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The Interwar Housing Cycle in the Light of 2001–2012

A Comparative Historical Perspective

Alexander J. Field

The financial crisis of 2008 to 2009 and the Great Recession it precipitated forced a rethinking among macroeconomists about the origin, prevention, and potential mitigation of such events. One of the conclusions emerging from a considered examination of the run-up to and the fallout from the events is the limitation of framing the policy issues solely in terms of whether Chairman Bernanke and the Federal Reserve System, as well as President Obama and the Congress, did the right thing when the crisis hit. Most observers believe that the response to the immediate crisis was correct in the sense that they believe that the appropriate remedy, once the seizing up of credit markets began, was indeed large scale fiscal and monetary stimulus.

As the Fed reduced short-term rates close to the zero lower bound, it almost tripled the size of its balance sheet, and this ongoing monetary accommodation was augmented by the Treasury's Troubled Asset Relief Program (TARP, October 2008) and, beginning in February of 2009, the fiscal stimulus associated with the American Recovery and Reinvestment

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Act (ARRA).¹ The Republican takeover of the House of Representatives in the November 2010 midterm elections ended prospects for additional fiscal stimulus, at least from the expenditure side, but the Fed's expansionary monetary stance continued as it sustained its expanded balance sheet, purchasing, through its programs of quantitative easing, longer term securities as some of the troubled assets acquired at the height of the crisis matured.

Analysis of the appropriate response to the crisis drew inspiration from the experience of the country during the Great Depression. Two of the key policymakers, Christina Romer and Ben Bernanke, were both serious students of the Great Depression. Bernanke is famous for saying, at a 2002 conference honoring Milton Friedman on his 90th birthday, "Regarding the Great Depression, you're right, we did it. We're very sorry . . . we won't do it again" (Bernanke 2002). Or to put it slightly more accurately, we won't *not* do it again, since Friedman and Schwartz's (1963) brief against the Fed was not their action, but their inaction in the face of bank failures and the consequent shrinkage in the country's money supply.

But this approach to thinking about the lessons of either the Great Recession or the Great Depression, by focusing only on the policy response once the crisis emerged full blown, may dissuade us from examining the process whereby balance sheets become increasingly levered and increasingly risky over time—in other words, the process, which may extend over several years or even decades, whereby an economy can become increasingly financially fragile (Minsky 1964, 1975, 1986). Ignoring this aspect of the run-up to the most recent episode makes it difficult to understand why or how the collapse of an asset price bubble in housing, and the consequent reduction of spending in an overbuilt sector could have threatened such catastrophic consequences for the United States and the world economy. To be sure, residential construction is an important component of gross private domestic investment, but it still contributes a small portion of overall planned spending. Even allowing for a generous multiplier, it is hard to see on the face of it how this relatively small tail could have had the potential to bring down a much larger economic dog.

The answer, which I think is appreciated more now than before 2008, is the significance of balance sheets, and in particular the ways in which high leverage in both the financial and household sectors can generate tight interconnections and the potential for domino effects (systemic impacts) as well as, in the context of house price declines, significant wealth and liquidity effects. To focus only on Fed action or inaction once the crisis hit draws attention away from the multiple acts of legislative and regulatory commission and omission that allowed financial fragility to grow in the first place. It is much clearer now that balance sheets, debt, and leverage can make a big

1. Most of the effects of the ARRA on employment and output were experienced in 2010 and 2011. See Congressional Budget Office (2013, 3, table 1).

difference in how an economy responds to an asset price, and/or spending shock. The financial fragility of an economy can spell the difference between whether the system shrugs off a shock or potentially goes into a tailspin.

If the history of the Great Depression enriched our understanding of and influenced the policy response to the Great Recession, reverse intellectual influences are also probable—and desirable. In particular, postmortems on policy issues associated with the Great Recession should cause us to reconsider the shared beliefs among many (aside from real business cycle proponents) that the Great Depression was indeed principally caused by the absence of adequate Federal Reserve response. The thesis that massive monetary accommodation in the early 1930s could almost entirely have eliminated the output cost of the Great Depression needs to be reexamined. Balance sheet considerations were likely implicated in the slow recovery then as well as now, and might have resulted in persistent output losses, even in the presence of a different monetary policy. In the Great Recession, the Fed drove short rates close to the zero lower bound, and also engaged, in sustaining a balance sheet that increased almost by a factor of three, in buying large amounts of longer term Treasury securities. It is not clear how much more monetary accommodation could have been applied. And yet, in its April 27, 2011, release, the Fed forecast unemployment in 2013, a full five years after the worst months of the crisis, to still be in the 6.8 to 7.2 percent range (central tendency), with some within the Fed projecting an unemployment rate of 8.4 percent (Federal Reserve Board 2011a).

The Fed's forecast was overly optimistic. The actual unemployment rate in June 2013 was 7.6 percent, and more than half the unemployed had been out of work for fifteen weeks or longer. It will likely be years before the economy reaches a prerecession forecast of the trajectory of potential output (this is written in 2013) and the cumulative output loss associated with the Great Recession may ultimately exceed one and a half years of gross domestic product (GDP) at 2007 rates.²

If massive monetary accommodation will not be able to avoid a very large output loss over the years 2008 to 2017 and beyond we must reconsider whether, in fact, as conventional wisdom seems to hold, massive monetary accommodation in 1929 to 1933 would have avoided most of the output loss associated with those worst years of the Depression. The more recent monetary accommodation made a difference and without it the cumulative output loss would likely have been larger. Similarly, more Fed accommoda-

2. After the start of the recession the Congressional Budget Office revised downward its projections of potential GDP, in part because of anticipations of the deleterious effects on labor productivity growth of long-term unemployment. This will reduce a calculation of cumulative output loss if we define the recession and slow recovery as ending at the point where actual output again reaches potential. Such an estimate of cumulative output loss will be too small, since the permanently reduced trajectory of potential is also a consequence of the recession and slow recovery and the financial fragility and crisis that precipitated it. See Field (2013) for calculations.

tion in the early 1930s would probably have meant a less severe Depression. The question on the table, however, is whether that was all that would have been needed to avoid a significant cumulative output loss.

Carmen Reinhart and Kenneth Rogoff (2009) provide historical evidence that recessions associated with financial crises require significantly longer for recovery than those that do not.³ And financial crises involving institutions that are not just illiquid but effectively insolvent (because of a prior history of poor and/or risky lending, augmented in some cases by fraud) pose a much more serious policy challenge. Richard Koo's (2009) analysis of Japan and the International Monetary Fund's 2012 survey emphasize that highly leveraged balance sheets in the financial, nonfinancial, and/or household sectors can make a big difference both in the resilience of an economy when faced with an asset price or spending shock, and on the effectiveness of monetary policy in avoiding a large output loss.⁴

But if balance sheet issues hindered recovery in the 1930s, we also need to ask whether housing was implicated in the same ways and to the same degree as has been true in the Great Recession. In 2007–2012, bad real estate lending clearly impaired financial sector balance sheets more than did poorly performing stock market–related loans. Was this true as well in the 1920s? In other words, compared to more recent experience, and other categories of lending, how much did residential mortgage lending in the 1920s contribute to weakening bank balance sheets, making them vulnerable in the 1930s to runs, insolvency, and failure? Secondly, at the level of household balance sheets, was bad residential mortgage debt linked in some direct way to the anomalous drop in consumer durables spending that marked the initial stages of the economic downturn in 1929 and 1930 (Temin 1976)? Or did this have more to do with the loss of stock market wealth (Mishkin 1978) or increased burden of consumer loans (Olney 1999), or an effect running from increased postcrash stock market volatility (Romer 1990)?

In this chapter I tread a narrow line, arguing on the one hand that we cannot understand the onset, depth, and duration of the Great Depression

3. Reinhart and Rogoff (2010) have been criticized for aspects of that paper suggesting that ratios of government debt to GDP above 90 percent represented a break point associated with much lower growth rates. In *This Time Is Different* (2009), they had cast a considerably broader net, with as much emphasis on private as on public debt. One of the central messages of *This Time Is Different* was that recoveries from recessions associated with financial crises tended to be slower; neither the 2010 paper nor criticism of it undermined or confirmed that generalization. Based on US data, Bordo and Haubrich (2011) did express doubt, although much depended on the criteria used to define a financial crisis. And they granted three important exceptions consistent with the Reinhart and Rogoff claim: the Great Depression, the recession of the early 1990s, and the recovery after the Great Recession.

4. Chapter 3 of the IMF's 2012 *World Economic Outlook* offers an overview of international and to some extent historical evidence that housing slumps associated with prior run-ups in household debt tend to be more severe and require more time for recovery. Koo (2009) emphasizes how high degrees of leverage contributed to years of slow economic growth in Japan, although the emphasis in the Japanese case is on corporate and bank as opposed to household balance sheets.

without giving as much attention to balance sheet issues as we are now devoting in the analysis of more recent events. At the same time I will maintain that the residential housing cycle, and lending associated with it, played a smaller role in the interwar business cycle compared to what has been true in the first cycle of the twenty-first century. To argue that housing was at the epicenter of the downturn in 1929 to 1931, as it was in 2007 to 2009, and as Gjerstad and Smith (see chapter 3, this volume) maintain, would require significant changes in what have become established narratives of the origin of the downturn in the interwar period. That does not mean the claim is wrong, but rather that it needs to be carefully considered.

There are many similarities between the Great Depression and Great Recession, not least of which is that each was preceded by asset price bubbles (boom and bust) in both equities and real estate. But there were also important differences. The timelines are roughly inverted.⁵ In the 1920s a residential real estate boom peaked in 1926, although it was followed by a boom in apartment building and one in central business district construction that extended into the early 1930s. The stock market boom was particularly strong in 1928 and 1929, and the crash in equity values is often taken as symbolic of the start of the Great Depression. Although the causal link has been questioned—scholars have pointed to the fact that industrial production began to decline in the summer of 1929, or claimed that stock ownership was concentrated among a small portion of the population,⁶ or that the market recovered considerably in the first four months of 1930, or that big declines in output and employment did not begin until months after the crash—the October 1929 drop and subsequent downward trajectory retain a central place in narratives of origin.⁷

In the Great Recession, the sequence was roughly reversed. The boom in equities, particularly tech-based securities, began to collapse in 2000. This was followed, however, by a major boom in the prices and construction of residential housing, which peaked in early 2006. A commercial construction boom followed, as had been the case in the 1920s.⁸

5. Another difference is that net inflows of foreign capital, an important factor in the early twenty-first century, were entirely absent in the 1920s, when the United States, running current account surpluses, was a net capital exporter.

6. Romer (1990) suggests that less than 2 percent of American households held stock at the time of the crash, citing Galbraith (1955, 78). But the empirical basis for this assertion is problematic. Galbraith cited a 1934 Senate investigation, in which 29 exchanges reported 1,548,707 customer accounts. Assuming no more than one account per household, and with approximately 30 million occupied housing units in the country in 1930, this is closer to 5 percent than 2 percent. I am indebted to Gavin Wright for drawing my attention to the open question of how extensive stock ownership was at this time.

7. See, for example, Mishkin (1978), who emphasized wealth and liquidity effects; Romer (1990), who argued that post-1929 stock market volatility adversely affected consumer durables purchases; or Eichengreen and Mitchener (2004, 190), who reference stock market effects on balance sheets throughout the economy.

8. The S&P 500 index temporarily exceeded its 2000 peak in 2007, although it remained, in inflation adjusted terms, about 18 percent below it. In November of 2011 it was, in real terms,

But whereas the real economy appears to have largely shrugged off the end of the residential real estate bubble in 1926, that does not appear to have been the case with the stock market crash of 1929 and the slow, sickening slide to a trough in 1932, marked as it was by some of the largest one-day percentage increases in stock prices. And whereas the real economy largely shrugged off the collapse of the tech stock bubble in 2000 and 2001, that does not appear to have been the case with the real estate collapse that began in early 2006 and continued through the first quarter of 2012. This asymmetrical real economy response to asset price deflation is associated with almost diametrically opposed opportunities for leveraged asset acquisition in housing and equities during the run-ups to the two crises.⁹

During the 1920s, mortgages commonly required 50 percent down payments, were generally nonamortized, and were for relatively short periods (five years or less). In the case of federally chartered commercial banks, these limits were legally mandated. Other lenders exercised restraint for some of the same reasons national banks had been restricted in their ability to lend on housing: real estate had an historical record as a very risky asset. As the result of innovations in the 1920s by building and loans, then responsible for more than half of institutional lending on residential housing, it did become possible in some instances for borrowers to obtain a second mortgage and thereby, through this mechanism, increase leverage (Snowden 2010). But not all building and loans were enthusiastic about the practice—the larger ones opposed it—and the overall norm remained short mortgages with modest loan-to-value ratios.

