

October 2011

**The Interwar Housing Cycle in the Light of 2001-2011:
A Comparative Historical Approach**

by

Alexander J. Field*
Department of Economics
Santa Clara University
Santa Clara, CA 95053
email: afield@scu.edu

*I am grateful for comments from Price Fishback, Steven Gjerstad, Gary Richardson, Ken Snowden, Eugene White, and other participants at the NBER Universities Research Conference on Housing, Cambridge, Massachusetts, September 23-24, 2011. The views expressed here are of course my own. Comments welcome.

The Interwar Housing Cycle in the Light of 2001-2011: A Comparative Historical Approach

ABSTRACT

This paper examines the interwar housing cycle in comparison to what transpired in the United States between 2001 and 2011. The 1920s experienced a boom in construction and prolonged retardation in building in the 1930s, resulting in a swing in residential construction's share of GDP, and its absolute volume, that was larger than what has taken place in the 2000s. In contrast, there was relatively little sustained movement in the real price of housing between 1919 and 1941, and the up and down price movements were remarkably modest, certainly in comparison with more recent experience. The paper documents the higher degree of housing leverage in 2001-2011. And it documents a rate of foreclosure post 2006 that is likely higher than during the 1930s, underlying the greater significance today of balance sheet problems in posing obstacles to recovery.

The Interwar Housing Cycle in the Light of 2001-2011: A Comparative Historical Approach

The financial crisis of 2008-2009 and the Great Recession it precipitated forced, or should force a major rethinking among macroeconomists about the origin, prevention, and potential mitigation of such events. One of the conclusions that emerges from a considered examination of the run up to and the fallout from the event is the limitation of framing the policy issues solely in terms of whether Chairman Bernanke and the Federal Reserve System did the right thing when the crisis hit. Most observers believe that the response to the immediate crisis was correct in the sense 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 Act. 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 undoubtedly drew inspiration from the experience of the country during the Great Depression. Two of the key policymakers, Christina Romer and Ben Bernanke were and are 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 discourage us from examining the process whereby balance sheets became 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. 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 U.S. and 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, as I think many of us appreciate more today than we did before 2008, is the significance of balance sheets, and in particular the ways in which high leverage in both the financial and household sectors generates tight interconnections and the potential for domino effects (systemic failure). 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 can allow financial fragility to grow in the first place. It is much clearer now that balance sheets, debt, and leverage can make a big 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 the 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, it is also true that the reverse can and is happening. In particular, post-mortems on policy issues associated with the Great Recession should cause us to reexamine the shared beliefs among many (aside from real business cycle proponents) that the Great Depression was indeed principally caused by the failure of adequate Federal Reserve response. That may well have been a contributory factor but the idea that massive monetary accommodation in the early 1930s could have almost entirely eliminated the output cost of the Great Depression needs to be reconsidered. Balance sheet considerations were likely also implicated in the long and

drawn out recovery. After all, in the Great Recession, the Fed has driven short rates close to the zero lower bound, and has 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 the (April 27, 2011) Fed release, unemployment was forecast 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).

If massive monetary accommodation could not avoid a very large output loss in 2008-2013, we must reconsider whether in fact, as conventional wisdom seems to hold, massive monetary accommodation in 1929-33 could have avoided most of the output loss associated with those worst years of the Depression. I am not disputing that the more recent monetary accommodation made a big difference and that without it things would have been much worse. Similarly, I am not disputing that more Fed accommodation in the early 1930s would not have made a difference, perhaps a big difference. What I am saying is that to suggest that that was all that was needed is probably wrong.

Carmen Reinhart and Kenneth Rogoff (2009) provide compelling historical evidence that recessions associated with financial crises require significantly longer for recovery than those that don't. We need to accept the lessons of recent history, and of those documented by Reinhart and Rogoff, and of Richard Koo's (2009) analysis of Japan, and appreciate 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.

But if balance sheet issues hindered recovery in the 1930s, we need to ask whether housing was implicated in the same ways and to the same degree as has been true in 2007-2011. Was mortgage debt linked to the fall off 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 and increased burden of security loans (Mishkin, 1978) or consumer loans (Olney, 1999), or an effect running from increased post-crash stock market volatility (Romer, 1990)? To accept that housing was at the epicenter of the downturn in 1929-30, as it clearly was in 2007-2009, would require significant alterations in what have become established narratives of the origin of the downturn in the interwar period.

