wealth

effects, income constraints, and creditworthiness' (40). President Lacker and others, however, countered these concerns. A number of members argued that the US had developed into a 'bi-modal economy' in which the housing and the auto sectors could be sluggish while the rest of the economy did well. The 'spillover' from any developments in housing was thought to be minimal as these two economic nodes were seen as relatively self-contained. In summing up, Bernanke asserted that '[m]ost people see a two-track or bi-modal economy...' (80) and that housing was 'about 15 percent of the economy as compared with 85 percent of the economy' (81). Even those FOMC members who raised concerns about financial innovations did not seem to contemplate grave systemic risks.

### The September 1998 LTCM episode

Although the United States had not experienced a full blown financial crisis since the 1930s, several episodes in the 20 years prior to the 2008 crisis served as potential warnings about the possible dangers of financial innovation (Morris, 2008). These episodes include the savings and loan debacle of the 1980s, the role of portfolio insurance computer programs in magnifying if not triggering the October 1987 stock market crash, and, most recently, the near meltdown of the hedge fund Long-Term Capital Management /Portfolio (LTCM or LTCP). The 2000–2002 'dot-com' bubble was different insofar as it did not involve much leverage and use of derivatives, though we do discuss below how the Fed's success in dealing with the bursting of the dot-com bubble affected their thinking in the lead up to the 2008 crisis. We consider the LTCM case to be particularly important for the Fed's thinking on systemic stability in the pre-crisis period because it centered on many of the same issues as the 2008 crisis, including overreliance on extrapolative models, high leverage, and over the counter (OTC) trading.

Created by Nobel Prize winning finance theorists and a former Fed governor in 1994, LTCM took huge, highly leveraged positions in derivatives and other assets that exploited relatively small pricing deviations extrapolated from recent historical patterns (Meyer, 2004). Initially, LTCM made spectacular profits. In 1998, however, it experienced large losses as a result of the Russian debt crisis, as asset prices deviated too much and too long from arbitrage conditions predicted by LTCM models given the capital at its disposal (Mackenzie, 2005), leading to worries that LTCM's failure could bring down its creditors in a cascade of major defaults. Thus, the Fed took the unusual step of brokering a bailout arrangement, allowing time for LTCM's positions to unwind in a relatively orderly way.

The FOMC discussed the LTCM situation at length at the 29 September 1998 meeting. New York President William McDonough, who led the Fed's involvement in the bail-out negotiations of LTCM, explained that:

[G]iven the presence of over 15 institutions in various nations in "very large" counterparty positions to LTCP, 'we shared the view that the collapse of [LTCP] would create chaotic financial markets around the world and that nobody could make a good estimate of what the likely damage would be (Federal Reserve, 1998: 102).

This failure to properly assess counter-party risk resembles the pre-2008 crisis period. Staff member Fisher, who was the Manager of System Open Market Account, reported:

Essentially, \$125 billion of [LTCM's] assets are out under repo. There are no assets in the firm. . . Swap agreements are their instrument of choice, and that is how they got to a \$1.45 trillion off-balance-sheet position. . . The off-balance-sheet leverage was 100 to 1 or 200 to 1 – I don't know how to calculate it. (108)

Fisher noted that 'all this relates to the question of how this financing got to be so big and nobody realized it was happening' (Federal Reserve, 1998: 120), while Greenspan suggested that 'it is one thing for one bank to have failed to appreciate what was happening to LTCM, but this list of institutions is just mind boggling' (108). Vice Chair Alice Rivlin asked, 'how many more LTCMs are there?' (109), to which McDonough answered 'there have to be little versions of LTCM/P' (110). Governor Lawrence Meyer expressed dismay and the need to learn from the LTCM crisis:

I think this is an important episode for us to study. . . We are trying to decide what is systemic risk and what is not. . . There is another issue I would be remiss not to mention, namely of how these lending and investment decisions get made. . . I was getting telephone calls from reporters who knew more about LTCM than I did. I don't think that's the way it should have been. (110)

Yet, the Fed largely forgot this episode. After the September meeting and a single subsequent conference call, LTCM was mentioned in meetings only twice in passing between 1999 and 2006 – once in February 2002, and once in October 2006. Similarly, a search of all Fed-in-print documents shows that between 1998 and 2008, the LTCM case was mentioned in a total of 12 documents out of 14,253.

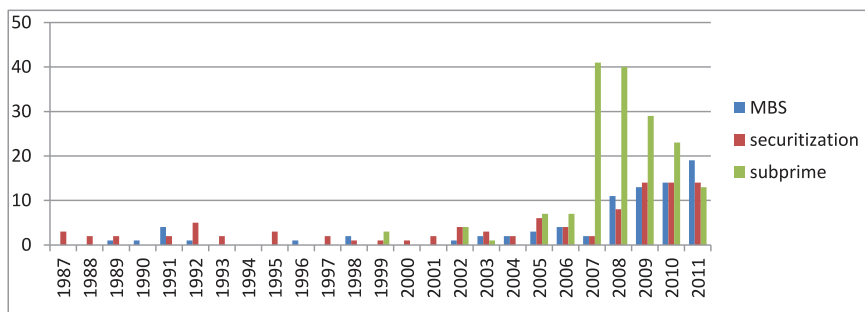


### Awareness of financial innovation in other Fed policy documents and research

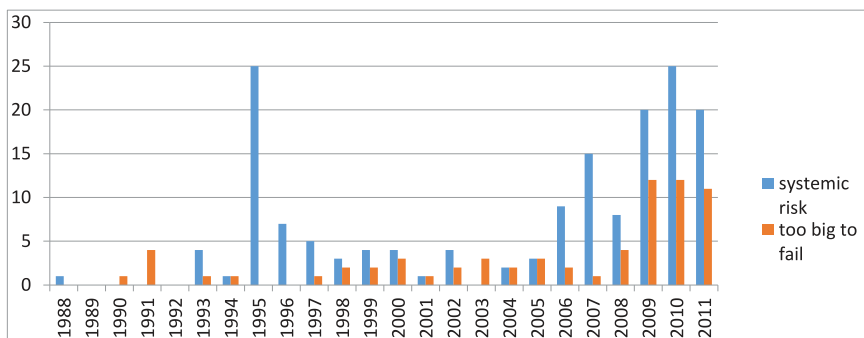
In addition to the FOMC transcripts, we reviewed other publicly available Fed documents through the Fed's website FedinPrint.org. These documents include research papers, policy analyses, conference proceedings and speeches, providing a comprehensive view of the issues about which Fed staff and policymakers were concerned. FedinPrint.org documents number about 1200 per year in the early 2000s, rising to about 1500 per year in 2005–2007.

Our analysis reveals that there was overall very little focus on the risks associated with financial innovation prior to the crisis. Figure 9 shows the number of Fed documents identified when certain housing finance keywords are selected. In 2002–2004, there are about 2–4 articles, testimonies, and speeches per year that touch on securitization, MBSs and sub-prime mortgages, with the numbers rising to about 5–7 in 2005–2006. In 2007, documents on sub-prime lending jump sharply to over 40 but articles on securitization remain tiny in number. Figure 10 presents counts of 'systemic risk' and 'too big to fail' in all Fed documents. These two are again generally quite low until 2007, although there is a sizeable increase in the number of documents on systemic risk in 2006 and 2007, related largely to 2006 conferences on this topic at the Federal Reserve Banks of Atlanta and New York. Finally, Figure 11 shows that there was a near total absence of documents on the new instruments, CDSs and CDOs /CMOs, before the crisis and few even after.