In stocks, however, the situation was almost exactly the reverse. Particularly in the early and middle twenties, one could buy stocks for as little as 10 percent down, with the remainder borrowed. The stock purchaser typically received margin from his broker, who in turn financed this by securing a brokers' loan from a bank or, in the late 1920s, directly from a corporation or private individual. If the stock price declined such that borrower's equity fell below an agreed upon minimum (which might be above 0), the borrower added margin or the lender sold out the position.¹⁰

still close to 40 percent below its year 2000 high point. The NASDAQ index, which peaked at 5,408 in March of 2000, remained in inflation-adjusted terms, almost 60 percent below its peak. By May of 2013 the S&P 500 had risen substantially, but still stood in real terms below its 2000 peak.

9. The asset-side wealth effects of the dot.com and real estate busts were of similar magnitude; the decline in stock values actually somewhat larger. Between December 1999 and September 2002 approximately \$10 trillion of stock market value disappeared (Gjerstad and Smith 2009). By the end of 2011, the housing crash had erased about \$7 trillion dollars of house value (the comparison between these losses does not factor in the mild inflation that characterized the early twenty-first century). Although the asset-side loss from stock market decline was somewhat larger than that associated with the housing bust, the real economy damage from the latter was worse, suggesting that a focus on the liability side of balance sheets is the key to understanding why this was so.

10. White (1990) argues that credit was not "pushed" on borrowers, but rather "pulled" by speculative fever in the stock market. His evidence is that when, under pressure from the Fed,

In 1934, following the worst years of the Great Depression, the Securities and Exchange Act gave the Federal Reserve authority to set margin requirements on stocks. Since 1975 these have been fixed, for new purchases by individuals, at 50 percent. When the tech bubble collapsed, many investors did see their balance sheets shrink. Nevertheless, because the acquisition of stocks had, to a lesser degree than in the 1920s, been financed with borrowed money, the collapse of the price bubble had lower potential to transmit distress to other entities (financial institutions) that, indirectly or directly, held equities on the left-hand (asset) side of their balance sheets.¹¹ The end of the tech boom also meant some retardation in the acquisition of information technology (IT) equipment which, through multiplier effects, influenced consumption spending and the retardation of GDP growth. From a comparative perspective, however, the 2001 recession saw few financial failures and was of mild severity and duration. Only in the quarterly data (2001:1) do we see a slight (one quarter) decline in real GDP (see US Department of Commerce 2013, NIPA table 1.1.6).

member banks in 1928 and 1929 cut back on brokers' loans, this lacuna was, in the presence of very strong demand, quickly filled by private investors, corporations, and foreign banks. Rates on brokers' loans rose during 1928 and 1929, along with the general level of interest rates, as the Fed allowed increases in the face of a rise in the transactions demand for cash associated with the upsurge in stock trading (Field 1984). The Fed rationalized these rate increases, along with member bank restrictions on brokers' loans, as part of a program that would help control speculation in the stock market. Rappoport and White (1994) summarize evidence that margins rose from 10 to 25 percent in the early to mid-1920s to 40 to 50 percent in 1928 and especially 1929. A brokers' loan was in principle collateralized, but creditors still bore risk because of the possibility, if prices went into free fall, that a lender might not be able to sell quickly enough to secure his initial investment. Higher margins provided additional protection against this risk. Rappoport and White also show that the premium on brokers' time loans rose relative to Treasury rates, also consistent with the likelihood that lenders had increasing concerns about a possible crash. Nevertheless, through whatever channels, and at whatever price, credit supported the run-up in stock purchases and prices, as evidenced by the close correlation between outstanding brokers' loans and security prices (White 1990, figure 4, 75).

11. Mishkin (1978) argued that the stock market decline between 1929 and 1932 affected household demand through both wealth and liquidity effects. Romer (1990) questioned the empirical significance of the wealth effect. Typical econometric estimates are that a dollar decline in household wealth will reduce consumption by four or five cents. The liquidity mechanism predicts that if financial liabilities rise, or if the illiquid portion of assets rises, then demand for new durables and house ownership may decline. The composition of the household balance sheet, therefore, has the potential to influence the amount and composition of consumption. Leveraged acquisition by households of stocks, as opposed to real estate or consumer durables, was less likely to generate liquidity effects because of the nature of margin loan contracts. If prices fell, the borrower could add margin to retain the position, but in cases of rapid price decline, the more likely outcome was that the lender simply sold out the position, removing the stock from the asset side of the balance sheet but at the same time extinguishing the associated liability. Banks in the aggregate did have considerable exposure. On December 31, 1929, loans on securities comprised 39 percent of all member bank loans, more than triple the amount of real estate loans, and loans on securities remained substantially above real estate loans throughout the worst years of the Depression (Board of Governors of the Federal Reserve Board 1943, *Banking and Monetary Statistics*, table 19, 76). But loans on securities were heavily concentrated in the large money center banks, which in general did not fail, suggesting that for the thousands of banks that did, bad real estate loans may have played a more important role than is suggested by the aggregate data.

In contrast, the collapse of the real estate bubble¹² starting in 2006 set in motion rows of falling dominoes that threatened to bring the United States and the world economy to its knees.

These observations suggest that the pre-2008 complacency among economists and policymakers about how real estate acquisition was financed was not justified. We should have been more concerned. Leverage mattered. This is a matter of continuing and more general concern. In spite of the passage of the Dodd-Frank bill in July of 2010, there has to date (May 2013) been little movement to alter the incentives that even bigger and more interconnected financial institutions have to make risky bets with borrowed money.¹³

As we try to parse the lessons from the most recent cycle, there is much to be learned by going back and reexamining the history of housing during the interwar period. In particular, it would be helpful to understand better why the end of the residential real estate boom in 1926 appears to have had such a limited adverse effect on the real economy, as compared to what happened in the early twenty-first century (on this question, see White, chapter 4, this volume). At the same time, we need to understand why private sector construction remained so depressed for such a long time during the 1930s. More than two decades ago I argued that this was principally due to the physical and legal detritus of premature subdivision in the 1920s (Field 1992), and that in the postwar period, housing booms have created fewer obstacles to recovery from this source, due to the development of zoning and land use regulation. That is likely to be true as well for the most recent boom, since land use regulation, unlike that applicable to financial institutions, was less affected by the deregulatory enthusiasms of the 1980s and 1990s (see also Field [2011], chapters 10 and 11).¹⁴ More than six years after it peaked in

12. By a bubble I mean an increase in asset prices unrelated to improvements in fundamentals. It is always easier to see and say this after the fact, but even before the crash it was apparent to a critical observer that the unprecedented increase in the ratio of house prices to median household income in the early twenty-first century could not continue indefinitely.

13. The failure in November 2011 of Jon Corzine's firm, MF-Global, was a reminder that a newer and more effective regulatory regime, one less subject to exploitation of loopholes and political manipulation, remained a work in progress. Corzine had placed highly leveraged bets (using leverage ratios of more than 30 to 1—higher than investment banks, somewhat chastened, were then risking) that troubled European sovereign debt would recover. Because of the very slim equity cushion, it did not take much of a continued slide in the prices of these bonds to push the firm into bankruptcy. Corzine also took advantage of weakening restrictions on what trading firms could do with supposedly segregated customers' accounts (see Burrough, Cohan, and McLean 2012), and had personally intervened to help fight back efforts by the Commodity Futures Trading Commission to tighten these. See <http://blogs.wsj.com/deals/2011/10/31/mf-global-bankruptcy-the-biggest-losers/>.

14. The implications of the failure of construction spending to revive are significant. Throughout the 1920s, gross investment in equipment, residential structures, and nonresidential structures were each of similar magnitude. In 1937, both construction categories remained substantially short of equipment investment. I calculate that had these three categories retained their rough equality with the rates exhibited by equipment investment, and assuming a multiplier of 1.78, GDP in 1937 would have been \$102.2 billion rather than the actual \$91.9 billion. I estimate potential output in that year at \$110.9 billion (all magnitudes in 1937 dollars). According

2006:1, expenditures on residential construction began to recover in 2012, although in 2013:1, a full seven years after the peak, these expenditures proceeded at less than half peak levels in nominal and real terms.¹⁵

On the other hand, leverage, debt overhang, and foreclosure played a major role in amplifying the impact of the housing bust in 2006 to 2012, posing obstacles to full economic recovery (Financial Crisis Inquiry Commission 2011). An open question historically is how much the debt overhang of the residential housing boom of the 1920s, as compared to the direct legacy of premature subdivision, contributed to slow recovery during the 1930s. Looking at the two booms using a comparative approach can give us some perspective on this.

What happened in the early twenty-first century was quite different in a number of respects from what happened in the interwar period. The epicenter of the problems causing the initial downturn in 2007 was clearly housing, which most argue was not the case in the Depression.¹⁶ And whereas Irving Fisher's debt deflation mechanism affected mortgaged housing between 1929 and 1933, the problems in the sector in the recent episode were caused only marginally by increasing debt burdens due to deflation. Although Bernanke and other policymakers feared more severe deflation, in part as a result of their actions, the annual rate of change of the consumer price index (CPI) for all urban consumers was negative only in 2009, declining at .37 percent per year, as compared with 3.8 percent growth in 2008, and returned to positive territory (1.6 percent per year) in 2010 (US Department of Labor 2011). This is to be compared with the 8 percent per year deflation that characterized 1929 to 1933.¹⁷

Bad mortgage debt contributed directly to failures of building and loans, the provider of the majority of institutionally financed mortgages during the 1920s, and this bears some relationship to the ways in which housing travails ended up threatening system-wide damage to the economy by jeopardizing the solvency of financial institutions in the 2007 to 2011 period. But the argument (Gjerstad and Smith, chapter 3, this volume) that balance sheet issues associated with housing were central both to the initial downturn in the Great Depression and to the slow recovery must overcome the long lag of several years between when the residential housing boom ended (1926) and the beginning of the downturn in the real economy in 1929. It must also overcome the relatively small share of institutional lending on residential

to these calculations, more than half the output gap remaining in 1937 can be accounted for by the failure of construction to revive. The contribution of the residential housing shortfall considered alone is about a third. For details, see Field (2011, 271).

15. US Department of Commerce 2013, NIPA table 1.1.5, accessed May 30, 2013.

16. For a contrasting view see Gjerstad and Smith, chapter 3, this volume.

17. Home owners in the most recent episode faced increasing real debt burdens, but this was more typically due to their use of innovative financial products such as negative amortization loans with low teaser rates that subsequently reset.

housing contributed by commercial banks: a fifth or less prior to 1937 (Morton 1956, table C-2, 170).

We have abundant historical evidence that commercial bank failures can pose a systemic threat to an economy. It is less clear that this would have been so with building and loans. Such institutions did not issue demand deposits, and so their failure could not reduce the money supply. Moreover, unlike commercial banks, they did not typically borrow from or lend to other financial institutions, and thus contributed little to the interconnections among financial sector balance sheets that can facilitate contagion.

On the other hand, there is little doubt that bad real estate lending contributed to the vulnerability and failure of specific commercial banks, particularly state-chartered banks, which faced fewer constraints on their lending in this area than did their nationally chartered counterparts. Natacha Postel-Vinay (2011) has found, based on longitudinal analysis of balance sheet data for Chicago-area state banks, that real estate lending in the 1920s influenced which banks were vulnerable to failure in the early 1930s. In particular, as did Elmus Wicker (1980), she disputes the view that bank runs were simply liquidity events inspired by irrational fear, crises that could have been averted by temporary intervention from the Fed. She suggests instead that most failed banks were insolvent, and that they were so in particular because of bad real estate lending. In other words she tells a story—admittedly one based on the Chicago data alone—that bears analogues to 2001 to 2010, and is in this sense supportive of what Gjerstad and Smith are trying to advance.