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. 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 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 casual link has been questioned – people point to the

fact that industrial production began to decline in the summer of 1929, that stock ownership was concentrated among a small portion of the population, and that big declines in output and employment didn't begin until months after the crash, it retains a central place in narratives of origin (see, e.g. Mishkin, 1978, who emphasized wealth and liquidity effects, or Romer, 1990, who argued that post-1929 stock market volatility adversely affected consumer durables purchases).

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.

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 appears to have largely shrugged off the collapse of the tech stock bubble in 2000-2001, that does not appear to have been the case with the real estate collapse that began in early 2006 and continues to the present. 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.

During the 1920s, most mortgages required 50 percent down payments, were nonamortized, and were for relatively short periods (five years). As the result of innovations in the 1920s (Snowden, 2010), it did become increasingly possible to obtain a second mortgage and increase leverage through this mechanism but that was not the norm. In stocks, however, the situation was almost exactly the reverse. One could easily buy stocks for 10 percent down, with the remainder borrowed through the call money market.

Following the Great Depression, margin requirements on stocks were, by regulatory fiat, raised to 50 percent and that has remained true to this day. The consequence was that when the Tech bubble collapsed, many investors saw their balance sheets shrink. Nevertheless, because the acquisition of stocks had, to a much lower degree than in the 1920s, been financed with borrowed money, the collapse of the price bubble had much lower potential to transmit distress to other entities (financial institutions) that, indirectly or directly, held equities on the left hand side of their balance sheets. And, since household stock acquisition had not involved high leverage, the collapse of the NASDAQ did not typically affect household financial survival, and pushed few units into insolvency. There were, to be sure, modest wealth effects on consumption, but the liquidity effects were more muted than appears to have been the case after 1929.¹ The

¹ Mishkin (1978) argued that the stock market crash affected household demand through both liquidity and wealth effects. The wealth effect is fairly straightforward. Typical econometric estimates are that a dollar decline in household wealth will reduce consumption by 4 or 5 cents. The liquidity mechanism predicts that if financial liabilities increase, or if the liquid portion of assets decreases (because a greater share of assets are in consumer durables and real estate), then demand for durables and house ownership will drop. Thus the composition of the household balance sheet, not just net worth, influences the amount and composition of consumption. An implication is that the more highly levered acquisition of stocks in the

end of the tech boom also meant some retardation in the acquisition of IT equipment which, through multiplier effects, also 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 <http://www.bea.gov>, NIPA Table 1.1.6).

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

These observations suggest that, contrary to our pre-2008 complacency about how real estate acquisition is financed, we should have been much more concerned. From the standpoint of the individual house buyer, the old mantra in real estate was that three things mattered: location, location, and location. From the standpoint of the threats posed to the macro economy, one could perhaps alter this to read leverage, leverage, and leverage. 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 been very little movement to alter the incentives that even bigger and more interconnected financial institutions have to make risky bets with borrowed money. As a consequence the likelihood that the U.S. economy will face a larger and potentially even more catastrophic financial crisis in the next fifteen years is probably similar to the likelihood that the Bay Area will experience a major earthquake in that time period. When that new financial

1920s made household consumption more vulnerable to declines in nominal stock values along with deflation after 1929. Romer (1990) questions the empirical significance of the wealth effect, although she does not directly address the liquidity effect.

crisis hits, once again the government and taxpayers will be over the barrel in terms of a choice between allowing a catastrophic depression or coming up with relief in a magnitude that will likely approach a third or more of GDP. Unless politics pushes us over a cliff, taxpayer funds will again be used to bail out financial institutions in one way or another. Indeed, this prospect may pose as much threat to the long run fiscal solvency of the U.S. government as do the more frequently talked about needs to increase taxes and control the rise of spending on medical care or in other areas.

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 useful 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 2000s. At the same time, we need to consider why private sector construction remained so depressed for such a long time during the 1930s. Twenty years 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, chs. 10 and 11).