Nevertheless, a limited number of these speeches, documents, and articles did recognize some of the problems brewing in the financial system. For instance, a 2005 speech by chairman Greenspan on new financial instruments acknowledged potential problems in highly leveraged institutions where 'the failure of a leading dealer could result in counterparty

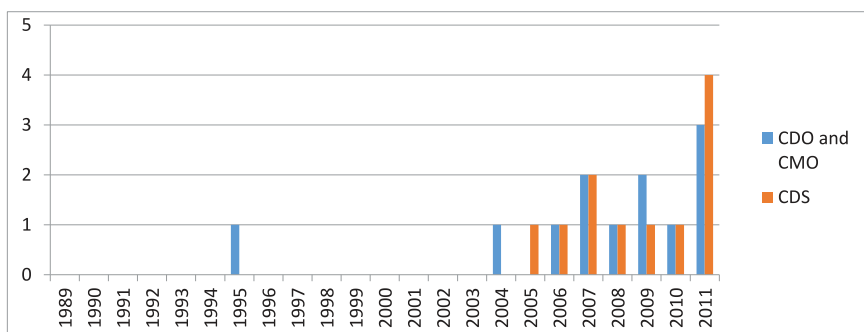


**Figure 9** Number of Federal Reserve documents on mortgage finance  
*Source:* Authors' calculations from Fed-in-Print.org data.



**Figure 10** Number of Federal Reserve documents on systemic risk  
*Source:* Authors' calculations from Fed-in-Print.org data.

credit losses for market participants' (Greenspan, 2005: 2). Governor Bies in particular called attention to the rising risks in banking. In a speech in 2005, she discussed how 'virtually all banking markets have become considerably more concentrated, with some companies – by their size alone – posing the potential for systemic risk', such that all banks should plan for 'losses beyond the range of expectations' (Bies, 2005). A few researchers were also producing relevant analysis. For instance, as early as 2004, Michael Gibson, an economist in the Trading Risk Analysis section of the Division of Research and Statistics, pointed out that CDOs were vulnerable to correlation and business cycle risks (Gibson, 2004). A Chicago Fed working paper by Robert Bliss and George Kaufman (2005) similarly identified the impact of derivatives on systemic risk.



(NB: Modern CDS contracts only widely used since 1994)

**Figure 11** Number of Federal Reserve documents on financial instruments  
*Source:* Authors' calculations from Fed-in-Print.org.

### Summary

Decisionmakers and economists at the Fed definitely had knowledge of the complexity of ongoing developments in financial innovation as well as of their potential dangers. However, both FOMC discussions and staff research on these topics seem to have been surprisingly infrequent. When the right type of discussions *did* surface in the FOMC, they appear to have slid off the FOMC's and the research departments' agendas, such that concerns within both the research and policy departments about ongoing developments in the housing and financial derivatives markets never reached a critical mass. The obvious question then is what explains this infrequent attention to systemic financial stability.

#### 4. EXPLAINING THE FED'S LACK OF CONCERN: EXISTING APPROACHES

The existing scholarly and popular literatures suggest several explanations of the Fed's behavior: (1) regulatory capture; (2) the dominance of free-market ideology that trusted the market's ability to self-govern; (3) the use of abstract academic models to the detriment of following actual financial developments; (4) a focus on inflation-targeting at the expense of other economic concerns.

##### Regulatory capture

Capture of an institution by the interests it is supposed to regulate is a well-known danger. Agency personnel must be adequately knowledgeable about, and connected to, the sectors they regulate, but too close a connection may lead them to favor their would-be targets over the public good (Dal Bo, 2006). Along these lines, some observers view the 'revolving door' of high-paid employment between regulatory agencies and large financial institutions along the 'Wall Street –Washington corridor' as a major contributor to the crisis (Johnson and Kwak, 2010; Auerbach, 2008; Ferguson, 2012; Jacobs and King, 2009, 2010). Congressional investigations of the Fed both before and after 2008 have also noted a real potential for such conflicts of interest leading to what Baxter (2011) calls the 'surface capture' of regulation (GAO, 2011; House Committee on Banking, Currency, and Housing, 1976).

Barth *et al.* (2012), in contrast, find 'surface capture' to be an unconvincing hypothesis, stating that 'our personal and professional experiences from working with regulators and within regulatory institutions suggest that regulators are highly skilled individuals who have devoted themselves to public service. So this explanation does not feel right to us.' (7). Their observation seems particularly true for the Fed, as there is no

persuasive evidence that Fed officials, from Greenspan on down, have personally sought to profit from their positions. Holmes (2009: 393) likewise notes ‘the personnel of the central banks that I have studied pride themselves on the quality of their research, their political independence, and their commitment to public interests. . .’

Barth *et al.* (2012: 7–9) do, however, argue that regulators tend to develop unconscious psychological biases favoring the financial industry, just as sports referees tend to favor the home team. Even more subtly, it is also possible that common theories, practices, and standards of evidence could produce an additional ‘cognitive’ or ‘cultural’ bias that blurs the separation of the regulator from the regulated (Buiter, 2012; Kwak, 2013). Such effects could add up to what Baxter (2011) calls ‘structural’ capture. But, the precise mechanisms by which ‘structural capture’ might occur are unclear, which makes it difficult to identify in practice (Carpenter, 2013; Pagliari, 2012). It is, nonetheless, worth asking if any explicit ideology affected the Fed’s thinking to the point of explaining the institution’s low level of attention to developments in the financial sector in the pre-crisis period.

### **Ideological sympathy with the financial sector**

When explaining the pre-crisis regulatory thinking, many authors emphasize what Jacobs and King (2009: 277) call the regulators’ ‘philosophical deference to private markets’ (Engelen *et al.*, 2011; Gourevitch, 2013; Johnson and Kwak, 2010; Roubini and Mihm, 2010). Greenspan has famously been known for his free-market views. His statement ‘I do have an ideology. My judgment is that free, competitive markets are by far the unrivaled way to organize economies. We tried regulation, none meaningfully worked’ has been quoted many times (Committee Hearings, 2008: 38). Such a perspective suggests that an ‘Ayn Randian passion for regulatory minimalism’ (Hirsch, 2008) could have determined the Fed’s pre-crisis proceedings.

Others emphasize, however, that the Greenspan years were marked by pragmatism rather than a strict adherence to a specific ideology. Former FOMC members and Fed staff praise Greenspan’s ‘open[ness] to a whole range of incoming economic information in all its detail and puzzling variability’ (Axilrod, 2011: 104) and ‘his flexibility, his unwillingness to get stuck in a doctrinal straitjacket’ (Blinder and Reis, 2005: 7). The same can be said about the FOMC broadly. Previous accounts of the FOMC of the Greenspan era emphasize that the members’ primary concern was to grapple with the data, instead of imposing a particular ideological perspective (Chappell *et al.*, 2005; Meyer, 2004). Additionally, as Section 3 underscored, FOMC members expressed a range of views even if this diversity did not necessarily translate into policy outcomes.

Moreover, Greenspan was not completely complacent about the ability of market participants to manage risk. As noted earlier, in May 2005 he recognized the growth of OTC derivatives markets and warned that their use could result in overall financial instability. He expressed concern regarding the possibility that the stress tests done by market participants may be under-estimating counterparty credit risk (Greenspan, 2005: 2, 4). Greenspan also accepted that financial actors sometimes fail at risk assessment.