Indeed, it does sometimes appear that wherever and whenever one digs into the failure of a commercial bank during the Depression, the words “bad real estate lending” are likely to follow. This is true for the famous case of the Bank of United States (see Lucia 1985; O’Brien 1992; Trescott 1992), although stock market loans, in particular loans to affiliates and others to support holding the bank’s own stock, were also implicated in its failure.¹⁸ Bad real estate loans were also prominent in the collapse of the Bain group of banks in Chicago in June 1931, which spread to the Forman banks (Guglielmo 2011, 35). A third case in point is the failure of the Tennessee-based banking empire of Caldwell and Company, which figures prominently in the Gjerstad and Smith narrative. Wicker (1980) attributed the failure of Caldwell and 120 other banks to poor loans and investments made in the 1920s (1980, 572).

Still, categories such as “real estate lending,” or “urban mortgages” include loans not only on residential housing, but also on commercial and industrial property; the focus here is mainly on the comparative contribution of the residential housing cycle to recession/depression. Caldwell’s problems, for example, appear to have been largely in commercial real estate and

18. Temin (1976, 92) also attributed the failure of the Bank of United States to bad loans, particularly real estate loans.

municipal investment complementary to it rather than strictly residential lending (Tennessee Encyclopedia 2011).

Wicker saw his interpretation as supporting Friedman and Schwartz (1963) in what was then an ongoing debate with Temin (1976). But Wicker's analysis is really quite inconsistent with the narrative Friedman and Schwartz advanced. Friedman and Schwartz downplayed the extent to which failing banks were insolvent as a result of a prior history of risky or poorly selected loans and investments, emphasizing instead that the banking panics were almost entirely liquidity events. This is particularly evident in their characterization of the failure of the Bank of United States, which they considered a solvent bank, attributing the fact that it was not rescued in part to anti-Semitism. Friedman and Schwartz mention, although they do not pursue further, the possibility that "the great surge in bank failures that characterized the first banking crisis after October 1930 may . . . have resulted from poor loans and investments made in the twenties" (Temin 1976, 85; Friedman and Schwartz 1963, 355).

As does Wicker, Guglielmo (2011) links vulnerability in the 1930s to poor lending in the 1920s, attributing a weakening of Illinois state bank portfolios to the drying up of opportunities to make short-term commercial loans—as many corporations shifted from debt to equity financing. To make up for lost business, he suggests, banks shifted into loans backed by real estate or stock. Although such loans may have been viewed as safe at the time they were made, they turned out, *ex post*, to be quite risky. Unlike commercial loans, neither category was discountable at the Fed. In the case of real estate, the relatively low loan-to-value ratios of 1920s loans did not end up protecting bank collateral as effectively as may have appeared to have been the case when they were originated, largely due to the perhaps unexpectedly high cost of foreclosure. Similarly, loans on stock (e.g., brokers' loans), although championed in the 1920s as almost as liquid as cash, turned out not always to be so when the free fall of equity prices made it impossible to sell out fast enough to recover collateral.

Therefore, there is considerable evidence linking bad lending in the 1920s, including bad real estate lending, to financial institution vulnerability in the 1930s, suggesting that failures, which were already high in the 1920s and rose much further in the 1930s, were not pure liquidity events but often involved institutions driven to insolvency by a prior history of risky lending (Calomiris and Mason 1997, 2003). This suggests strong parallels with the early twenty-first century, and would again seem to provide support for the Gjerstad and Smith position. While acknowledging the importance of this dynamic in understanding the interwar cycle, I will nevertheless continue to make the case that the residential housing cycle in the 1920s was not the epicenter of the Great Depression in the way it so clearly has been for the Great Recession. To the degree that real estate lending was implicated in bank failures in the 1920s, and it was considerable, the loans tended to be

farm mortgages, rather than loans on residential real estate per se (Alston, Grove, and Wheelock 1994).

It is indeed tempting to conclude that the 1920s were like the early twenty-first century, and that the foundations for the Depression were established in housing in the 1920s. To some degree this was no doubt true. As I have previously argued, premature subdivision in the 1920s posed legal and infrastructural impediments to the revival of house construction in the 1930s (Field 1992). But the financial groundwork differed in important ways. In the earlier period a smaller fraction of houses was mortgaged, and loan-to-value ratios were lower—in other words the sector was much less levered. Bad real estate loans adversely affected building and loan societies (forerunners of savings and loans), but their failures had little systemic impact. In spite of the role that poor real estate (and in general poor and in some cases fraudulent) lending played in notable bank failures in the 1930s, the fact remains that commercial bank holdings of institutional mortgages on one-to-four family houses never rose above 20 percent of the total until 1937 (Morton 1956, table C-2).

Because of a history of wild real estate booms and busts prior to the Civil War, the National Banking Act (1864) tightly restricted the loans national banks could make on land or housing. Although these prohibitions were weakened in the face of competition from state chartered institutions, total lending on mortgages by federally chartered commercial banks remained very low until the second decade of the twentieth century. On June 4, 1913, real estate loans accounted for just .7 percent of national bank assets (Behrens 1952, 16).

Loosening began with the Federal Reserve Act (1913), which for the first time allowed loans on farmland with loan-to-value not to exceed 50 percent and a period of time not to exceed five years, provided such loans in the aggregate did not exceed 25 percent of bank capital and surplus or a third of time deposits. The 1916 legislation went somewhat further, freeing national banks to lend on nonfarm real estate for a period of time not to exceed one year, again with a maximum 50 percent loan-to-value. The one-year restriction was serious: prior to the McFadden Act, many commercial bank mortgage loans were effectively demand loans after the first year. The McFadden Act (1927) increased the allowable term on nonfarm mortgages to five years with the total amount of such loans not to exceed 50 percent of time deposits. In most cases commercial banks could not lend across state lines, and indeed were restricted to lending on real estate within 100 miles of the bank's principal place of business.

State-chartered banks did not face the same restrictions in the 1920s, perhaps one reason their failure rates were so much higher in the 1930s. Still, even with more liberal real estate lending on the part of state banks, total commercial bank lending as a fraction of institutional lending on one-to-four family houses did not rise above 20 percent until 1937. The rise at

that point was partly the result of an amendment to the Federal Reserve Act in 1935 that allowed national banks to make ten-year loans, with up to 60 percent loan-to-value, if the loan was sufficiently amortized to reduce principal by at least 40 percent within ten years. This was part of a coordinated program of mortgage liberalization advanced during the New Deal, reflected in the establishment of the Federal Housing Authority in 1934 and the Federal National Mortgage Association in 1938. These legislative and policy initiatives led ultimately to the thirty-year, fully amortized fixed rate instrument that became common after the Second World War.

Finally, although mortgage-backed securities appeared in the 1920s, their development was much less advanced than became the case in the early twenty-first century (White 2009, figure 4.14). During the 1920s they were largely limited to pools of mortgages on apartments or other commercial properties, as opposed to first mortgages on owner-occupied houses. (Goetzmann and Newman 2010). Robert J. Gordon has noted that more skyscrapers higher than 250 feet tall were built in New York between 1922 and 1931 than in any ten-year period before or since. Securitization and other innovations played a significant role in financing this capital formation, and the balance sheet consequences, in terms of the duration of the interwar cycle, remain to be investigated. But this dynamic is distinct from what we normally understand as the residential housing cycle, and is not the central focus of this chapter.

Turning now from financial sector to household sector balance sheets, we can consider other channels through which asset price deflation might have contributed to the propagation of the Great Depression. In the presence of a central bank with an asymmetric commitment to price stability, and thus in the presence of deflation, even the moderate (relative to the early twenty-first century) expansion of debt in housing that took place during the 1920s could have contributed, through the debt deflation mechanism, to declines in demand, particularly for durables and houses themselves. Frederick Mishkin's breakdown of the household balance sheet during the Depression shows mortgage liabilities increasing in real terms from \$29.6 billion in 1929 to \$33.6 billion in 1930, to \$36.9 billion in 1931, and to \$40.5 billion in 1932. He shows security loans jumping in real terms from \$16.4 billion in 1929 to \$21.6 billion in 1930, before falling off to \$17.4 billion in 1931 and \$12.4 billion in 1932. Consumer credit liabilities (for automobiles, for example) increased from \$10.1 billion in 1929 to \$12 billion in 1930, to \$12.3 billion in 1931, and then fell to \$11.3 billion in 1932 (Mishkin 1978, 921; all figures in 1958 dollars). These numbers suggest that the biggest negative shock coming from the liabilities side of the household balance sheet between 1929 and 1930 was the increase in the real value of security loans: \$5.2 billion. The increase in the real value of real estate liabilities, \$4 billion, was about a fourth less. The stock of real estate debt, however, was larger than securities and consumer credit debt combined, and persisted at high,

and in the case of real estate lending rising levels (in real terms) much longer, in part perhaps because of less adequate resolution mechanisms.

Mishkin's data suggest that the liability-side wealth effects on consumption emanating from stock acquisition in the 1920s were stronger than those from real estate debt in producing the initial shocks that led to the downturn in the economy between 1929 and 1930. However, there are unresolved issues about the data underlying his analysis of equities. Mishkin's table A-1 gives as the source for the stock market loan data column (4) of table L-25 in Goldsmith (1955, vol. 1, 410). That table shows that nominal commercial bank loans for purchasing or acquiring securities fell from \$8.278 billion in 1929 to \$7.251 billion in 1930 (these are listed in the table as end-of-year values).¹⁹ That is what one would have expected to have happened if, in the presence of rapid price declines, lenders sold out the positions of their leveraged borrowers, thus extinguishing the loans. The only circumstance in which we might have expected nominal loans to have increased is if, in the face of collapsing stock values, many borrowers met their margin calls and even acquired new stock on margin in the expectation that price declines represented a buying opportunity. This is possible, especially given that most of the largest one-day price increases in the market during the twentieth century took place between 1929 and 1932. But it seems much less likely than the first scenario, which would be consistent with the numbers in Goldsmith.

The problem with reconciling these numbers with Mishkin (1978) is that there is too little deflation between 1929 and 1930 to turn these nominal decreases into real increases, let alone real increases of the magnitude reported in his table 2. The stock market crash may have adversely affected spending in such areas as consumer durables because of a reduction in stock market values or because of the influence of volatility on perceived uncertainty, as emphasized by Romer. It appears questionable, however, at the household level, whether the balance sheet effects of declining stock values on the asset side was reinforced by a rising real value of stock market loans on the liabilities side. Between 1929 and 1933 the wealth effects of declines in the values of equities were considerably more serious than were those associated with declines in the value of real estate. On the asset side of the household sector balance sheet, corporate stocks in 1929 were worth more than real estate (\$128.8 billion vs. \$109.7 billion), a situation dramatically reversed by 1933 (\$50.9 billion vs. \$81.7 billion) (data are nominal and are from Woolf and Marley 1989, table 15.A.1, 817). Stocks fell in value more than real estate, and much more than consumer prices, and so the asset-side wealth effect was quite large. Woolf and Marley give a 1929 value of

19. Board of Governors of the Federal Reserve Board 1943, *Banking and Monetary Statistics* (table 19, 76) shows end-of-year member bank loans on securities falling from \$10.148 billion in 1929 to \$9.439 billion in 1930, although the average level of brokers' loans was higher in 1930 than in 1929. Even a generous allowance for deflation cannot generate the increase in real value of loans on securities reported by Mishkin.

total equities held of \$235.4 billion. That included unincorporated business equity, trust fund equity, insurance and pension equity, as well as corporate stock (\$128.8 billion). The Dow Jones index fell 89 percent in nominal terms and 60 percent in real terms between its peak in August of 1929 and trough in July of 1932, although it recovered somewhat in 1933. Using the data from Woolf and Marley, limiting ourselves to corporate stock and assuming 30 percent goods and service price deflation between 1929 and 1933, we have stock values dropping 60 percent in nominal terms and 44 percent in real terms over this four-year period for a loss in wealth of \$57 billion in 1929 dollars. Using the Goldsmith numbers from table L-25, we have stock market borrowing dropping from \$8.278 billion to \$3.078 billion (nominal). Again, assuming 30 percent deflation, we have stock market liabilities declining 63 percent nominal and 47 percent real, for a decline of \$4.4 billion in 1929 dollars. Combining the effects of declines of both stock market assets and liabilities between 1929 and 1933, we have a negative net wealth effect of \$52.6 billion (\$57 billion drop on the asset side, counterbalanced by a \$4.4 billion decline on the liabilities side).