On the other hand, leverage, debt overhang, and foreclosure played and continue to play a major role in amplifying the impact of the housing bust in the 2006-2011 period, and continue to pose obstacles to full economic recovery (Financial Crisis Inquiry Commission, 2011). An open question historically is how much the debt overhang of the real estate booms 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 2000s 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 (but see Gjerstad and Smith, 2011). And whereas Irving Fisher's debt deflation mechanism clearly affected mortgaged housing between 1929 and 1933, the problems in the sector in the recent episode were caused only marginally by increasing burdens due to debt deflation. Although Bernanke and other policy makers feared more severe deflation, in part as a result of their actions the rate of change of the CPI for all urban consumers went negative only in 2009, declining at .37 percent per year, as compared with 3.8 percent growth in 2008, and returning to positive territory (1.6 percent rise) in 2010. This is to be compared with the 8 percent per year deflation that characterized 1929-33.²

² Homeowners 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.

Bad mortgage debt contributed directly to failures of building and loans and mutual savings bank, the main providers of mortgages during the Depression, and this bears some relationship to the ways in which housing travails ended up threatening system-wide damage to the economy in the 2007-2010 period. But the argument (Gjerstad and Smith, 2011) that housing was central to the initial downturn in the Great Depression (as well as depth and duration) 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 is tempting to conclude that the 1920s were like the 2000s, 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 (Field, 1992). But the financial groundwork differed in important respects. 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 one can question how much systemic impact this had. Commercial banks played little role in mortgage lending, and securitization was less advanced, and more limited to commercial construction than was true in the 2000s.

On the other hand, in the absence of a central bank committed to price stability, and thus in the presence of deflation, even the relatively more moderate expansion of debt in housing could have contributed, through the debt deflation mechanism, to declines in

demand, particularly for durables and housing ownership. 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 to \$40.5 billion in 1932. Security loans jump 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) increase from \$10.1 billion in 1929 to \$12 billion in 1930 to \$12.3 billion in 1931 to \$11.3 billion in 1932 (Mishkin, 1978, p. 921; all figures in 1958 dollars). These numbers suggest that the biggest negative shock coming from the household balance sheet between 1929 and 1930 was the increase in the real value of security loans: \$5.2 billion, although the increase in the real value of real estate liabilities of \$4 billion surely also played a roll. Real estate debt, however, was larger than securities and consumer credit combined, and persisted at high levels much longer (in part perhaps because of less adequate resolution mechanisms). All of these issues and others will need to be considered in addressing Gjerstad and Smith's provocative thesis.

The most recent housing cycle has been marked by a dramatic 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. This was not associated with a big decline in the average real value of a house, so pure wealth effects, particularly among nonmortgaged homeowners, were limited. Unlike the 2000s, 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 2000s, 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 homeowners into very serious trouble. The phenomenon of underwater homes (loan balances greater than house values), which is endemic today (2011), for example, was much less common during the Depression. 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 substantially in the two cycles.

Shiller’s Series

As part of the research for his book Irrational Exuberance (2006), Robert Shiller assembled series on real and nominal house prices going back to 1890. His source for nominal house prices for 1890-1933 is Grebler, Blank and Winnick (1956), whose data were based on a survey of homeowners in 22 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 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, p. 234).

Shiller's data for 1934-41 are based on advertised home prices in newspapers in five cities: Chicago, Los Angeles, New Orleans, New York, and Washington D.C.. 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.