### Irrelevant academic models

A number of scholars have argued that prior to the crisis, regulators may have been hindered by the academic discipline of economics focusing too much on abstract mathematical models to the detriment of real-world issues in financial markets (e.g., Krugman, 2009; Stiglitz, 2011; Rodrik, 2011; Rajan, 2011) – a complaint that builds on longstanding assaults from within the economics profession itself about the lack of realism in formal models (e.g., Leontief, 1971; Hutchison, 1992; Mayer, 1993; McCloskey, 1996).

The influence of academic standards is relevant given that the Fed, along with other central banks, has prioritized state-of-the-art research capacities. Marcussen (2006) notes the increasing ‘scientization’ of central banking based on the use and creation of rigorous economic research using macroeconomic models and econometric methods. As noted above, the Fed indeed employs hundreds of economics PhDs in its research departments and recruits these researchers from top academic programs, and sometimes even ranks and pays them according to a point system based on articles placed in prestigious economics and finance journals. As Axilrod (2011: 184) suggests, these researchers may have little incentive to be as ‘sensitive to the issues and as immersed in the current flow of economic data and information’ as their more operations-oriented colleagues. For instance, the ‘dynamic stochastic general equilibrium’ (DSGE) models prevalent in scholarly research, with some important exceptions, have minimal financial sectors.<sup>9</sup> Further, some scholars have emphasized the influence of academic financial models that assume normal distributions and thus disregard ‘black swan’ effects (e.g., Engelen *et al.* 2011).

Others point out, however, that FOMC discussions themselves have involved very little explicit invocation of academic ideas. A number of authors find that FOMC members have openly disagreed about economic models, using them as heuristics for debate rather than as assumed principles (Meyer, 2004; Meade and Thornton, 2011; Tillman, 2009). Similarly, academic models did not strictly frame the Fed’s monetary policy

decisions. Specifically, the ‘Taylor Rule’ that mechanically connected interest rate decisions to economic indicators certainly entered into FOMC discussions in the 1990s, but by all accounts it was honored as much in the breach as in the observance (Cecchetti, 2003; Hayford and Malliaris, 2001; Killian and Manganelli, 2008).

Further, evidence of the FOMC adhering to the efficient markets hypothesis (EMH), which some authors cite as an important factor in the crisis, is also thin (Lo, 2012). References to ‘bubbles’ in the various aforementioned meetings and discussions at the Fed run counter to the EMH view that bubbles cannot exist because market participants integrate all the available information about asset prices (Cassidy, 2010). The EMH is never mentioned in the FOMC transcripts between 1996 and 2007. Moreover, as Katzenstein and Nelson (2013) and Schonhardt-Bailey (2013) have noted, FOMC members display an implicit understanding of the Knightian distinction between ‘risk’ and ‘uncertainty’, where the former is quantifiable and the latter is not. The FOMC’s awareness of un-measurable uncertainty is evident in some of the quotes from Susan Bies and others in Section 3 above.

### Inflation-targeting

The Fed’s focus on inflation-targeting could have distracted the Fed’s focus away from financial issues (e.g., Kirshner, 1999; Reinhart and Rogoff, 2013). As Schonhardt-Bailey (2013: 10) observes, ‘the last 30 years have seen the emergence of a consensus worldwide around establishing and maintaining persistent low inflation as the appropriate goal of monetary policy’. Further, the pre-2008 period was marked by low inflation and limited output volatility, and this period of ‘Great Moderation’ further boosted central bankers’ confidence in their ability to manage the economy (Engelen *et al.*, 2011).

Yet, there are several reasons as to why inflation-targeting by itself fails to account for the Fed’s low level of attention to systemic risk in the pre-crisis period. To begin with, the Fed has always been responsible for maintaining economic growth, employment and financial stability, along with price stability. Further, given the Fed’s responsibility for financial stability and the impact of financial stability on the real economy, it is reasonable to expect that monetary policy decision-making would take the financial sector into greater consideration. Moreover, as already noted, the Fed’s inflation-targeting was flexible (Abolafia, 2004; Anderson and Kliesen, 2012; Edison and Marquez, 1998; Meyer, 2004). The ‘Greenspan Standard’ (Blinder and Reis, 2005), or commitment to ‘constrained discretion’ (Bernanke, 2003; Friedman, 2006), involved pragmatic responses to market developments (Greenspan, 2004). This pragmatism suggests that the Fed’s approach to inflation-targeting left

room for consideration of a range of economic factors. Additionally, the Fed has some discretion over prudential regulation, but when the FOMC considered this tool in June 2005, it dismissed it. All in all, the focus of monetary policy on inflation-targeting does not explain the Fed's inadequate attention to systemic financial risks in the pre-crisis period.

Overall, the literature does not offer clear explanations for the Fed's low attention to troubling developments in financial markets, nor does it illuminate why when concerns surfaced, they failed to find traction at the FOMC. While some fault the Fed's adherence to free market ideology, misleading academic models and single-minded focus on controlling inflation, others point persuasively to the pragmatism and flexibility of FOMC's deliberations and policies. What then explains the Fed's thinking in the pre-crisis period?

## 5. EXPLAINING THE FED'S LACK OF CONCERN: ADDITIONAL KEY CONSIDERATIONS

We emphasize two specific aspects of the Fed's functioning that contributed to its lack of concern about systemic risks: the view that the Fed could 'mop up' after bubbles burst, and institutional routines that immunized the Fed from contrary evidence and contributed significantly to subduing concerns about systemic risk in FOMC discussions.

### Post hoc interventionism

Despite their generally pragmatic approaches, both Greenspan and Bernanke adhered to 'post hoc interventionism', which posited the Fed could effectively deal with the fallout from a systemic disturbance in financial markets, such as the bursting of an asset bubble. In several influential papers Bernanke and Gertler (1999, 2001) explicitly acknowledge the possibility of bubbles, namely periods when 'asset values seem all but disconnected from the current state of the economy' (2001: 18). Moreover, they note these bubbles can have deleterious effects on the economy through the 'debt-deflation' mechanism identified by Irving Fisher in the Great Depression. Depending on the level of indebtedness, collapsing bubbles can have a 'highly nonlinear effect' on the rest of the economy (21).

Although the Bernanke and Gertler papers underscore the possibility of bubbles, they also establish a reactive rather than proactive policy toward these bubbles. First, they argue that the identification of bubbles is difficult. Second, they suggest that misidentification of a bubble followed by a policy tightening, resulting in increased interest rates, may hurt the economy more than the possible bubble burst. That is, targeting

asset prices through monetary policy can cause substantial ‘collateral damage’ (Bernanke and Gertler, 2001: 28).

Third, the authors emphasize inflation-targeting as the best strategy. They argue, ‘central banks can and should treat price stability and financial stability as consistent and mutually reinforcing objectives. In practice, we believe, this is best accomplished by adopting a strategy of flexible inflation targeting’ (Bernanke and Gertler, 2001: 21). In other words, ‘leaning against the wind’ that stabilizes inflation and output fluctuations will also stabilize financial markets by dampening oscillations of asset prices and fostering expectations of stability. In the event of a severe downturn resulting from an asset price collapse, the flexible inflation targeting strategy calls for monetary easing.

Post hoc interventionism was also apparent in Greenspan’s views. As Cassidy (2008) narrates, Mark Gertler reported that Greenspan approached him after a talk to say ‘as quietly as he could, “You know, I agree with you”’. Similarly, Greenspan (2004: 34–5) praised the Fed’s actions after the stock market bubble burst in 2001:

There appears to be enough evidence, at least tentatively, to conclude that our strategy of addressing the bubble’s consequences rather than the bubble itself has been successful ... It is far from obvious that bubbles, even if identified early, can be preempted at lower cost than a substantial economic contraction and possible financial destabilization. ...