In real estate, the locus of the balance sheet effects differed, and overall impact on net worth was much smaller. If we accept Shiller's numbers (see following) the price of houses fell, but only along with the general deflation, so real values were largely unaffected, and therefore the asset-side wealth effects in the aggregate were on average small. On the liabilities side, a much smaller fraction of the housing stock was mortgaged, and loan-to-value ratios were much lower than was true in the early twenty-first century. Woolf and Marley (1989, table 15.A) show nominal housing values dropping from \$109.7 billion to \$81.7 billion between 1929 and 1933, a decline of 25 percent. Shiller has nominal prices dropping 30 percent over those years. If we make allowance for a modest increase in the number of structures over that four-year period, these estimates are roughly consistent with each other.

On the other hand, the interactions of real estate debt and deflation clearly became important in 1931 and 1932, and the negative wealth effect on the liability side was nonnegligible. Woolf and Marley (1989) have nominal mortgage debt falling from \$16.6 billion in 1929 to \$13.3 billion in 1933. Again assuming an approximately 30 percent decline in goods and services prices over the four-year period, this means real mortgage debt rose from \$16.9 billion in 1929 to \$19 billion in 1933, a 14 percent increase, a total of \$2.1 billion in 1929 prices. Since we are assuming essentially no effect in inflation-adjusted terms on the asset side of the balance sheet, this is the total deflationary impact from real estate. Even if Woolf and Marley are off by a factor of two or three, and the rise in real estate liabilities is closer to what Mishkin reports, it is clear that the stock market effects on household balance sheets in the first four years of the Depression were much larger than those emanating from real estate—probably an order of magnitude larger.

To summarize, from the stock market, we have for the household sector very large negative wealth effects from the assets side, only modestly counteracted by the reduction in liabilities from the closing out of margined positions. In the case of real estate, we have little if any effect on the asset side from change in real housing values, along with a negative wealth effect of an increase in mortgage liabilities through the debt deflation mechanism. The relatively modest impact on household balance sheets from the real estate sector over the worst years of the Great Depression, in comparison with the impact of stock market decline, contrasts sharply with the respective impacts from these two asset classes during the 2006 to 2012 period. In the latter period, as I will show, not only were the housing price declines, both nominal and real, comparatively larger, but so too was the impact of the rising nominal and real value of mortgage liabilities.

Note that, with respect to real estate, debt deflation had conflicting effects on lending institutions' balance sheets. To the degree that households managed to remain current on their nominally fixed mortgage payments, deflation benefited lenders, because the real value of debt repayment went up. Indeed, bond interest was the one category of income to capital that increased in real terms between 1929 and 1933 (Field 2011, 269). Similarly, declines in short rates should, *ceteris paribus*, have increased the value of the higher interest longer term mortgages. But to the degree that deflation drove borrowers to default, lenders were harmed. When real estate borrowers defaulted, of course, this may have been attributable to loss of income as the consequence of unemployment, to rises in the real burden of payments due to the debt deflation mechanism, or because the loan was of poor quality in the first place—and likely would not have continued to perform even in the absence of deflation or increases in the unemployment rate.

The most recent housing cycle has been marked by a sharp decline in both the nominal and real value of housing. In contrast, although housing prices dropped in the early 1930s, they did so only in line with the general deflation. Unlike the early twenty-first century, however, goods and service price deflation raised the real burden of nominally fixed mortgage payments, which did contribute to foreclosure.

The wave of foreclosures in the early twenty-first century, on the other hand, required neither deflation nor falling income to precipitate it. Falling (indeed, no longer rising) nominal house prices combined with high loan-to-value and “innovative” financing instruments such as negative amortization loans with teaser initial rates were enough to get many home owners into very serious trouble. Because average loan-to-value ratios were so much lower as were nominal price declines, the phenomenon of underwater homes (loan balances greater than house values), still endemic today (2013), was less common during the Depression (but see also Guglielmo 2011, 13, who asserts the contrary, although without evidence). In the nation as a whole

more than one in four home owners with a mortgage remained underwater in the first quarter of 2013.²⁰

It was much more the case, particularly after 1929, that people got into trouble not because housing prices had fallen per se, but because income had fallen as the result of other causes, combined with the effects of deflation in raising the burden of mortgage payments fixed in nominal terms. In a number of respects, therefore, the precipitators of foreclosure differed in the two cycles.

2.1 Shiller's Series

As part of the research for his book *Irrational Exuberance* (2006), Robert Shiller assembled a series on real and nominal house prices going back to 1890. His source for nominal house prices for 1890 to 1933 is Grebler, Blank, and Winnick (1956), whose data were based on a survey of home owners in twenty-two cities who were asked to report the value of their house in 1934 and what they originally paid for it and when. Since the index created from these reports tracks prices for the same housing units at different times, it is not subject to the compositional bias that can bedevil comparisons of median house prices over time (see Shiller 2006, 234).

Shiller's data for 1934 to 1941 are based on advertised home prices in newspapers in five cities: Chicago, Los Angeles, New Orleans, New York, and Washington, DC. His students collected about thirty house prices for each city for each year, except that the Washington data are based on a median price series from Fisher (1951). Data for those years may therefore be partially affected by the upward bias characteristic of median sales price data, which can in part reflect improvements in house quality. Given the relatively low level of house construction during the 1930s, however, the bias is probably small. Shiller uses the Consumer Price Index to deflate nominal house values both pre- and post-1934 to get a series on real house prices, which appear in his book as part of figure 2.1.

For most readers of the second edition of *Irrational Exuberance* (the first dealt only with the stock market boom), the principal takeaway from the longtime series on real housing prices was the strikingly dramatic run-up in real estate prices between 2000 and 2006. In percentage terms the increase in the real price of a house (approximately 60 percent between 2000:1 and 2006:1) was larger during this period than during any comparable period going back to 1890. The increase in house prices following the Second World War (measuring from 1944 to 1953) came close in percentage terms, but it took place over a larger number of years and, in contrast with the run-up

20. <http://www.zillow.com/visuals/negative-equity/#12/43.8065/-71.5023>, accessed May 30, 2013.

over the 2000 to 2006 period, the new higher level of real house prices was sustained for half a century.

As Shiller updated his numbers, they revealed a staggering fall in the value of an asset that conventional wisdom held should and could never decline nationally. According to his quarterly data, nominal prices through 2012:1 declined 34 percent from their peak in 2006:2. The economy also experienced mild inflation over this period. Data on real housing values indicate that they declined 42 percent over the period 2006:1 through 2012:1; the index drops from 198.1 to 113.9. Widespread reports of price appreciation in 2013, particularly in certain markets, such as the San Francisco Bay Area, did reflect a real phenomenon, but the positive news was much amplified by the real estate industry. Shiller's real price index for houses had risen to 121.7 by the fourth quarter of 2012, a 7 percent increase from the trough, but a long way from 198.1.

In a 2005 interview with *New York Times* correspondent David Leonhardt, Shiller predicted house prices could fall 40 percent in inflation-adjusted terms (Leonhardt 2005). Because of the mechanics of simple percent calculations, the 60 percent increase followed by 42 percent decrease in real housing prices left the index in 2011:4 below where it had been in 1998:4, thirteen years earlier. By 2012:4 it had recovered to where it was in 1999. The price recovery to date (May 2013) has been, on a national level, quite modest. With one out of four home owners with a mortgage still underwater (see footnote 20) the magnitude and severity of this housing cycle should not be downplayed.

Investors are taught that they must be prepared to take substantial losses if they are to enjoy the upside potential of assets such as stocks. But it is not what individuals expected from housing, certainly in the postwar period. The expectation that houses would hold and possibly increase their value helped justify and reinforce institutional changes that allowed lower down payments (higher leverage) in house purchases starting in the 1930s. New norms and mechanisms of housing finance originating in the 1930s established an institutional regime that helped real house prices remain basically stable for fifty years, from the early 1950s through 2001. Boomlets marked the last part of the 1970s and, associated with the Savings and Loan Crisis, 1988 through 1990. But in both cases the price rises, modest compared to what were experienced in the early twenty-first century, quickly subsided.

Looking at Shiller's entire series since 1890, it is clear that the degree of real house price decline between 2006 and 2012 in the United States does have historical precedent. But if we study the series closely we discover something else that is quite remarkable: *no such decline took place during the interwar years*. It is true, according to Shiller's index data, that a house purchaser buying at the peak in 1907 and selling in the trough of 1921 would have experienced a 40 percent decline in real value, similar to that experienced since 2006. And a house purchaser buying at the peak in 1894

and selling at the trough in 1921 would have lost 47 percent of the value of the house in real terms.²¹ These house price losses, however, would have been experienced over twenty-seven- and fifteen-year holding periods, not a five-year period. Moreover, these calculated losses are partly an artifact of the sharp post–World War I inflation, which home owners probably—and correctly—did not expect to last.

In contrast with evidence of large declines in the real price of housing in 2006 to 2012, what is striking for a student of the interwar period is the relative tameness of price movements during the 1920s and 1930s. There was indeed a real estate boom during the 1920s, one whose details have been seared into the consciousness of economic historians by the lurid descriptions of it contained in J. K. Galbraith's *The Great Crash* (1955). In terms of overall construction activity, there were, as noted, actually three consecutive booms, a boom in single-family residences that peaked in 1926, an apartment building boom that peaked a year later, and a central business district building boom that extended into the early 1930s (because of semicompleted projects such as the Empire State Building). And, looking at residential prices, there was appreciation and depreciation prior to and following the construction peak. But the magnitudes of these price swings, compared with 2001 to 2012, are mild.

Let's look first at nominal prices (figure 2.1).²² We can see house prices increasing from 1919 through a peak in 1925, then declining to about the 1919 level in 1930 and then continuing to fall along with the general deflation in the economy before beginning to increase again in 1934.

The relative tameness of house price movements in the interwar period is even more apparent when we look at real price movements (figure 2.2). Comparing figure 2.2 with figure 2.1, one can see that the main effect of moving to a real index is to moderate the decline evident in the early 1930s. As for the 1920s, after 1922, the nominal and real indexes move very closely with each other, because the CPI was basically stable between 1922 and 1929.

Examining the real house price series one cannot help but be struck by the almost complete absence of a 2001 to 2012–style price bubble and collapse. There is actually a slight *upward* trend in real housing prices, comparing the 1930s with the 1920s, which might or might not be due to the change in the data source post-1934. Of course, even if the decline in real house prices between 1925 and 1932 was only 12.6 percent (as compared with a real decline of 42 percent between 2006 and the end of 2012), the nominal decline

21. Both 1893 and 1907 are peaks associated with financial panics that ended NBER business cycle expansions. Indeed, the ending of the 1907 crisis benefited from the intervention of J. P. Morgan (Friedman and Schwartz 1963, 160), and set in motion forces that would lead to the creation of the Federal Reserve System in 1913.

22. This series is described in Fishback and Kollmann's figure 6.1 (chap. 6) as "Shiller GBW hybrid." They normalize on 1930 whereas, following Shiller, I normalize on the year 2000. The other difference is that my *y* axis begins at the origin, which produces a less exaggerated impression of the degree of house price fluctuations during the interwar years.

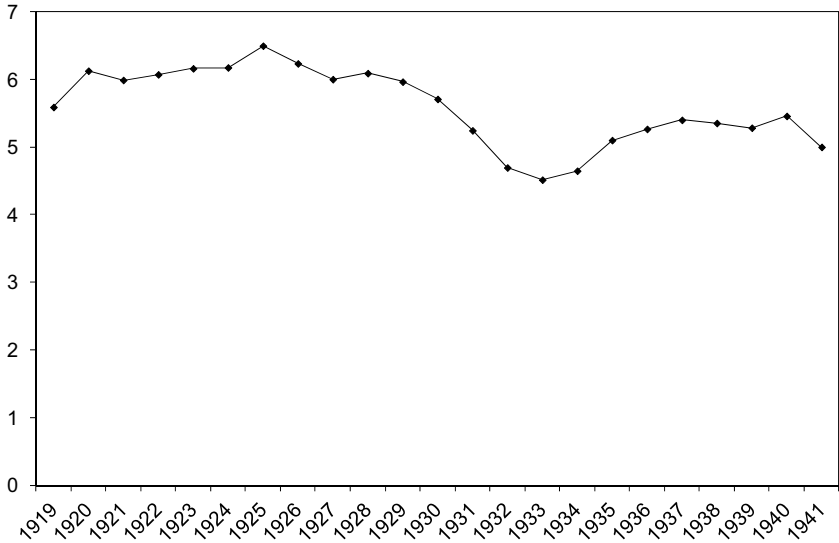


Fig. 2.1 Nominal house price index, United States, 1919–1941

Source: Shiller (2012), housing data, available at <http://www.econ.yale.edu/~shiller/data.htm>.