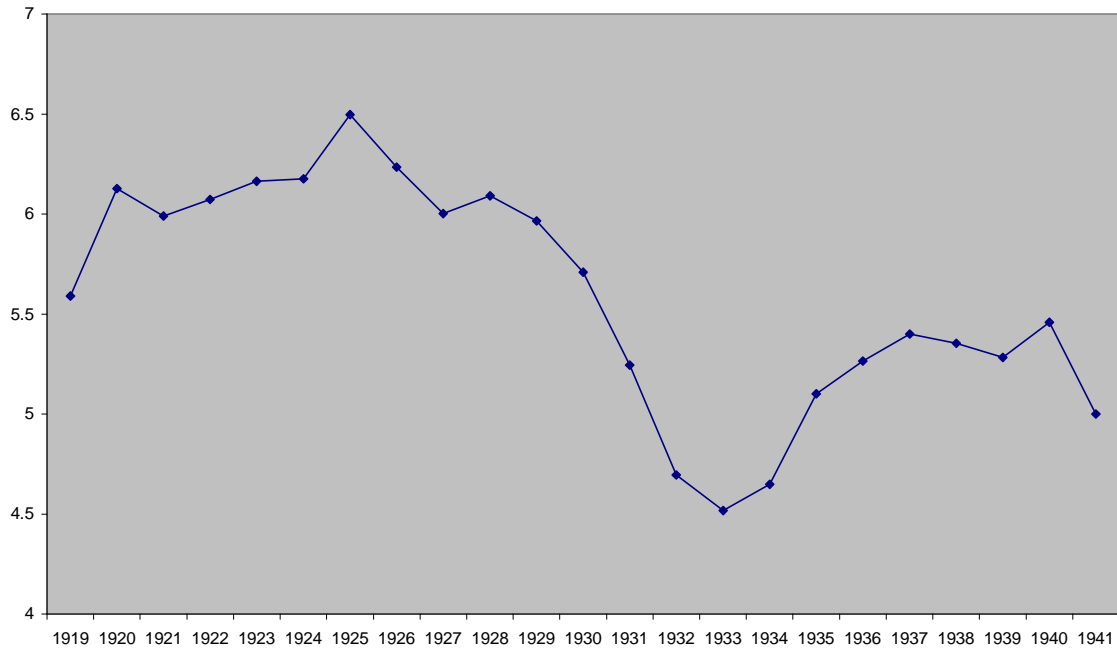
For most readers of Irrational Exuberance, particularly the first two editions, the principal takeaway from the long time series on real housing prices was the strikingly dramatic run up in real estate prices between 2000 and 2006. In percentage terms the increase in the real price of a house (approximately 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 2000-2006 period, the new higher level of real house prices was sustained for half a century.

As Shiller has updated his numbers (Shiller, 2011), they have 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 2011:1 declined 34 percent from their peak in 2006:2. We have also had mild inflation over this period. Data on real housing values indicate that they have now declined 40 percent from their peak in 2006:1. 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 40 percent decrease in real housing prices, actually puts the index in 2011:1 below where it was in 2000:1.

That kind of loss is what investors are taught they must be prepared to take 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, which look modest compared to what we've recently experienced, quickly subsided.

Looking at Shiller's entire series since 1890, it is clear that the degree of house price decline between 2006 and 2011 in the United States does have precedent. But if we study the series closely we discover something else which 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. Both 1893 and 1907 are associated with financial panics that ended NBER business cycle expansions. Indeed, the 1907 crisis required the personal intervention of J.P. Morgan to end it and it set in train forces that would lead to the creation of the Federal Reserve System in 1913. These house price losses, however, would have been experienced over twenty-seven and fifteen year holding periods, not a five year period.

Figure 1
Nominal House Prices, United States, 1919-41



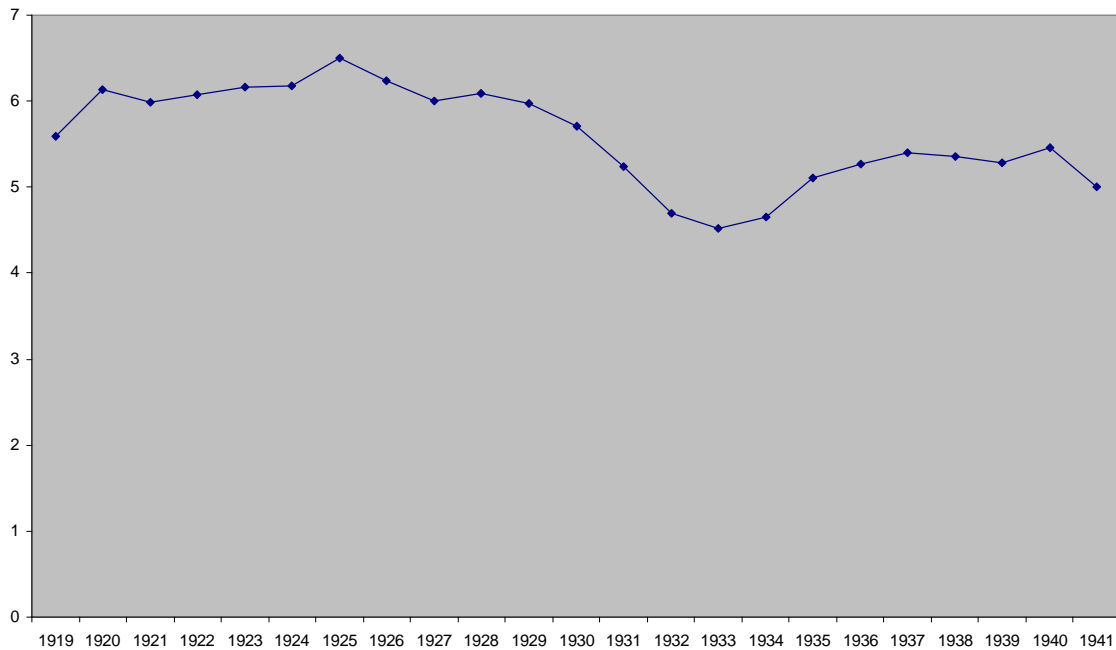
Source: Shiller 2011, Housing data, available at <http://www.econ.yale.edu/~shiller/data.htm>.