As Blinder and Reis (2005: 67–73) conclude, ‘[Greenspan’s] legacy, ... is the strategy of mopping up after bubbles rather than trying to pop them. And we judge that to be a salutary one’ (73).<sup>10</sup> Greenspan (2010: 9) reiterated his belief in mitigating rather than preventing financial instability even after the 2008 crisis:

Regulators who are required to forecast have had a woeful record of chronic failure. History tells us they cannot identify the timing of a crisis, or anticipate exactly where it will be located or how large the losses and spillovers will be. Regulators cannot successfully use the bully pulpit to manage asset prices, and they cannot calibrate regulation and supervision in response to movements in asset prices.

In short, the two most recent Fed Chairmen were convinced that ex post interventions would mitigate any fallout from financial panics and focusing on stable inflation would ensure stability better than deflating bubbles. This common set of beliefs is suggestive in explaining why even though Bernanke is noted for his open-mindedness to different



perspectives and is credited with a more inclusive leadership style than Greenspan (Cassidy, 2008), the meetings chaired by Bernanke do not exhibit greater discussion on mortgage finance *until* the actual onset of the crisis in 2007 (see Figures 7–11). For instance, Bernanke and Greenspan both ignored Governor Susan Bies’s warnings (Section 3).

### The importance of institutional structures and routines

Institutional structures and routines also played a key role in reinforcing the Fed’s confidence in post-hoc interventionism in the face of mounting evidence of systemic financial vulnerability. The existing literature on the Fed, to our knowledge, does not utilize insights from political science and sociology that draw attention to institutional structures, conventions and routines as explaining key institutional outcomes. For instance, scholarly work on multilateral economic institutions, particularly the IMF and the World Bank, has highlighted ‘organizational culture’ and ‘routines’ in explaining these institutions’ adherence to certain policies, including liberalization of finance and trade (e.g., Barnett and Finnemore, 1999; Chwieroth, 2010; Weaver, 2008). The IMF’s own self-evaluation after the 2008 financial and economic crisis invokes the concepts found in that literature, such as ‘silo mentality’ of certain departments and lack of adequate attention to dissenting views (Independent Evaluation Office of the IMF, 2011). These approaches show how the very arrangements that enable an institution to operate efficiently might also possess a ‘dark side’ with the potential to produce suboptimal or pathological outcomes (Barnett and Finnemore, 1999; Vaughan, 1999).

This literature suggests that the Fed’s approach to systemic financial stability could have been reinforced by the ways in which routines for gathering, processing, and interpreting information reduced the flexibility and effectiveness of decision-making. We find four sources of such ‘pathologies’: (1) the scripted structure of FOMC meetings; (2) the routine focus of deliberations on interest rate policy; (3) the habitual treatment of certain sources of information as more credible than others; and (4) the isolation of the Fed’s supervision and regulation division from the FOMC.

### The structure of FOMC meetings

At least three features of FOMC meetings contributed to an environment in which dissent – in this case, concern about systemic risk due to securitization of sub-prime mortgages – was unlikely to ‘stick’. First, the substantive discussions of economic and financial conditions at FOMC meetings are based on a ‘go-around,’ where members sequentially present their perspectives on the economy, including reports on local conditions from regional Fed Bank Presidents. As former Governor Meyer

puts it, the 'FOMC meetings are more about structured presentations than discussions and exchanges...Each member spoke for about five minutes, then gave way to the next speaker' (Meyer, 2004: 39).<sup>11</sup> Such a structure is not conducive to the kind of back-and-forth building of narratives and arguments necessary for considering alternative views in detail (Meade, 2006; Gibson, 2012). This routine segmenting of arguments also creates breaks in the proceedings that can further reduce the momentum of exploratory discussions. For example, Governor Bies' questions in the September 2005 meeting about the new OTC markets for MBSs seemed to go unanswered not least because they were immediately followed by Chairman Greenspan taking advantage of the end of her turn to ask 'shall we break for coffee?' (Federal Reserve, 2005c: 46).

A second way in which FOMC meetings stifle dissent and the exploration of alternative scenarios is their overwhelming emphasis on finding agreement. Although decisions are made by majority vote, the meetings tend toward consensus building (Chappell *et al.*, 2005).<sup>12</sup> Meyer (2004) explains how FOMC members attempt to find a common ground to facilitate 'collective responsibility' for the decisions and speak in a unified voice (53). For example, consider Governor Kohn's statement at the December 2006 FOMC meeting:

[some members of the FOMC] are concerned that our individual public statements could impede our ability to reach internal consensus and to control how whatever that consensus turns out to be is communicated to the public. I think that finding consensus on some of these issues is going to take considerable flexibility and give and take among Committee members.

Although these features of FOMC meetings are useful and probably inevitable constraints on meeting procedures, they can inhibit consideration of new and critical perspectives (Vaughan, 1999; Barnett and Finnemore, 1999).

Third, in addition to the structure of the meetings, their narrow focus may also have been problematic. However wide-ranging FOMC discussions have become, they ultimately focus on a very narrow institutional task: setting the federal funds interest rate, and deciding how to publicly signal the FOMC's predictions about its future direction (Holmes, 2009). Even the latter can involve extensive debate over which precise phrases to select from the Blue or Teal book options, with the level of detail frequently reaching the level of Chairman Bernanke's argument in the December 2006 meeting:

On section 2, the two suggestions that I think have commanded some significant support are, first, President Minehan's suggestion

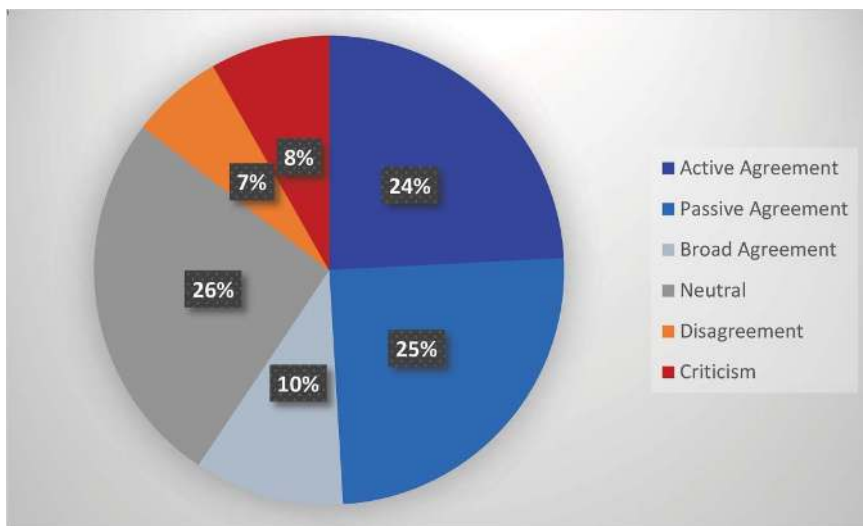
of using the second section under alternative C and, second, the alternative in the Christmas-tree colors using ‘although recent indicators have been mixed’ in the present perfect tense – ‘although recent indicators have been mixed, the economy seems likely to expand at a moderate pace on balance over coming quarters’. I think those are the two that people have preferred. I don’t think it makes a great deal of difference, frankly, but I lean personally a bit toward including the reference to indicators only on the grounds of trying to signal to the market again that we are watching the data, that we are aware of developments in the economy, and that we’re not just taking the statement out and putting a new date on it. So that would be my recommendation – that we use the phrase ‘although recent indicators have been mixed, the economy seems likely to expand,’ and so on (113).