Note: 2,000 = 100.0.

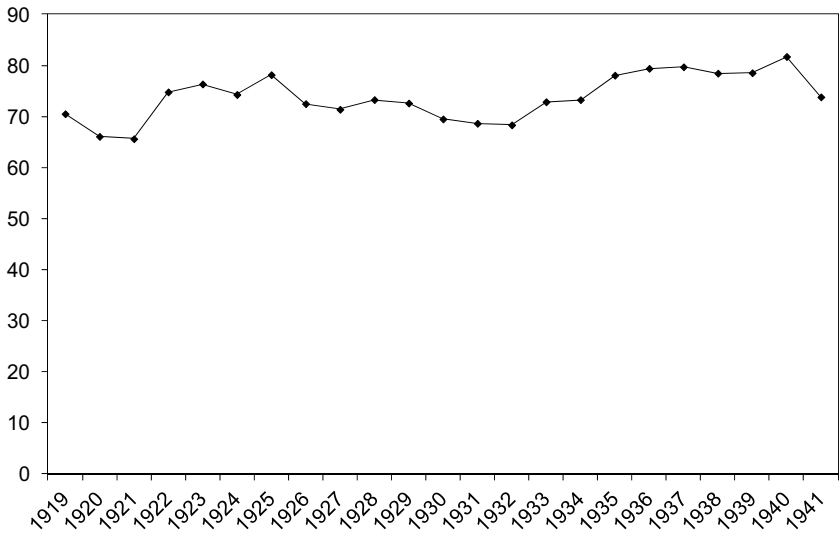


Fig. 2.2 Real house price index, United States, 1919–1941

Source: Shiller (2012), housing data, available at <http://www.econ.yale.edu/~shiller/data.htm>.

in the context of mortgages with fixed nominal interest payments had the potential to contribute to debt deflation and persisting problems with debt overhang and contagion in the 1930s. As noted in the earlier discussion of Mishkin, however, the lower fraction of houses mortgaged and lower loan-to-value ratios meant that the adverse effect on household balance sheets of deflation in the face of fixed nominal mortgage payments was modest.

As already mentioned, I argue that the difficulties construction had in recovering in the 1930s had more to do with the legacy of premature subdivision (see Field 1992) than with debt overhang from real estate. This view is strengthened by looking at the interwar housing cycle in the light of 2001 to 2012. Assuming house prices bottomed out in 2012:4, the 2006 to 2012 peak-to-trough decline in real housing prices of 42 percent was more than triple the 1925 to 1932 decline in percentage points. And, as I will show, housing was much more highly leveraged in the more recent episode, which enabled it to pose more of a systemic threat.

2.2 Critiques of Shiller's Series

A number of scholars, including contributors to this volume, have raised doubts about the reliability of Shiller's series for the 1920s and the years 1934 to 1940. Eugene White (2009, see also chapter 4, this volume) has argued that the data disguise the true magnitude of the house price boom and bust in the interwar period. White finds the series too volatile in the early years, which he attributes to the declining sample sizes as one goes back further in time, but he also suggests that the level of the series in the 1920s, and thus its interwar volatility, is biased downward because the series does not include the prices of houses bought at the peak and subsequently abandoned or foreclosed upon. Such houses, he argues, would not have shown up in Grebler, Blank, and Winnick's 1934 survey. He notes, however, that the size of the possible bias is "difficult to assess in the absence of sufficient additional national or regional data" (White 2009, 9; 2014, x). Price Fishback and Trevor Kollmann (chapter 6, this volume) note that GBW also produced a house price series adjusted for depreciation, and, reinforcing White's view, suggest that Shiller's use of the unadjusted series biases downward the price increases during the 1920s.

In their 2011 paper in the *Review of Financial Studies*, Fishback et al. reported data derived from the US census on the ratio of the value of owner-occupied housing in 1930 to the value of mortgaged owner-occupied housing in 1920 for 272 large cities in the United States (Fishback et al. 2011, 1784).²³ They found that the average ratio was 1.45, meaning that nominal

23. Fishback and Kollmann expand on this work, proceeding to develop an index of house prices of owner-occupied mortgaged homes. What we aspire to, however, is an index of quality-adjusted house prices, irrespective of whether they are owner occupied, and irrespective of whether they are mortgaged. Their calculated average owner occupied mortgaged (AVOOM) index is not necessarily a representative index of the price of the entire universe of prices, only those that are owner occupied and mortgaged.

prices in 1930 were 45 percent higher than they had been in 1920. In contrast, the Grebler, Blank, and Winnick (GBW) data show nominal house prices *lower* in 1930 by about 7 percent than in 1920. The Fishback and Kollmann chapter in this volume (chapter 6) supersedes the comparisons made in the 2011 paper, although the data presented still suggest that the GBW data understate nominal price rises between 1920 and 1930, and overstate increases between 1934 and 1940.

Fishback et al. (2011) compared census data for all owner-occupied houses in 1930 with mortgaged occupied houses in 1920. It is difficult to know if this difference in the sample space between the 1920 and the 1930 census data they rely upon introduces a bias, and if so in which direction. Fishback and Kollmann's contribution to this volume achieves consistency in comparing 1920 and 1930 by concentrating on data on mortgaged owner-occupied units, at the expense of focusing on a somewhat narrower subset of the residential housing stock (the GBW data are for single-family, owner-occupied units, irrespective of mortgage status).

An issue of particular concern in making comparisons of median house prices is one upon which Shiller placed a great deal of emphasis. It has to do with changes in the composition of the housing stock and the necessity of comparing the prices of similar housing units through time. Houses are a heterogeneous asset category. If over time the average unit becomes larger or in other respects better (or the reverse), then comparisons of changes in median house prices may not accurately reflect what is happening with respect to quality-adjusted prices. Careful attempts to correct for changes in the composition and characteristics of housing inform the construction of the widely referenced indexes which in part bear his name. As the methodology section for the currently produced S&P/Case-Shiller indexes states,

The indices measure changes in housing market prices given a constant level of quality. Changes in the types and sizes of houses or changes in the physical characteristics of houses are specifically excluded from the calculations to avoid incorrectly affecting the index value.

That is one reason Shiller found the data underlying the GBW series appealing: the survey asked people what their house was currently worth and what they paid for it and when. The index was constructed based on comparisons of value over time for the same housing units. The modern Case-Shiller indexes are based on repeat sales of similar houses. In other words, they rely on comparisons over time of prices of individual houses that have sold at least twice. The index is constructed by sampling recent real estate transactions and then searching prior transaction records to create matched sales pairs for individual houses. As the document describing the methodology states, "The main variable used for index calculation is the price change between two arms-length sales of the same single-family home" (Standard and Poor's 2009, 6). All repeat sales pairs are candidates for inclusion, but

non-arms-length transactions, such as those between family members, are excluded, as are transactions in which the property type is changed; for example, when a property is converted to a condominium. Statistical techniques are used to reduce the weighting of outlier transactions that are not likely to truly be matched pairs because, for example, maintenance has been neglected or the house has been extensively remodeled, and to reduce the weight of transactions that are far separated in time.

The statistical underpinnings of the Shiller-GBW series for the years 1934 and earlier are, to be sure, sparser and noisier than those that underlie the modern Case-Shiller series. The raw materials were estimated values and remembered sales prices observed during 1934 rather than actual transactions data covering a number of years. GBW acknowledge the likelihood of purchase year “heaping” on years ending in 0 or 5. For each city, the price relatives to 1934 were calculated as the ratio of aggregated recalled purchase price to estimates of aggregated estimated 1934 values (the indexes might more closely have approximated the repeat sales methodology had they, for each year, averaged the price relatives for each individual housing unit). Despite its limitations, however, the GBW index is closer conceptually to the repeat sales (matched pairs) methodology than are some of the comparisons reported by Fishback et al. (2011) or Fishback and Kollmann (chapter 6, this volume).

GBW also produced a second “adjusted” series, which assumed that housing service flow and “real” value depreciated at a compound rate of 1 and 3/8 percent per year. Fishback and Kollmann note that GBW believed this series superior, and wonder why Shiller did not use it. GBW argued that houses deteriorated in value over time because of wear and tear and obsolescence. They acknowledged that structural additions and alterations worked in the opposite direction but cited evidence supporting their view that the former effect dominated (1956, appendixes C and E). There remains, however, a theoretical and empirical question as to whether the service flow from a well-maintained house truly declines through time. A well-maintained house, like a chair, may have a depreciation profile more akin to the proverbial one-horse shay.²⁴ Shiller may have been receptive to this view, and thus preferred the unadjusted series.

24. The reference is to a poem by Oliver Wendell Holmes Sr. The shay was so well constructed that it lasted 100 years before falling apart. The Case-Shiller methodology emphasizes the importance of controlling for changes over time in the size and physical characteristics of the average housing unit. The age of a unit might be considered a physical characteristic, but, again, the service flow from a well-maintained house, like a shay, may not necessarily decrease with age. The size and physical characteristics (electrification, for example) of the over seven million units constructed in the 1920s, in relation to what was in place in 1920, and the units that were withdrawn from service during that decade, are in my view issues of greater empirical significance than whether one uses the “adjusted” series constructed by GBW that factors in depreciation on the housing stock. None of the alternate series investigated by Fishback and Kollmann (chapter 6, this volume) changes the conclusion that house price movements, both nominal and real, were more moderate during the interwar period than has been true in 2001 to 2012.

Returning to the comparisons Fishback et al. make between the 1930 and 1920 census data, there are several reasons these might depart substantially from what would be yielded by matched pair reports of the same houses sold in 1920 and 1930. The most important is that the housing stock was different in 1930. Over the years 1920–1929 inclusive, over 7 million new private, permanent, nonfarm housing units were built (Grebler, Blank, and Winnick 1956, table B-1, 332). The 1930 census reported 23.2 million occupied nonfarm housing units. Since few of the units built in the 1920s would have been abandoned, unoccupied, or torn down in 1930, we can conclude that at least 30 percent of the units in 1930 simply were not there in 1920. Moreover, although few of the newly built units would have vanished, been torn down, or been unoccupied in 1930, some of the units whose prices had been reported in the 1920 census of mortgaged units were, by 1930, abandoned, torn down, or unoccupied, and they were likely to have been smaller units with less desirable physical characteristics.²⁵ The 1920 census reported about 17.6 million occupied housing units, and the 1930 census 23.2 million, an increase of 5.6 million. Since there were roughly 7 million units constructed, we can infer that about 1.4 million units fall into the category of present in 1920 but absent in 1930.

Because the 1930 enumeration included 7 million generally higher quality houses not present in 1920, and because it did not include approximately 1.4 million generally lower quality units that had been in the enumeration in 1920, the 1920 to 1930 comparisons reported by Fishback et al. and Fishback and Kollmann may give a misleading picture of quality-adjusted house price change between 1920 and 1930.

Fishback and Kollmann emphasize the outlier nature of the unadjusted GBW series, although other data are consistent with the picture it paints. Fisher (1951, 55, table 7), for example, looked at a sample of 3 percent of Home Owners' Loan Corporation (HOLC) mortgage loans in the states of New York, New Jersey, and Connecticut. The underlying data included appraisal values for those refinancing loans in 1933 and 1934 and purchase prices in 1925 and 1927. These are for the same houses, and thus the data approximate the repeat sales data that underlie the current Case-Shiller indexes, although the HOLC appraisals may have overstated the market value of the homes in 1933 and 1934 because of a rule limiting the loan-to-value ratio of the mortgage they could offer to 80 percent. Median prices in Fisher's sample decline 31 percent between 1925 and 1933 to 1934. Grebler, Blank, and Winnick report approximately the same percentage decline in their twenty-two city sample over these years. In the Fisher sample, homes purchased in 1926 and 1927 had a decline of 26.9 percent nominal to 1933 to

25. For example they may have been less likely to have had hot and cold running water, had an interior bathroom, or been wired for electricity.