In contrast with evidence of large declines in the real price of housing prior to the 1920s, or in 2006-11, 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 memories 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 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 2001-2011, are almost unbelievably mild.

Let's look first at nominal prices (figure 1). We can certainly 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. But figure 1 exaggerates the magnitude of the increase and decreases by truncating the y axis to bracket the range of the index. If we look at the index with 0 as the origin of the graph (figure 2), the fluctuations look less dramatic

Figure 2
Nominal House Prices, United States, 1919-41

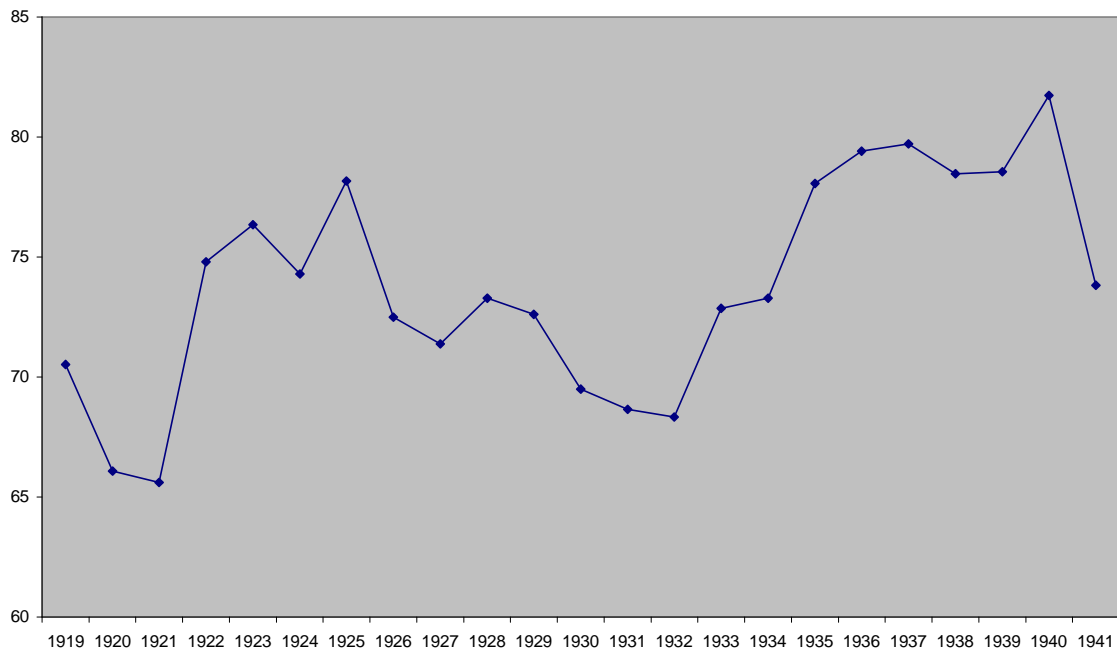


Source: Shiller 2011, Housing data, available at <http://www.econ.yale.edu/~shiller/data.htm>.

The modesty of the increases and decreases are now much more apparent, with the peak to trough 1925-1933 decline of 30 percent roughly in line with the movement of the general price level over that period.

The relative tameness of house price movements in the interwar period is even more apparent when we look at real price movements, first with a truncated y axis (figure 3) and then with 0 as the origin (figure 4). Comparing figure 3 with figure 1, 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.