The focus on such narrowly-defined decisions can crowd out other discussions, and even pushing the Fed towards a ‘flattening of diversity’, wherein familiar policies (in this case setting the Federal Funds rate) are increasingly viewed as uniform hammers, and diverse problems look more and more like similar nails (Barnett and Finnemore, 1999: 720).

### The information considered

Another institutional problem concerns the Fed’s uneven treatment of different sources of knowledge. Transcripts reveal that FOMC members routinely accept some kinds of information and data as reliable and easy to interpret, but discount or ignore others. Put differently, they clearly operate according to a particular ‘economy of credibility’ where data and interpretations coming along certain ‘vectors’ are habitually taken for granted, if not treated as completely unquestioned ‘black boxes’ (Latour, 1987; Shapin, 1995). While this behavior facilitates routine bureaucratic functioning, it also raises the possibility that decisionmakers’ organizational routines lead to a false sense of security, blinding them to the dangers of unusual risks (Vaughan, 1999: 277).

The most obvious example of particular kinds of knowledge being routinely accepted is the staff’s summaries of national economic developments and prospects – the ‘Current Economic and Financial Conditions,’ known as the ‘Greenbook’ (in reference to its cover). Ex-Governor Laurence Meyer refers to the Greenbook as ‘the 13th member of the FOMC’ (2004: 34). Figure 12 classifies all references to the Greenbook in the 2005–2007 FOMC transcripts. Over 60 per cent of these references are supportive, including ‘active agreement’ where FOMC members explicitly affirm the findings of the Greenbook, ‘passive agreement’ where



**Figure 12** FOMC comments on the Greenbook, 2005–2008

Source: Authors' Calculations from FOMC Greenbooks.

members mention Greenbook forecasts without questioning them, and 'broad agreement' where FOMC members agree with the overall conclusions but disagree with some details. The widespread and consistent agreement with the Greenbook suggests little intensive questioning of the staff's forecasts.

Moreover, the *specific topics and measures* covered in the briefing book section of the Greenbook inevitably direct discussions. In the pre-crisis period the Greenbook tended to focus on the real economy rather than the financial sector. While as much as a third of the detailed Part 2 Greenbooks in 2005–2007 covered financial data, the summary and forecast in Part 1 typically largely ignored finance. Part 1 of the January 2006 Greenbook, for example, devoted only three out of 51 pages to financial issues.

Also, the Greenbook projections were based on simulations of the FRB/US model, which did not capture the financial risks at the heart of the crisis.<sup>13</sup> The Fed's primary macroeconomic model from the mid-1990s onwards – the FRB/US ('Federal Reserve Board / United States') – has been based on academic ideas, and its calculations laid out in the Greenbook were typically accepted as reliable in the pre-crisis period (at least after 2000; see Anderson and Kliessen, 2012).<sup>14</sup> Compared to its predecessor, FRB/US adopted modern academic elements, such as forward-looking expectations and vector autoregression techniques (see Brayton and Tinsley, 1996).<sup>15</sup> The general adherence to Greenbook data and forecasts, thus, ultimately contributed to the narrowing of the scope of

FOMC discussions and the possible consideration of alternative perspectives. The Greenbook-conforming nature of the discussions also suggests a subtle way in which economic models, with rudimentary financial sectors, influenced the FOMC's otherwise more pragmatic thinking.

Another source of data that the Fed routinely treated as relatively credible is the anecdotes from personal communications reported during the FOMC meeting 'go-arounds'. A striking feature of these anecdotes is the frequency of contacts from 'Main Street' rather than 'Wall Street', that is manufacturing, construction, and retail rather than banking and finance. For example, the June 2005, September 2005, May 2006, and December 2006 Beigebooks, which record anecdotes about economic and financial conditions from Regional Federal Bank presidents, mention Main Street contacts about seven times more than contacts from the financial sector, and about four times more than contacts from the real estate sector (including commercial real estate).<sup>16</sup> The relative paucity of financial anecdotes is surprising given the Fed's responsibility for banking regulation.

### Isolation of the supervisory and regulatory branch

Finally, the Fed's main organ for identifying the risks faced by financial institutions, and their ability to assess and manage these risks, is the Division of Banking Supervision and Regulation (S&R). Senior S&R staff members were present at the LTCM meeting, the 2005 discussion of the housing market, and the last two meetings of 2007, when the crisis was starting to loom. But these were the *only* FOMC meetings in which S&R members participated between 1996 and 2007, and the S&R division was *mentioned* just eight times in the same period. At least at the highest deliberative level then, routine procedures may have isolated an important part of the organization from transmitting information, interpretations, and priorities to decision-makers – a problem identified as sub-optimal 'structural secrecy' (Vaughan, 1999).<sup>17</sup> This point was noted by Boston Fed President Rosengren at a March 2008 FOMC meeting, following a presentation by several S&R staff who pointed to the role of the 'silos' within banks as a source of excessive risk-taking prior to the crisis:

It is great to see some bank supervision people at this table, and I would just highlight one of the comments that you made about silos. It is interesting that this morning we have been discussing issues of bank balance sheet constraints and how that would occur, and it might be useful to think structurally within our own organization whether there are ways to do a better job of getting people in bank supervision to understand some of the financial stability

issues we think about, and then vice versa. Maybe having some bank supervision people come to FOMC meetings might be one way to actually promote some of this. (189)

More research is necessary to determine why the S&R was so isolated from the FOMC, but S&R's marginalization is again consistent with the Fed's routines and 'vectors of knowledge'.

## 6. CONCLUSION

This paper has documented the Fed's limited attention to the systemic dangers associated with the housing boom and the role of structured finance therein. Both FOMC discussions and staff research rarely considered the issues now known to be at the heart of the crisis, namely the housing market, the complex superstructure of derivatives built on that market, and the institutions and practices of the new OTC financial world. Although the Fed did not have supervisory authority over much of this 'shadow' banking system, the banks that the Fed did oversee were deeply involved in it, and the Fed's mandate to protect overall financial stability was clear. We are not claiming that the Fed could have predicted or prevented the crisis, but given its mandate and intellectual resources, it should have been engaged in a greater study of the systemic risks associated with housing finance. As Buitier (2012: 6) puts it: 'Regulators and supervisors must monitor risky behavior, risky products, practices and instruments, no matter where they occur.'

Attributing the Fed's failures to free-market ideology, reliance on unrealistic models and regulatory capture is too simplistic -- FOMC discussions are remarkably pragmatic and Fed policymakers and staff are highly sophisticated. Instead we argue that a combination of factors, most prominently confidence in 'post hoc interventionism' as the best policy response to bubbles, and institutional routines that directed attention away from the crucial issues, were what blinded the Fed to mounting systemic risks in the pre-crisis period. Along with Greenspan's skepticism about the efficacy of regulation, these two considerations contribute significantly to our understanding of the Fed's pre-crisis thinking.