1934. Using the Grebler, Blank, and Winnick series for a similar calculation yields a 25.2 percent decline.

Another regional series is the National Housing Agency's compilation of monthly price data for Washington, DC, from 1918 through 1948, which was based on asking prices for houses listed for sale in newspapers. The annual average for 1930 is 13.5 percent higher than for 1920 (see Carter et al. 2006, series Dc 828), compared with Fishback et al.'s 45 percent increase and Grebler, Blank, and Winnick's 7 percent decline. The Fisher numbers can be reconciled with the Grebler, Blank, and Winnick series, given the fact that the housing stock in 1930 was possibly of better quality and that these are not and do not approximate matched sales.

Fishback et al. (2011) also compare housing prices reported in the 1940 census with those reported in the 1930 census, and find them in nominal terms to be 48.6 percent lower; Shiller has them about 5 percent lower.²⁶ The issue of changes in the composition of the stock is less important in the 1930s than the 1920s, since many fewer units were constructed than had been true in the 1920s. The number of occupied nonfarm housing units increased just 19 percent during the 1930s (4.4 million), as opposed to the 30 percent jump during the 1920s. The number of housing starts in the years 1930 through 1939 inclusive was even less, totaling only 2.586 million (Grebler, Blank, and Winnick 1956, table B-1). This means, since the number of occupied units rose 4.4 million, that approximately 1.8 million units abandoned or unoccupied at the time of the 1930 census were now again in use. We can infer that these were lower quality units (after all, they had been abandoned during the boom time of the 1920s) and their reintroduction into the occupied housing stock may be one of the reasons the Fishback et al. data show a sharper drop in reported values between 1934 and 1940.

All of this discussion speaks to the significance of the matched sale methodology pioneered and championed by Case and Shiller in developing meaningful price indexes for a heterogeneous housing stock whose composition changes over time. Fishback et al. and Fishback and Kollmann have done yeoman work in digging up new data. But the alternatives they explore may not necessarily do a better job than the GBW series preferred by Shiller of reflecting changes in quality-adjusted house prices for the 1920 to 1934 period.²⁷

26. Fishback and Kollmann (chapter 6, this volume) suggest somewhat smaller price declines after 1934, but still substantially larger than the Shiller numbers. As Shiller acknowledges, the five-city survey his students conducted for years after 1934 makes no claim to approximate a repeat sales methodology.

27. Fishback and Kollmann also augment the GBW series by adding data for thirty-one cities to the twenty-two originally used by GBW. But the expanded coverage does not change the picture much. Compare "GBW adjusted" in their figure 6.1 with "New GBW-Style Adjusted" in their figure 6.4. In both cases these series include the adjustment for depreciation, which Shiller eschewed.

Both nominal and real prices matter in thinking about the impact of housing price fluctuations on the real economy. In an institutional environment characterized by fixed nominal debt obligations, nominal prices matter, because their decline can decrease the value of an owner's equity. When both house prices and goods and service prices are declining (as was true between 1929 and 1933), the real burden of debt repayment can go up if mortgage payments are fixed in nominal terms. But not all home owners had a mortgage. Indeed, the majority did not. For those who did, loan-to-value ratios were smaller than they are today. If we are interested in possible wealth effects of consumption caused by declines in housing equity, real prices matter. If you own your house free and clear, or have a small mortgage on it, and it drops in value 30 percent, but so does the CPI, it should not have a great effect on your behavior.

All of the decline in real house prices in the interwar period had already taken place by 1929, with no apparent ill effects on the economy. Real housing prices were actually higher in 1933 than they had been in 1929. In order for the magnitude of the decline in real house prices in the interwar period to approach what has taken place since 2006, either the 1929 figure suggested by Shiller and Grebler, Blank, and Winnick would have to be 40 percent too low or the 1933 figure 40 percent too high, or there would have to be some combination of too low earlier and too high later yielding biases in the nominal data sufficient to disguise a 40 percent drop in the real price. We should accept that the real price decline in the most recent cycle has been substantially greater in magnitude—the collapse has been more severe—than what took place during the interwar years.

2.3 Construction

There are of course at least two dimensions to a housing boom—price and quantity—and so one might expect from the more modest price movements between 1919 and 1941 that the boom and collapse of construction was also more moderate in the interwar period than it was in the early twenty-first century. And one would be quite mistaken (see figures 2.3 and 2.4). From a construction standpoint the interwar boom was in fact the greatest in terms of the fluctuations of construction activity, both in absolute terms and as a proportion of GDP, that the US economy has ever experienced. In 1924, 1925, 1926, and 1927, residential housing construction comprised more than 5 percent of GDP (over 6 percent in 1925), a figure not exceeded until the most recent boom.²⁸ In the 2001 to 2005 boom, the share of residential

28. See Carter et al. (2006) series De256 for construction and Ca213 (Balke-Gordon) for the gross national product (GNP), which yields a residential construction share of 5.8 percent for 1924, 6.0 percent for 1925, 5.7 percent for 1926, and 5.3 percent for 1927. Kendrick's GNP estimates (series Ca188) are very similar. Both Balke-Gordon and Kendrick are intended conceptually to be comparable to the Bureau of Economic Analysis estimates published from

construction rose from 4.6 percent in 2000 to 6.2 percent in 2005 (the year that housing prices peaked nationally) before falling to 3.4 percent in 2008 and 2.5 percent in 2009. By 2011:1 it had declined further to 2.2 percent, in 2013:1 it had recovered only to 2.7 percent (US Department of Commerce 2013, NIPA table 1.1.5, accessed May 31, 2013).

In comparison, by 1929 the housing construction share of GDP had fallen to 3.9 percent and by 1933 to 1 percent of a greatly reduced GDP (US Department of Commerce 2013, NIPA table 1.15). So in terms of GDP shares, housing construction went from 6 percent to 1 percent of GDP between 1925 and 1933, and from 6.2 percent to 2.2 percent from 2005 to 2011. If we looked at residential construction as a fraction of potential rather than actual GDP, the contrasts between these two episodes would be even greater.

The drop is especially dramatic in the interwar period, as figure 2.3 indicates, if we look at the absolute decline in inflation-adjusted residential construction. The years 1926 to 1933 witnessed an 89 percent decline in real construction activity. In comparison, assuming that the housing construction cycle bottomed out in 2011, we see a peak-to-trough decline of 57 percent in real construction activity between 2006 and 2011 (see figure 2.4).²⁹ From the standpoint of construction activity, the 1920s boom and bust was proportionately larger. Yet the price movements associated with that housing cycle were more modest.

The absence of big real house price movements in the interwar period means that the mechanisms whereby housing contributed to recession/depression were different in the two cycles. In the 1930s, the collapse of construction spending and its weak recovery contributed to a slow revival in private sector aggregate demand primarily through standard multiplier mechanisms. Since the collapse of the building boom was associated with modest movements in the real price of housing, and the impact of the debt deflation mechanism was softened by the smaller fraction of houses mortgaged and lower loan-to-value ratios, the impact of the housing bust on household balance sheets was also more modest. In comparison with the wealth and liquidity effects on consumption of collapsing stock prices, the influence of the end of the housing boom on consumption expenditures through this mechanism was weaker, at least initially.

Between 2006 and 2011, in contrast, the collapse of the housing boom was associated with an approximately \$7 trillion hit to household balance sheets (in comparison, the flow of US GDP in 2011 was about \$15 trillion per year). This decline in home equity was the result of a pincer movement: nominal mortgage debt continued to increase through 2007 and then

1929 onward. Using Kuznets's variant 1 for the denominator (series Ca184) puts residential construction's share at 6.2 percent for 1924, 6.4 percent for 1925, 6.1 percent for 1926, and 5.7 percent for 1927.

29. US Department of Commerce 2013, NIPA table 1.1.3, accessed May 30, 2013.

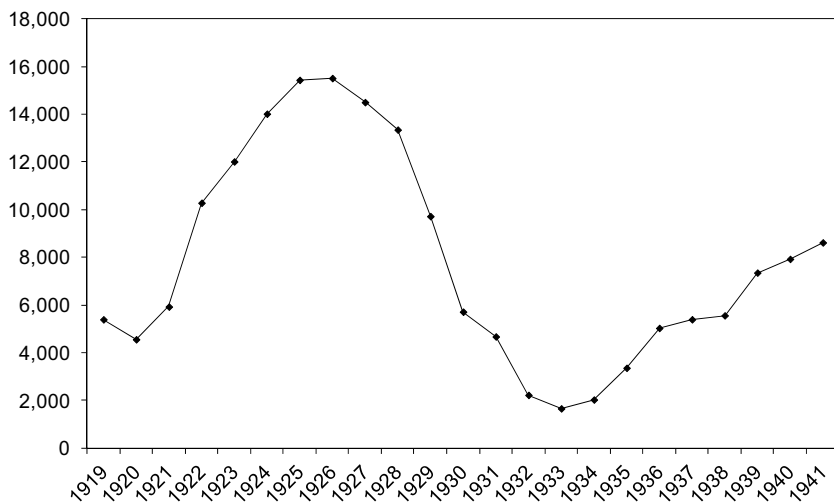


Fig. 2.3 Residential construction, United States, 1919–1941

Source: Carter et al. (2006, series Dc262).

Note: Millions of 1957–1959 dollars.

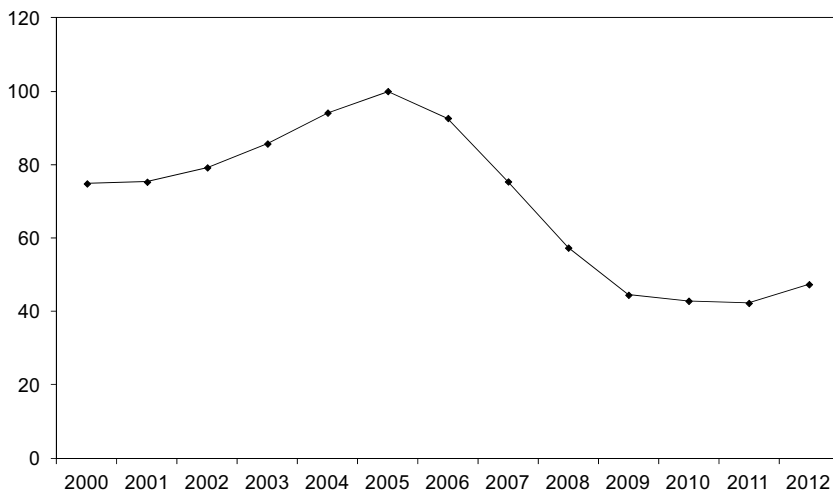


Fig. 2.4 Index of real residential construction, United States, 2000–2012

Source: <http://www.bea.gov>, NIPA table 1.1.3, accessed May 30, 2013.

declined only modestly, while nominal house prices fell sharply (see figure 2.6). The consequence was a big reduction in household real estate wealth. Given the uneven distribution of mortgage debt this pushed millions of home owners underwater, in the sense that they owed more than their homes were worth. The 2006 to 2008 American Community Survey showed that of

approximately 75.4 million owner-occupied US housing units, 51.4 million had a mortgage (US Bureau of the Census 2011, series B25087). Of these, more than one in four remained underwater in the first quarter of 2013. Even though there were tens, indeed hundreds of thousands of foreclosures during the Depression, the phenomenon during the most recent episode has been more widespread and more severe in its consequences, particularly if we try and restrict our attention to residential housing, as opposed to the farm foreclosure problem. During the Depression the problem was not typically that people owed more on the house than it was worth.³⁰ The problem was simply that they could not make the mortgage payments, in part because their nominal income had fallen, and in part because the drop in goods and service prices had increased the real burden of their mortgage payments.

Case, Quigley, and Shiller (2005) estimate that a 10 percent decline in household wealth has somewhere between a .4 and a 1.1 percent effect on consumption (although see Calomiris, Longhofer, and Miles 2009 for a more skeptical view of the size of this coefficient). Whatever the number we agree on, we are dealing here with a drop in owner's equity of more than 50 percent, from \$13.1 trillion in 2005 to \$6.3 trillion in 2010. Nothing comparable happened with respect to real estate wealth in the interwar period. In contrast, the contractionary effect of lower *construction* expenditures was relatively more significant during the interwar housing boom.