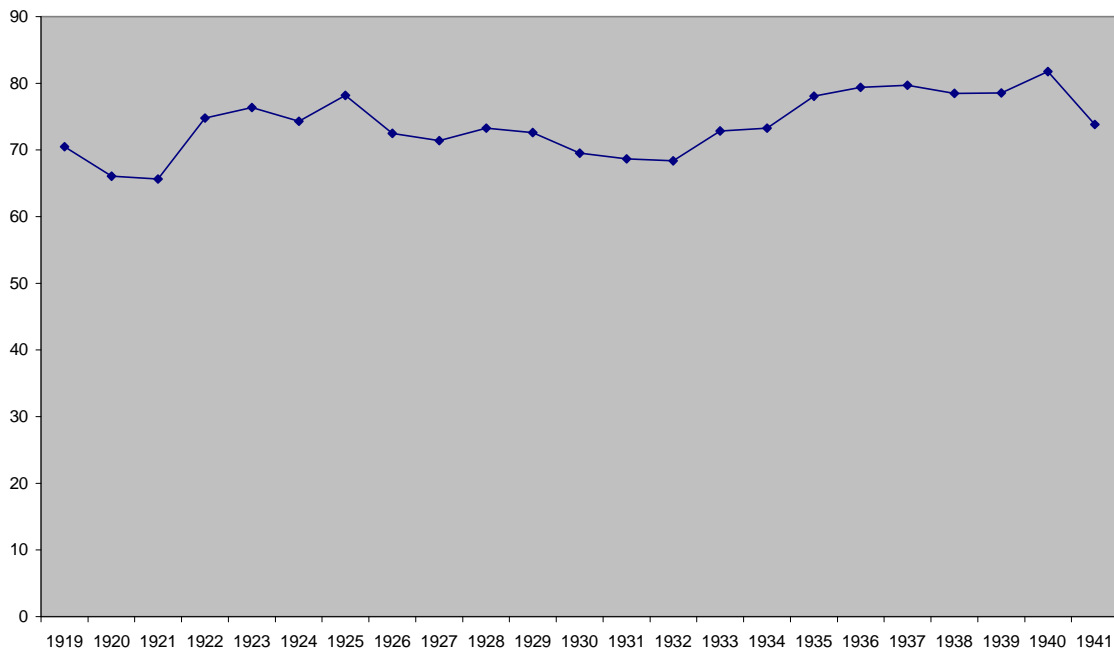
Figure 3
Real House Price Index, United States, 1919-41



Source: Shiller 2011, Housing data, available at <http://www.econ.yale.edu/~shiller/data.htm>.

Examining the real house price series with the untruncated y axis (figure 4), one cannot help but be struck by the almost complete absence of a 2001-2011 style price bubble and collapse. True, if you had been able to buy a national portfolio of real estate in 1921 and managed to sell in 1925, you would have enjoyed a 19 percent real gain, and if you bought in 1932 and sold in 1940, you would have gained 19.6 percent real. With 50 percent down you could have walked away with gains of almost 40 percent. But this is chump change compared to what real estate speculators actually made in the United States between 2002 and 2006. Looking at this graph, one almost feels we need Greg Clark to tell us provocatively that “nothing happened” Clark is famous for arguing that, at least with respect to the standard of living, nothing happened in 800 years of British economic growth, let alone 100,000 years of world economic history prior to 1800.

Figure 4
Real House Price Index, United States, 1919-41



Source: Shiller 2011, Housing data, available at <http://www.econ.yale.edu/~shiller/data.htm>.

That's of course, a little bit of an exaggeration, as it was in Clark's case. There's 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 real decline in house prices between 1925 and 1932 was only 12.6 percent (as compared with a real decline of 40 percent between 2006 and 2011), the nominal decline in the context of mortgages with fixed nominal interest payments did have the potential to contribute to debt deflation and persisting problems with debt overhang and contagion in the 1930s.

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 2001-2011. Assuming we are at a trough in house prices in 2011, a matter about which there remains some uncertainty, the 2006-2011 peak to trough decline in real housing prices of 40 percent is more than triple the 1925-1932 decline in percentage points. And, as I will show below, housing was much more highly leveraged in the more recent episode, which enabled it to pose more of a systemic threat.