These points are also relevant going forward. The US Dodd-Frank Act has strengthened the Fed's monitoring of banks and their subsidiaries, as well as giving it oversight over savings and loan holding companies and non-bank institutions that are categorized as systemically important financial institutions (Shull, 2012). The Fed claims, '[g]iven the risks to financial stability exposed by the financial crisis, [the Fed] has reoriented supervisory focus to look more broadly at systemic risks and has strengthened its micro-prudential supervision of large, complex banking firms'

(Tarullo, 2013). Our analysis suggests that without reorienting the organization's operation – including prioritizing research on real-world financial issues, how research is provided to the FOMC, and the organization of FOMC meetings – and without strengthening the connection among research, regulation and policy-making units, these reforms may fail.

Further research could usefully explore some of the issues this paper has highlighted. First-hand accounts of the actual routine practices and uses of information in different parts of the Fed would shed more light on just how academically-oriented researchers were, as well as on the views of senior officials, and the Fed's bureaucratic structure. Perhaps more importantly, finer detail concerning the generation and interpretation of information would also enable the exploration of two crucial issues: why the Supervision and Regulation division came to be isolated from key research and decision-making functions, and how the Fed at various levels obtained knowledge about the financial system. Finally, the views of former FOMC members could reveal why the highest decision-making level did not exhibit sustained concern about the developments that ultimately caused the catastrophic meltdown of 2008.

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### NOTES

1. As Schonhardt-Bailey (2013, 15) notes, the 'Fed's original mandate was very much viewed as preventing financial crises and panics. . . '.
2. It also had the authority to prevent 'unfair', 'abusive', and 'deceptive' practices in high-cost loans under the 1994 Home Ownership Equity Protection Act (Greenspan, 2010).
3. As previously noted, although Barth *et al.* (2012) is an exception, the authors do not focus on the Fed or its transcripts in detail. Schonhardt-Bailey (2013) examines FOMC transcripts roughly from 1979–1999. Rosenhek (2012) investigates the Fed's changing conceptualizations of 'the crisis' once the panic in financial markets erupted in late 2007, but does not rely on FOMC transcripts. Holmes (2010) focuses on the Fed's communication of its monetary decisions to the public. Most of the recent work produced on the Fed has examined the implications of the Fed's interventions during the crisis, including quantitative easing and financial sector bailouts (e.g., Blinder, 2013; Chinn and Frieden, 2012).



4. Although housing bubbles inflated by lending booms and securitization also occurred in several European countries, given our interest in the Fed this section analyzes US housing and financial markets.
5. See, e.g., Coval *et al.* (2009) and MacKenzie (2011).
6. See, e.g., Engelen *et al.*, 2011.
7. The Fed defines the FOMC's role as follows: 'The Committee reviews economic and financial conditions, determines the appropriate stance of monetary policy, and assesses the risks to its long-run goals of price stability and sustainable economic growth.' (<http://www.federalreserve.gov/monetarypolicy/fomc.htm>).
8. We considered a wide range of terms and phrases and report only the most important here. Atlas allows for similar terms to be grouped in a single search, e.g., CDS and credit default swaps.
9. A prominent exception of a DSGE model with financial frictions is Bernanke *et al.* (1999).
10. For a critical assessment of the 'mop-up' strategy, see Roubini (2006).
11. While Meade (2006) suggests that the go-around impedes the voicing of dissent, we suggest that even if dissent is voiced (as we have shown to be the case), the go-around impedes the *impact* of dissent on discussions and institutional outcomes.
12. Lombardi and Woods (2008) emphasize the downsides of the consensus-generating nature of IMF staff discussions, a point stressed in the IMF's self-evaluation of its pre-crisis weaknesses (Independent Office of the IMF, 2011).
13. Research director David Stockton admitted at the September 2007 FOMC meeting that 'much of what has occurred [in the financial markets] doesn't even directly feed into our models' (Federal Reserve, 2007: 20).
14. The Fed merged the Greenbook and Bluebook into the Tealbook in 2010 in an attempt to streamline the production and processing of these documents. The effects of this change remain unclear given the five-year delay in the release of these documents.
15. But this did not make it a DSGE model, and overall it was still neo-Keynesian rather than New Classical (Mankiw, 2006; Meyer, 2004; Pescatori and Zaman, 2011).
16. These numbers were almost identical across the different Beigebooks. Discussions about 'real estate' primarily consisted of comments about housing prices from construction firms, developers, contractors, and real estate agents. 'Finance' consisted of conversations with bankers and information about mortgage volumes, interest rates, delinquency rates, and perceptions of credit standards. 'Main Street' comments were centered on manufacturing and retail, but also included infrequent topics like agriculture and tourism.
17. Similarly, the IMF's self-evaluation found that the IMF staff's compartmentalization in isolated 'silos' contributed to the institution's failure to appreciate the dangers before the crisis (Independent Evaluation Office of the IMF, 2011).

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## REFERENCES

- Abolafia, M. Y. (2004) 'Framing Moves: Interpretive Politics at the Federal Reserve', *Journal of Public Administration Research and Theory*, 14: 349–70.
- Anderson, R. G. and Kliesen, K. L. (2012) 'How Does the FOMC Learn About Economic Revolutions? Evidence from the New Economy Era 1994–2001', *Business Economics*, 47: 27–56.
- Auerbach, R. D. (2008) *Deception and Abuse at the Fed. Henry B. Gonzalez Battles Alan Greenspan's Bank*, Austin, TX: University of Texas Press.
- Axilrod, S. H. (2011) *Inside the Fed: Monetary Policy and Its Management, Martin through Greenspan to Bernanke*, Cambridge, MA: MIT Press.
- Barnett, M. N. and Finnemore, M. (1999) 'The Politics, Power, and Pathologies of International Organizations', *International Organization*, 53(4): 699–732.
- Barth, J. R., Caprio, G., and Levine, R. (2012) *Guardians of Finance: Making Regulators Work for Us*, Cambridge, MA.: MIT Press.
- Baxter, L. G. (2011) "'Capture" in Financial Regulation: Can We Channel it Toward the Common Good?', *Cornell Journal of Law and Public Policy*, 21: 175–200.
- Bernanke, B. S. (2003) "'Constrained Discretion" and Monetary Policy', Speech presented before the Money Marketeers of New York University, New York, NY.
- Bernanke, B. S., Gertler, M., and Gilchrist, S. (1999) 'The Financial Accelerator in a Quantitative Business Cycle Framework', in J. B. Taylor and M. Woodford (eds) *Handbook of Macroeconomics*, Vol. 1: Available at: <http://www.sciencedirect.com/science/article/pii/S157400489910034X>. Amsterdam, Netherlands: Elsevier Science B.V.