Why were the price movements and wealth effects so much more muted during the interwar period than in 2001 to 2012? The most compelling answer is simply that residential housing was less leveraged in the 1920s than it became in the early twenty-first century. Mortgage "innovations" such as option adjustable rate mortgages (ARMs), no documentation loans, and no money down loans magnified the upward price movements during the boom, as they did the downward movements in the bust. These institutional innovations helped upend an institutional equilibrium that, by and large, had kept real house prices relatively stable for half a century.

Another way to look at this question is to ask why housing leverage was so low in the 1920s when, as evidenced by the stock market, the financial system was clearly capable of financing highly leveraged asset acquisition. Why was it that mortgage lenders in the 1920s were so stingy with down payment and maturity terms? Again, common terms were 50 percent down, five-year mortgages with a balloon payment at the end. It is true that innovations pioneered by small building and loan societies enabled some borrowers to take a second mortgage and thus borrow a larger share of the house value (Snowden 2010). But these innovations were opposed by larger building and loan societies, and overall, especially in comparison with the early twenty-

30. Since loan-to-value ratios rarely exceeded 50 percent in the 1920s, and the average nominal price decline between 1929 and 1933 appears to have been about 30 percent, simple arithmetic tells us that the phenomenon of underwater houses, or negative equity, with the outstanding loan value exceeding the house value, must have been infrequent in comparison to what has been the case in the post-2005 period.

first century, the overall picture is one of conservatism (White [2009], 26 reaches a similar conclusion).

One might argue, and indeed it was argued in the 1930s that the typical loan contract from the 1920s was in fact risky to lenders (Morton 1956). It was the heavy and perhaps unanticipated costs of foreclosure that made it so (see Ghent 2010, 11). Given the experience with the foreclosure process that had by then manifested itself, one can perhaps understand the argument from an *ex post* standpoint. But if foreclosure had been costless, requiring a 50 percent down payment surely would have given considerable protection to the lender, who always, of course, had the option of rolling the balloon loan over. It is hard to see how, absent the large transactions costs associated with foreclosure, an 80 percent, thirty-year loan, even one fully amortized, was, on the face of it, *less* risky for the lender than a 50 percent, five-year, nonamortized loan.

There was in fact a large percentage increase in mortgage lending in the first half of the 1920s. But that increase was from a modest base, and considering loan-to-value ratios and other metrics, it is fair to say that lending on residential real estate, in comparison to what transpired in the early twenty-first century, remained conservative.³¹

This conservatism was in part because legislation governing lending by national banks mandated higher down payments. And even though state-chartered commercial banks and building and loans were not so constrained, the prior history of land and real estate speculation, in which lending standards had been at times lax, leading to sometimes extreme cycles of boom and bust in house prices prior to the 1920s, which lay behind the National Banking Act restrictions, acted as something of a deterrent on lending by institutions that were not constrained.

White (2009) has argued that conservatism in the 1920s was reinforced by the absence of a “too big to fail” expectation,³² although it is not clear that the major players in the residential mortgage market (building and loans, mutual savings banks, insurance companies) could have had this expectation even had the government or Fed announced a willingness to rescue systemically important institutions. For a financial institution to be systemically important it must have liabilities serving as assets for other institutions, so that if it fails its creditor financial institutions are threatened as well, or like a commercial bank, have demand deposits as liabilities, so that collapse reduces the means of payment (money supply).

31. Whether the same can be said for loans on commercial and central business district structures remains an open question. See Postel-Vinay (2011) for evidence on the role bad real estate loans played in failures of Chicago-area state banks.

32. White also emphasizes the typical absence of deposit insurance (state schemes generally covered smaller banks in more rural or agricultural areas) as well as the imposition in some states of double liability on shareholders of failed banks, both of which, it can be argued, increased the incentives of depositors or shareholders to monitor the liability side of financial institutions of which they were creditors.

To be sure, by the last years of the 1920s, there was plenty of excess in real estate lending. Declines in lending standards (see Saulnier 1956), self-dealing, fraud, all of this was evident in absolute terms. *But not in comparison with what took place between 2001 and 2008.* Decades of experience of real estate cycles in the nineteenth and early twentieth centuries had persuaded lenders—and legislators—that real estate was a very risky asset, by no means certain or even expected to appreciate, and one for which lenders should take moderate and short-lived stakes, and ensure that borrowers had plenty of skin in the game.

An implication of this is that although the failure of housing construction to revive during the 1930s helps explain the duration of the Depression, balance sheet aspects of housing sector finance are today more important in obstructing recovery than was true in the Great Depression. As has been noted, there are several distinct mechanisms whereby housing can affect a downturn. A decline in construction can, amplified by multiplier effects, lead directly to a decline in equilibrium output, associated with drops in both consumption and gross private domestic investment. In the 1920s the decline in residential construction was, from an aggregate demand perspective, compensated for by the apartment building boom followed by central business district (CBD) construction, which extended into the 1930s. Strong exports helped as well. But when construction went south big time in the 1930s, this mechanism became very important in accounting for the prolonged downturn and the failure to recover.

A second depression-inducing, housing-related mechanism involves borrowers on real estate who cannot service their mortgages, become delinquent, and eventually face foreclosure. As they struggle to meet their mortgage obligations, nonhousing consumption is adversely impacted. Foreclosures were an important feature of the early 1930s (see Wheelock 2008), but they were not primarily produced by the cessation of increases and then actual declines in house prices, which was the main driver after 2006. Rather, during the early years of the 1930s, it was declines in income (among those unemployed, for example), that predisposed to foreclosure. Of course as deflation set in during the early 1930s, the real value of debt service obligations fixed in nominal terms did increase, aggravating the pressure on borrowers in difficult positions. Because of lower leverage, however, shorter average durations of mortgages, and a smaller fraction of the housing stock encumbered by loans, bad mortgage debt from housing did not play as significant a role in transmitting a financial shock to lending institutions as was the case in 2007 to 2009.

2.4 Foreclosures

There was indeed a serious foreclosure problem during the Great Depression, but it was more specifically a farm foreclosure problem. Two decades of farm prosperity came to an end at the conclusion of World War I, and

farm incomes and land values declined steadily during the 1920s, a major factor in bank failures during that decade (Alston, Grove, and Wheelock 1994; Field 1992, 2001). The precipitous decline in agricultural commodity prices between 1929 and 1933 made a fragile situation worse, and attempts to foreclose led to actual or threatened violence and multiple state-level foreclosure moratoria.

Foreclosures on residential housing during the 1930s, although a very real and painful phenomenon, were, however, proportionately less common than has been true in the years since 2006. To show this, we begin with interwar data for nonfarm housing units, over three-fourths of the occupied housing units in 1930, for which the statistical information is less ambiguous. The number of foreclosures for nonfarm occupied housing units, 68,100 in 1926, rose to 134,900 by 1929, and peaked in 1933 at 252,400, before gradually subsiding to 58,559 by 1941 (Carter et al. 2006, series Dc1255). The 1930 census reported 23,235,982 occupied nonfarm housing units (Carter et al. 2006, series Dc697-698). Using the 1930 occupied housing number as a denominator, and the peak 1933 foreclosure number as numerator, we can conclude that 1.08 percent of the nonfarm occupied housing stock was foreclosed upon in the worst year of the Depression. This number is probably biased slightly upward because we have not attempted to correct for the possible growth in occupied housing units between 1930 and 1933.

In contrast, RealtyTrac (2011) reported that in 2010, 2,871,891 housing units in the United States experienced a foreclosure filing.³³ This represented 2.23 percent of all US housing units; the total of about 130 million in 2010 includes seasonal units as well as occupied all year units and those that were vacant. Note that the 1933 calculation has occupied units in the denominator. If that calculation were comparable to that made for 2010, the denominator would include vacant and seasonal units as well, and the foreclosure rate would be lower.

The fact that more than twice the proportion of all housing units were foreclosed upon in 2010 as compared with the proportion of nonfarm units foreclosed upon in 1933 is indicative of the higher fraction of the housing stock encumbered by a mortgage, the substantially higher degree of leverage, and the much greater decline in nominal and real housing prices that have marked the more recent cycle.

The data for the 1930s in the aforementioned calculations are, of course, for the nonfarm housing sector. Adding in data on farm-occupied housing units will increase our estimate of the rate for all occupied units. The 1930 census shows that there were about a third as many occupied farm housing units (6,668,881) as there were nonfarm units (there were 29,904,663 total units, so farm housing units were about a quarter of the total). The rate

33. The data on filings include notices of default, scheduled auctions, and real estate owned (REO) property.

of foreclosure on farm housing would have had to have been substantially higher than on nonfarm housing to yield a foreclosure rate on the entire occupied housing stock approaching that experienced in 2010. I calculate that 424,473 farm housing foreclosures—6.2 percent—or one of every sixteen farm housing units would have had to have been foreclosed upon in 1933 in order to make the overall foreclosure rate on residential housing equal to what it was in 2010.

The rate of foreclosure on farm housing is inextricably entangled with the rate of foreclosures on farms, and these are not exactly the same. They are, nevertheless, closely related, and we do have some data on the latter. Alston (1983, 886) reports that in 1933, the worst year of the Depression, over 200,000 farms were foreclosed—3.88 percent of all farm units. This is significantly below the 6.2 percent rate that would have been needed to equate the overall 1933 foreclosure rate to that experienced in 2010. Since a number of states passed laws instituting moratoria on farm foreclosures, it is possible that in their absence, we would have had foreclosure rates at that level.

Citing Federal Reserve Board data, Alston, Grove, and Wheelock (1994, 415) indicate that 42 percent of owner-occupied farms had a mortgage in 1930. Parker (2005, 57), reviewing early research by Galbraith, reports that half of all farm mortgages were in default by 1933. This suggests that approximately a fifth of owner-occupied farms were potentially vulnerable to foreclosure during the worst year of the Depression. In comparing foreclosure rates on residential housing in the early twenty-first century with those in the 1930s, a difficulty thus arises: how should we treat a foreclosure or potential foreclosure on a farm property that also includes a residential housing unit? Since roughly a quarter of all residential housing units were on farms the issue can be neither dismissed nor easily resolved.

Some conclusions can, however, be stated without qualification. If we restrict our attention to nonfarm residential housing units, or to *actual* foreclosures on all residential units (considering a foreclosure on a farm as equivalent to a foreclosure on a farm housing unit) the foreclosure rates in 2010 were unambiguously higher than those during the worst year of the Depression. These higher foreclosure rates were, moreover, generated in an environment in which the unemployment rate did not break 10 percent (as opposed to 25 percent in 1933), which gives us additional appreciation for how fragile the housing finance situation had become by 2006.

In the 1930s, and under the aegis of the Federal Housing Authority, institutional changes ushered in an era of higher leverage in housing than had prevailed in the 1920s. These changes were associated with a one-time permanent upward movement in real housing prices in the years immediately after the war. In part because of organizational and procedural controls on the quality of lending, however, this rise was sustained, leading to a half century of relative stability in real housing prices, from the early 1950s through 2001. Prior to the twenty-first century, this was disrupted at the



Fig. 2.5 Nominal housing value and mortgage debt, United States, 1925–1941

Sources: Nominal value of net housing stock, US Department of Commerce, Bureau of Economic Analysis (2011, fixed asset table 1.1, <http://www.bea.gov>, accessed June 6, 2011); nominal value of mortgage debt on residential structures, Carter et al. (2006, sum of series Dc916-922).

national level only by boomlets in the late 1970s and again during the savings and loan (S&L)–fueled 1988 to 1990 period, but each of these subsided relatively quickly.

Beginning in the 1980s under President Reagan, gathering steam under President Clinton in the 1990s, and continuing under President George W. Bush at the turn of the twenty-first century, financial deregulation and changes in the financial services industry destroyed the previous institutional equilibrium. Out of this witches' brew (much more than simply the low interest rates of the early twenty-first century, on which it is often blamed), emerged the housing boom and the near catastrophic financial meltdown that followed.