Criticisms of Shiller's Series

Eugene White (2009) has raised doubts about the reliability of Shiller's series for the 1920s and the first years of the 1930s, arguing 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 (his standard for too volatile is not specified),

indicative of small sample problems, but also suggests that the series is biased downward because it does not include the price movements of houses bought at the peak and subsequently abandoned or foreclosed upon. That is, such houses would not have shown up in Grebler, Blank, and Winnick's 1934 survey. He notes that the size of the possible bias is "difficult to assess in the absence of sufficient additional national or regional data" (White, 2009, p.9).

Price Fishback et al (2011) are also implicitly critical of Shiller's series and the 1934 survey that underlies it. In a paper forthcoming in the Review of Financial Studies, they report data derived from the 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, p. 1784). They find that the average ratio was 1.45 percent, meaning that nominal prices in 1930 were 45 percent higher in 1930 than they had been in 1920. In contrast, the Grebler, Blank, and Winnick data show nominal house prices *lower* in 1930 by about 7 percent than in 1920.

How can this be? Are the data Shiller relies on for this period that bad? One possible explanation for the discrepancy is that the Fishback et al census data compares all owner occupied houses in 1930 with mortgaged occupied houses in 1920. In a footnote the authors acknowledge limitations of the 1920 data: "There was a 1920 mortgage census that collected information only on the value of mortgaged homes and was limited in the scope of cities for which it reported information" (Fishback et al, 2011, p. 1794). But it is hard to know if this introduces a bias, and if so in which direction.

An issue of greater concern is one about which Shiller has written repeatedly and consistently. 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. If houses over time become newer, bigger, or in other respects better, then comparisons of changes in median house prices will not accurately reflect what is going on 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 Grebler Blank and Winnick survey appealing: it asked people what their house was currently worth and what they paid for it and when. The comparisons were over time for the same housing units.

The 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 Poors, 2009, p. 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 likely not truly to be matched pairs because, for example, maintenance has been neglected or the house have been extensively remodeled.

The Grebler, Blank, and Winnick index is not as sophisticated as the currently constructed Case-Shiller indexes, but is more consistent with their methodology than are the comparisons reported by Fishback et al. The 1934 survey yields approximate matched pairs because it asked people the current value of their house and what they originally paid for it and when.

There are several reasons why the comparisons Fishback et al make between 1930 and 1920 census data may depart substantially from what would be yielded by matched pair reports of the same houses sold in 1920 and 1930. First, respondents to the 1930 census (the enumeration took place in the Spring) may not fully have appreciated the degree to which the values of their houses had softened since the peak in 1926. Second, the housing stock was quite different in 1930 than it had been a decade earlier, since a large fraction of it was newly constructed. Over the years 1920 -1929 inclusive, over 7 million new private permanent non-farm housing unit were built (Grebler, Blank, and Winnick, 1956, Table B-1, p. 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 weren't there in 1920. Moreover, although few of the newly built units would have vanished, been torn down, or otherwise 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 older, more decrepit units. The 1920 census reports 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 this category.

For both of these reasons the 1930 – 1920 comparison reported by Fishback et al is likely to give a misleading picture of quality adjusted house price change between 1920 and 1930. In many instances, we are comparing oranges with apples. The typical 1930s house would have been newer and possibly of higher quality, thus commanding a higher price.

Another reason to have some faith in Grebler, Blank, and Winnick series is that other data are consistent with the picture they paint. Fisher (1951, p. 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. Median prices in Fisher's sample decline 31 percent between 1925 and 1933-34. Grebler, Blank, and

Winnick report approximately the same percentage decline in their 22 city sample over these years. In the Fisher sample homes purchased in 1926 and 1927 had a decline of 26.9 percent nominal to 1933-34. 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 Historical Statistics, Series Dc 828), compared with Fishback et al's 45 percent increase and Grebler, Blank, and Winnick's 7 percent decline. The Fisher numbers are not inconsistent with the Grebler, Blank, and Winnick series, given the fact that the stock in 1930 was newer and possibly of better quality and that these are not and do not approximate matched sales

Fishback et al also compare housing prices reported in the 1940 census with those reported in the 1930s census, and find them in nominal terms to be 48.6 percent lower, Shiller has them than about 5 percent lower. 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 non-farm 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, however, totaled 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 there were lower value units (after all, they had been abandoned during the boom time so the 1920s) and their reintroduction into the occupied housing stock may be one of the reasons the Fishback et al data show such a sharp drop in reported values between 1930 and 1940.