- Bernanke, B. S. and Gertler, M. L. (1999) 'Monetary Policy and Asset Price Volatility', Paper presented at New Challenges for Monetary Policy, A symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, USA. 26–28 August.
- Bernanke, B. S. and Gertler, M.L. (2001) 'Should Central Banks Respond to Movements in Asset Prices?', *American Economic Review*, 91(2): 253–7.
- Bies, S. (2005). 'Remarks by Governor Susan Schmidt Bies', Paper presented at The International Center for Business Information's Risk Management Conference: Basel Summit, Geneva, Switzerland.
- Blinder, A. (2013) *After the Music Stopped: The Financial Crisis, the Response, and the Work Ahead*, New York, NY: Penguin Books.
- Blinder, A. S. and Reis, R. (2005) 'Understanding the Greenspan Standard', Paper presented at the Federal Reserve Bank of Kansas City Symposium, Jackson Hole, Wyoming.
- Bliss, R. R. and Kaufman, G. G. (2005) 'Derivatives and Systemic Risk: Netting, Collateral, and Closeout', Federal Reserve Bank of Chicago Working Paper 2005-03.
- Borio, C. and White, W. (2004) 'Whither Monetary and Financial Stability? The Implications of Evolving Policy Regimes', Paper Presented at the Federal Reserve Bank of Kansas City's Symposium at Jackson Hole, Wyoming, on 28–30 August 2003.
- Brayton, F. and Tinsley, P. (1996) *A Guide to FRB/US – A Macroeconomic Model of the United States*, Washington, DC: Federal Reserve Board.
- Buffett, W. (2003) 2002 Chairman's Letter: Berkshire Hathaway.
- Buiter, W. H. (2012) 'The Role of Central Banks in Financial Stability: How Has it Changed? (Discussion Paper No.8780)', London: Centre for Economic Policy Research.
- Carpenter, D. (2013) 'Detecting and Measuring Capture', in D. Carpenter and D. Moss (eds) *Preventing Regulatory Capture: Special Interest Influence and How to Limit it*, Cambridge: Cambridge University Press.
- Cassidy, J. (2008) 'Anatomy of a Meltdown', *The New Yorker*.
- Cassidy, J. (2010) *How Markets Fail: The Logic of Economic Calamities*, London: Allen Lane.
- Cecchetti, S. G. (2003) 'What the FOMC Says and Does When the Stock Market Booms', Paper presented at the Reserve Bank of Australia Conference, Kirribilli, New South Wales.
- Chappell, H. W., McGregor, R. R. and Vermilyea, T. (2005) *Committee Decisions on Monetary Policy: Evidence from Historical Records of the Federal Open Market Committee*, Cambridge, MA: MIT Press.
- Chinn, M. and Frieden, J. (2012) *Lost Decades: The Making of America's Debt Crisis and the Long Recovery*, New York, NY: W. W. Norton.
- Chwieroth, J. (2010) *Capital Ideas: the IMF and the Rise of Financial Liberalization*, Princeton, NJ: Princeton University Press.
- Committee Hearings (2008) Federal Regulation of Financial Markets, Hearings before the House Oversight and Government Reform Committee, 110th Session.
- Coval, J., Jurek, J. and Stafford, E. (2009) 'The Economics of Structured Finance', *Journal of Economic Perspectives*, 23(1): 3–25.
- Dal Bó, E. (2006) 'Regulatory Capture: A Review', *Oxford Review of Economic Policy*, 22(2): 203–25.
- Edison, H. J. and Marquez, J. (1998) 'US Monetary Policy and Econometric Modeling: Tales from the FOMC Transcripts 1984–1991', International Finance Discussion Papers, No. 607: Board of Governors of the Federal Reserve System.

- Engelen, E., Erturk, I., Froud, J., Johal, S., Leaver, A., Moran, M., Nilsson, A., and Williams, K. (2011) *After the Great Complacency: Financial Crisis and the Politics of Reform*, New York, NY: Oxford University Press, USA.
- Federal Reserve (1998) Meeting of the Federal Open Market Committee on September 29, 1998, Washington, DC: Federal Reserve.
- Federal Reserve (2005a) *The Federal Reserve System: Purposes & Functions Vol. 9*, Washington, DC: Federal Reserve System Publications Committee.
- Federal Reserve (2005b) Meeting of the Federal Open Market Committee on June 29–30, 2005, Washington, DC: Federal Reserve.
- Federal Reserve (2005c) Meeting of the Federal Open Market Committee on September 20, 2005, Washington, DC: Federal Reserve.
- Federal Reserve (2006a) Meeting of the Federal Open Market Committee on May 10, 2006, Washington, DC: Federal Reserve.
- Federal Reserve (2006b) Meeting of the Federal Open Market Committee on December 12, 2006, Washington, DC: Federal Reserve.
- Federal Reserve (2007) Meeting of the Federal Open Market Committee on September 18, 2007, Washington, DC: Federal Reserve.
- Ferguson, C. H. (2012) *Predator Nation: Corporate Criminals, Political Corruption, and the Hijacking of America*, New York, NY: Crown Publishing.
- Friedman, B. M. (2006) 'The Greenspan Era: Discretion, Rather than Rules', *American Economic Review*, 96: 174–7.
- GAO (Government Accountability Office) (2011) *Federal Reserve System: Opportunities Exist to Strengthen Policies and Processes for Managing Emergency Assistance*, Vol. 11, Washington, DC: GAO.
- Gibson, M. (2004) *Understanding the Risk of Synthetic CDOs*, Washington, DC: Federal Reserve Board.
- Gibson, D. (2012). *Talk on the Brink: Deliberation and Decision during the Cuban Missile Crisis*, Princeton, NJ: Princeton University Press.
- Gorton, G., He, P. and Huang, L. (2006) 'Asset Prices when Agents are Marked-to-Market', Philadelphia, Pa.: Rodney L. White Center for Financial Research, The Wharton School, University of Pennsylvania.
- Gorton, G. (2012) *Misunderstanding Financial Crises: Why We Don't See Them Coming*, New York, NY: Oxford University Press.
- Gourevitch, P. (2013) 'Yet More Hard Times? Reflections on the Great Recession in the Frame of Earlier Hard Times', in M. Kahler, and D. A. Lake (eds) *Politics in the New Hard Times: The Great Recession in Comparative Perspective*, New York, NY: Cornell University Press.
- Greenspan, A. (2004) 'Risk and Uncertainty in Monetary Policy', *American Economic Review*, 94: 33–40.
- Greenspan, A. (2005) 'Risk Transfer and Financial Stability', Paper presented at the Federal Reserve Bank of Chicago's 41st Annual Conference on Bank Structure, Chicago, Illinois.
- Greenspan, A. (2010) Testimony of Alan Greenspan, Speech presented at Congress, Washington, DC.
- Hayford, M. and Malliaris, A. G. (2001) 'Is the Federal Reserve Stock Market Bubble-Neutral?', in G. Kaufman (ed.) *Asset Price Bubbles: Implications for Monetary Policy and Regulatory Policies*, Amsterdam, Netherlands: Elsevier Science.
- Helleiner, E. (2011) 'Understanding the 2007–2008 Global Financial Crisis: Lessons for Scholars of International Political Economy', *Annual Review of Political Science*, 14: 67–87.
- Hirsch, M. (2008) 'Greenspan's to Blame for Wall Street Woes', *Newsweek* digital edition, 16 September.