Figures 2.5 and 2.6 illustrate the very different degrees of housing leverage in the interwar cycle as compared with 2001 to 2012. Figure 2.5 shows the nominal value of the net housing stock along with the nominal value of residential mortgage debt from 1926 through 1941. The debt-to-asset ratio never rose above 25 percent during these years (see figure 2.7), starting at 10.9 percent in 1925, ending at 12.5 percent in 1941, and peaking in 1932 at 22.6 percent under the influence of temporarily declining nominal house prices, and a relatively stable nominal debt burden. It is certainly true that

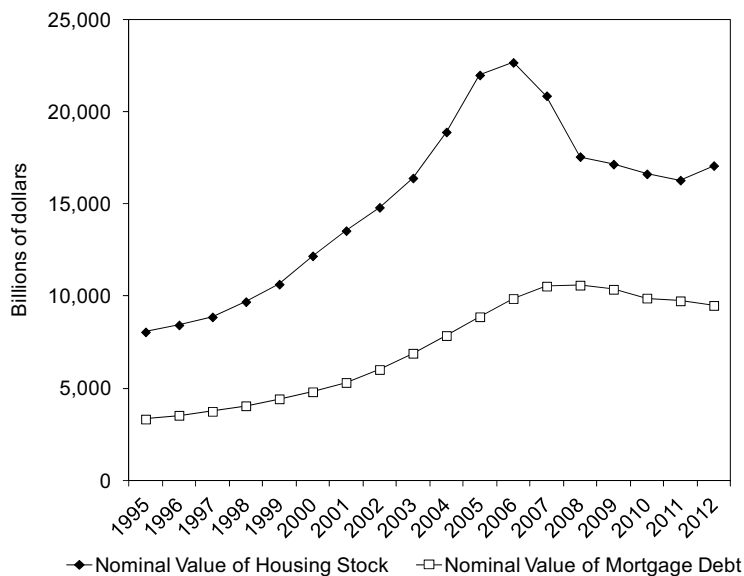


Fig. 2.6 Nominal value of housing stock and mortgage debt, United States, 1995–2012

Sources: US Department of Commerce, Bureau of Economic Analysis (2011, fixed asset table 1.1, <http://www.bea.gov>); Carter et al. (2006, series Dc916-922); <http://www.federalreserve.gov>, Flow of Funds accounts, table B-100, lines 4 and 33, accessed May 30, 2012.

in 1932 home owners were stressed. But the degree of leverage is dwarfed by what transpired in the first decade of the twenty-first century. The debt-to-asset ratio averaged roughly 40 percent during the run up to the housing price explosion, and then jumped to over 60 percent starting in 2006 in the face of rapidly declining house prices and a nominal debt burden that continued to increase through 2007 and then fell off only slightly. It remained at that level through 2011.

The comparative trends in housing debt-to-asset ratios, comparing 1925 to 1941 with 1996 to 2012, are illustrated in figure 2.7.

2.5 Conclusion

Using a comparative historical approach, this chapter has identified several important differences in the housing sector's characteristics and contributions to macroeconomic instability in the interwar period as compared with 2001 to 2012. First, in terms of fluctuations in residential construction activity, and whether measured in absolute terms or as a share of GDP, the interwar housing cycle was more severe than 2001 to 2012. But it was *less*

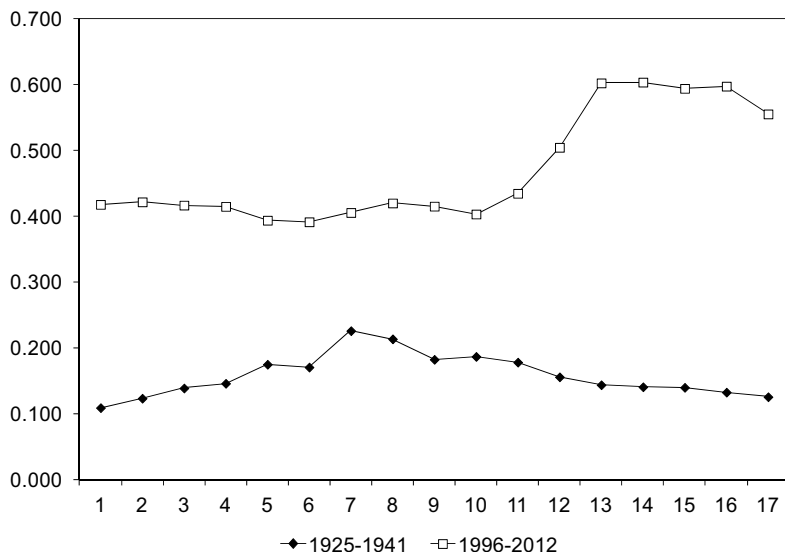


Fig. 2.7 Debt-to-asset ratios in housing, United States, 1925–1941 and 1996–2012

Sources: US Department of Commerce, Bureau of Economic Analysis (2011, fixed asset table 1.1, <http://www.bea.gov>); Carter et al. (2006, series Dc916-922); <http://www.federalreserve.gov>, Flow of Funds accounts, table B-100, lines 4 and 33.

severe in terms of fluctuations in the real price of housing and their impact on household and banking institution balance sheets. Finally, housing was much less levered in the 1920s than was true in the run up to the most recent crisis.

The chapter argues that the second and third of these differences are related. During the 1920s, a prior historical experience of housing booms and busts had disciplined lenders to treat housing as a very risky asset, and made them at least initially unwilling to lend liberally on it, with the standard for “liberalism” being what transpired between 2001 and 2008. Although these inhibitions, which had been reinforced by legislation and government regulation, weakened as the decade of the 1920s proceeded, the overall outcome was still a housing sector that was much less leveraged than in 2001 to 2012. In contrast, between 2001 and 2006 institutional restraints on lending that had for the most part obtained for half a century broke down under the banner of deregulation, innovative ways to finance housing, and shoddy and sometimes fraudulent work by mortgage appraisers, originators, securitizers, and ratings agencies.

The channels through which a housing bust affected the rest of the economy were different across these two periods. The impact of the collapse in construction spending in the 1930s was felt particularly strongly through its effect on real gross private domestic investment, and, through

multiplier mechanisms, indirectly on consumption. In the housing bust of the early twenty-first century, this mechanism was weaker. On the other hand, the relative stability of housing values in the interwar period meant that the effect of the end of the boom on household consumption through a direct wealth effect was weaker, certainly in comparison to the effect of the collapse of stock prices.

In contrast, in 2001 to 2012, with an almost \$7 trillion drop in house values, this effect was stronger. And because of the much higher degree of leverage in 2001 to 2012, the problems of debt overhang and underwater home owners were more severe than was true in the interwar period. Moreover, because of the interconnections between high leverage in households and highly leveraged and interconnected financial institutions, the ability of a prior real estate lending boom to pose a systemic threat to United States and world financial institutions was higher in the first decade of the twenty-first century than was true in the interwar period. The mechanisms and interconnections that allowed this to happen in the early twenty-first century are documented in the final report of the Financial Crisis Inquiry Commission (2011).

Compared to what happened in the 1920s, postwar subdivisions were more efficiently designed for an automobile age, and, because of the integration of the subdivider/developer function there was much less of a postboom problem of subdivisions with a few houses built here and there. Subdivisions in the postwar period tended to be opened in sections, with a new one not opening until the previous one had been built out. This was not true in the 1920s. As bad as things may have been after the savings and loan bubble or the most recent upswing, they were worse in this respect during the interwar period. That is, the physical legacy of premature and partially completed subdivisions in the 1920s posed a greater hindrance to the recovery of construction in the 1930s than has been true in postwar cycles. True, some overbuilt subdivisions from 2001 to 2010 left vacant and allowed to deteriorate, may ultimately have to be bulldozed; this was true as well after the S&L insolvencies. But the physical legacies of postwar housing booms, including the most recent one, pose less of an obstacle to long-term recovery than was true during the interwar period.

On the other hand, the financial legacies pose a *more* serious threat to economy-wide recovery today than was true during the Depression. That is because housing was much less leveraged in the 1920s than was true in the early twenty-first century. In the more recent episode, more houses had mortgages, loan-to-value ratios were much higher on average, and securitization has meant that there were many more avenues for contagion from household to financial institution balance sheets.

When New Deal reformers set their minds to mitigating the likelihood of a recurrence of the Great Depression, they addressed housing, but placed much more emphasis on the travails of the stock market. They insisted on

separating commercial and investment banking.³⁴ During the 1920s housing boom, commercial banking had been involved to only a limited degree in housing finance, and although investment banking activities did include placements of some mortgage-backed securities, these tended to be for the purposes of financing commercial and other nonresidential structures (Goetzmann and Newman 2010). The insistence on separating commercial from investment banking (Glass-Steagall) was motivated by what were perceived as improper or imprudent commercial bank lending on stocks, not real estate. The Securities Act of 1933 and the Securities and Exchange Act of 1934 mandated new transparency in security issues and corporate reporting in the hopes of mitigating the magnitude and impacts of subsequent booms and busts in the market for equities.

New Deal legislation, including acts establishing the Home Owners' Loan Corporation (1933), the Federal Housing Administration (1934), and the Federal National Mortgage Association (1938) did address issues in the housing sector. While these organizations aimed at alleviating Depression era problems, their mandates do not suggest that housing and its financing per se was perceived as a locus of the origins of the economic downturn. The HOLC engaged in remedial intervention, and indeed stopped making new loans after 1935. The FHA pioneered in establishing the viability of the thirty-year, fixed-term, fully amortized mortgage, and promulgating better designs for residential subdivisions, and the Federal National Mortgage Association, chartered in 1938, established a secondary market for home mortgages. These changes helped usher in a half century of relative stability in real house prices.

But these changes in the institutional mechanisms of residential finance were not primarily oriented toward mitigating a systemic risk that lending on real estate was perceived as having generated during the 1920s. Remedial efforts to mitigate such risk concentrated much more on the stock market, focusing on the purchase, sale, and financing of equities, with the twin objectives of increasing transparency and limiting leverage. Unlike real estate, which declined in nominal terms by 30 percent but in real terms hardly at all, the 89 percent nominal (60 percent real) decline in the Dow Jones index reflected a drop in the value of the highly levered stock market that had more severe consequences.³⁵ Indeed, while the Securities and Exchange Act of

34. Investment banking profits, among other sources, derive from commissions earned marketing new bond and stock issues to retail customers, advice provided to potential merger candidates, and income from trading on the bank's own account (proprietary trading). There is abundant evidence that proprietary trading by depository institutions was implicated in the 2008 financial crisis, and some evidence that its frequency, and the share of profits from this source, increased prior to the crisis (see "Obama to Propose Limits on Risks Taken by Banks," by Jackie Calmes and Louis Uchitelle, *New York Times*, January 20, 2010; Financial Crisis Inquiry Commission 2011). The "Volker rule" was intended to prohibit proprietary trading by commercial banks.

35. As Eichengreen and Mitchener observed, "the Great Crash bequeathed a legacy of problems for banks, corporations and households, which had assumed heavy debt loads and packed their portfolios full of now poorly performing assets" (2004, 190).

1934 was tightening margin requirements on stock purchases, amendments to the Federal Reserve Act in 1935 loosened margin requirements in terms of the ability of federally chartered national banks to lend on real estate. And while those amendments relaxed constraints on lending by banks on real estate, perhaps the most famous legislation of the New Deal era, the Glass-Steagall Act (1933–1999), drastically restricted the ability of commercial banks or their affiliates to take positions in equities. This emphasis on the market for stocks rather than real estate as ground zero for the unfolding Great Depression stands in sharp contrast to the diagnoses of the locus of the onset of the 2008 and 2009 financial crisis and ensuing economic recession and slow recovery. The differential legislative attention during the New Deal is consistent with the narrative developed in this chapter.

There is broad consensus that the 2007 to 2012 financial crisis and aftermath originated in US housing markets, precipitated by imprudent real estate loans, enabled by lax regulation and associated behavior by ratings agencies, and facilitated by innovations in mortgage products and derivatives, particularly credit default swaps and tranching mortgage-backed securities. There is as well much evidence that, for both the interwar period and the early twenty-first century, the quantity and quality of credit extended during the boom created obstacles to recovery that prolonged depression/recession.

But history never repeats itself exactly. Although no doubt contributory, bad residential housing lending in the interwar period did not play as central a role in blocking recovery as it does today. The legacies of the explosion of mortgage debt between 2001 and 2007 and the 42 percent drop in real house prices between 2006 and 2012 included impaired household balance sheets, effectively insolvent financial institutions, and extensive, lengthy, and drawn out foreclosure processes. These legacies exercised a persistent retardative effect on the macroeconomy, the result of which will be a cumulative output loss substantially exceeding that associated with the 1982 recession, which had heretofore been the worst since the Great Depression.

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