- Holmes, D. R. (2009) 'Economy of Words', *Cultural Anthropology*, 24(3): 381–419.
- Hopf, T. (2010) 'The Logic of Habit in International Relations', *European Journal of International Relations*, 16(4): 539–61.
- House Committee on Banking, Currency, and Housing (1976) *Federal Reserve Directors: A Study of Corporate and Banking Influence*, House of Representatives, 94th Congress.
- Hutchison, T. W. (1992) *Changing Aims in Economics*, Cambridge, MA: Blackwell.
- Independent Evaluation Office of the IMF (IEO) (2011) *IMF Performance in the Run-up to the Financial and Economic Crisis*, IMF.
- Jacobs, L. and King, D. (2009) 'America's Political Crisis: The Unsustainable State in a Time of Unraveling', *PS: Political Science & Politics*, April: 277–85.
- Jacobs, L. R. and D. S. King (2010), 'Varieties of Obamaism: Structure, Agency, and the Obama Presidency', *Perspectives on Politics*, 8(3): 793–802.
- Johnson, S. and Kwak, J. (2010) *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown*, 1st ed., New York, NY: Pantheon Books.
- Katzenstein, P. J. and Nelson, S. C. (2013) 'Worlds in Collision: Uncertainty and Risk in Hard Times', in M. Kahler, and D. A. Lake (eds) *Politics in the New Hard Times: The Great Recession in Comparative Perspective*, New York, NY: Cornell University Press.
- Killian, L. and Manganelli, S. (2008) 'The Central Banker as a Risk Manager: Estimating the Federal Reserve's Preferences under Greenspan', *Journal of Money, Credit, and Banking*, 40: 1103–29.
- Kirshner, J. (1999) 'Inflation: Paper Dragon or Trojan Horse?' *Review of International Political Economy*, 6(4): 609–18.
- Kotios, A. and Galanos, G. (2012) 'The International Economic Crisis and the Crisis of Economics', *The World Economy*, 35(7): 869–85.
- Krugman, P. (2009) 'How Did Economists Get It So Wrong', *New York Times*, 6 September.
- Krugman, P., and Wells, R. (2010) 'The Slump Goes On: Why?', *New York Review of Books*.
- Kwak, J. (2013) *Cultural Capture and the Financial Crisis*, New York, NY: Cambridge University Press.
- Latour, B. (1987) *Science in Action: How to Follow Scientists and Engineers through Society*, Cambridge, MA: Harvard University Press.
- Leontief, W. (1971) 'Theoretical Assumptions and Nonobserved Facts', *American Economic Review*, 61(1): 1–7.
- Levine, R. (2008) 'An Autopsy of the US Financial System: Accident, Suicide, or Negligent Homicide', *Journal of Financial Economic Policy*, 2(3): 196–213.
- Lo, A. (2012) 'Reading about the Financial Crisis: A Twenty-One-Book Review', *Journal of Economic Literature*, 50(1): 151–78.
- Lombardi, D. and Woods, N. (2008) 'The Politics of Influence: An Analysis of IMF Surveillance', *Review of International Political Economy*, 15(5): 711–39.
- MacKenzie, D. (2005) 'Opening the Black Boxes of Global Finance', *Review of International Political Economy*, 12(4): 555–76.
- MacKenzie, D. (2011) 'The Credit Crisis as a Problem in the Sociology of Knowledge', *American Journal of Sociology*, 116(6): 1778–1841.
- McCloskey, D. N. (1996) *The Vices of Economists – The Virtues of the Bourgeoisie*, Amsterdam: Amsterdam University Press.
- Mankiw, G. N. (2006) 'The Macroeconomist as Scientist and Engineer', *Journal of Economic Perspectives*, 20: 29–46.
- Marcussen, M. (2006), 'Institutional Transformation? The Scientization of Central Banking as a Case Study', in T. Christensen and P. Laegreid (eds) *Autonomy*

- and Regulation: Coping with Agencies in the Modern State*, Cheltenham, UK: Edward Elgar.
- Mason, J. R. and Rosner, J. (2007) 'Where Did the Risk Go? How Misapplied Bond Ratings Cause Mortgage Backed Securities and Collateralized Debt Obligation Market Disruptions', Social Science Research Network Working Paper 1027475.
- Mayer, M. (2001) *The Fed: The Inside Story of How the World's Most Powerful Institution Drives the Markets*, New York, NY: Free Press.
- Mayer, T. (1993) *Truth Versus Precision in Economics*, Brookfield, VT: Edward Elgar.
- Meade, E. (2006) 'Dissent and Disagreement on the Fed's FOMC: Understanding Regional Affiliations and Limits to Transparency', Amsterdam, Netherlands: Netherlands Central Bank.
- Meade, E. E. and Thornton, D. L. (2011) 'The Phillips Curve and US Monetary Policy: What the FOMC Transcripts Tell us', *Oxford Economic Papers*, 64: 197–216.
- Meyer, L. (2004) *A Term at the Fed: An Insider's View*, New York, NY: HarperCollins.
- Morris, C. (2008) *The Two Trillion Dollar Meltdown*, New York, NY: Perseus Books.
- Nakamoto, M. and Wighton, D. (2007) 'Citigroup Chief Stays Bullish on Buy-Outs', 9 July, *Financial Times*.
- Obstfeld, M., Shambaugh, J. C. and Taylor, A. M. (2009) 'Financial Instability, Reserves, and Central Bank swap lines in the Panic of 2008', *American Economic Review: Papers and Proceedings*, 99(2): 480–6.
- Pagliari, S. (ed.) (2012) *Making Good Financial Regulation: Towards a Policy Response to Regulatory Capture*, London, UK: Grosvenor House Publishing.
- Pescatori, A. and Zaman, S. (2011) 'Macroeconomic Models, Forecasting, and Policymaking', Working Paper, Federal Reserve Bank of Cleveland.
- Powell, W. and DiMaggio, P. (eds.) (1991) *The New Institutionalism in Organizational Analysis*, Chicago, IL: University of Chicago Press.
- Rajan, R. (2005) 'The Greenspan Era: Lessons for the Future', Paper presented at A Symposium Sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming.
- Rajan, R. (2011) *Why Did Economists Not Spot The Crisis?* Chicago, IL. Chicago Booth Fault Lines Official Blog, 5 February: Available at: <http://forums.chicagobooth.edu/faultlines?entry=30>
- Reinhart, C. and Rogoff, K. (2013) 'Shifting Mandates: The Federal Reserve's First Centennial', National Bureau of Economics Working Paper 18888.
- Rodrik, D. (2011) *The Globalization Paradox*, New York/London: W.W. Norton.
- Rosenhek, Z. (2012), 'Diagnosing and Explaining the Global Financial Crisis: Central Banks, Epistemic Authority and Sense-Making,' The Open University of Israel Research Institute for Policy Political Economy and Society, Working Paper No. 19.
- Roubini, N. (2006), 'Why Central Banks Should Burst Bubbles', *International Finance*, 9(1): 87–107.
- Roubini, N. and Mihm, S. (2010) *Crisis Economics: A Crash Course in the Future of Finance*, New York, NY: Penguin Press.
- Schonhardt-Bailey, C. with A. Bailey (2013) *Deliberating American Monetary Policy: A Textual Analysis*, Cambridge MA: MIT Press.
- Shapin, S. (1995) 'Cordelia's Love: Credibility and the Social Studies of Science', *Perspectives on Science*, 3: 255–75.
- Shull, B. (2012) 'Too Big to Fail: Motives, Countermeasures, and the Dodd-Frank Response', Levy Economics Institute of Bard College Working Paper 709.

REVIEW OF INTERNATIONAL POLITICAL ECONOMY

- Stiglitz, J. E. (2011) 'The Failure of Macroeconomics in America', *China & World Economy*, 19(5): 17–30.
- Stulz, R. M. (2010) 'Credit Default Swaps and the Credit Crisis', *Journal of Economic Perspectives*, 24(1): 73–92.
- Tarullo, D. (2013) 'Dodd-Frank Implementation', Speech before the Committee on Banking, Housing, and Urban Affairs, US Senate, Washington, DC.
- Tillman, P. (2009) 'The Fed's Perceived Phillips Curve: Evidence from Individual FOMC Forecasts', MAGKS Papers on Economics, Marburg, Germany.
- Vaughan, D. (1999) 'The Dark Side of Organizations: Mistake, Misconduct, and Disaster', *Annual Review of Sociology*, 25: 271–305.
- Weaver, C. (2008) *Hypocrisy Trap: The World Bank and the Poverty of Reform*, Princeton, NJ: Princeton University Press.