All of this discussion speaks to the merits of the matched sale methodology pioneered and championed by Case-Shiller. It's not that Fishback et al are wrong. It's just that their calculations do not necessarily cast doubt on the reliability of Grebler, Blank, and Winnick as an index of quality adjusted house prices for the 1920-1933 period.

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 increases the value of owner's equity. And 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 homeowners had a mortgage. Indeed, the majority did not. 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 affect your behavior much.

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 is 40 percent too low or the 1933 figure is 40 percent too high, or there is 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. This seems unlikely. I think instead we need to be receptive to what the data are trying to tell us, and that is that the real price decline in the most recent cycle has been far greater in magnitude – the collapse is more severe - than what took place during the interwar years.

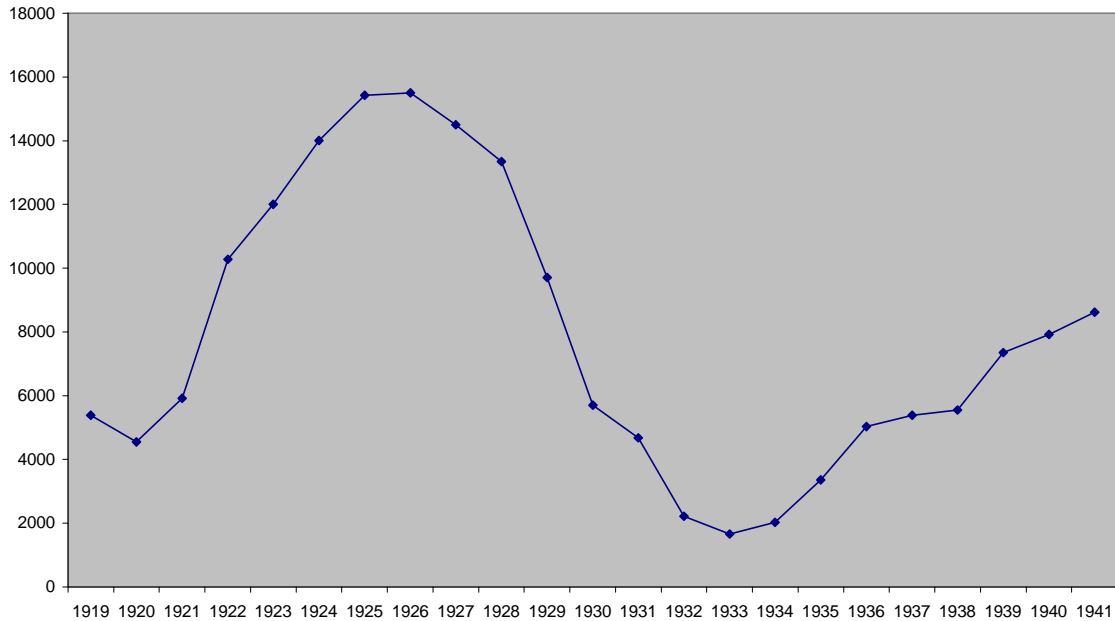
Construction

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 2000s. And one would be quite wrong. 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 U.S. 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.³ In the 2001-2005 boom, the share of

³ See Historical Statistics, series Dc256 for construction and Ca213 (Balke-Gordon) for 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

residential 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 (NIPA Table 1.1.5).

Figure 5
Residential Construction, United States, 1919-41
 Millions of 1957-59 dollars



Source: Historical Statistics, Millennial Edition, Series Dc262.

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 (<http://www.bea.gov>, 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 look at the absolute decline in inflation adjusted residential construction,

published from 1929 onwards. Using Kuznets 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.

the drop is even more dramatic in the interwar period, as figure 5 indicates. 1926 to 1933 witnessed an 89 percent decline in real construction activity.

In comparison, assuming that the housing construction cycle has now bottomed out (I am writing in October of 2011), we see a peak to trough decline of 57 percent in real construction activity between 2006 and 2011. 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, however, 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 (Mishkin, 1978), the influence of the end of the housing boom on consumption expenditures through this mechanism was weaker, at least initially.

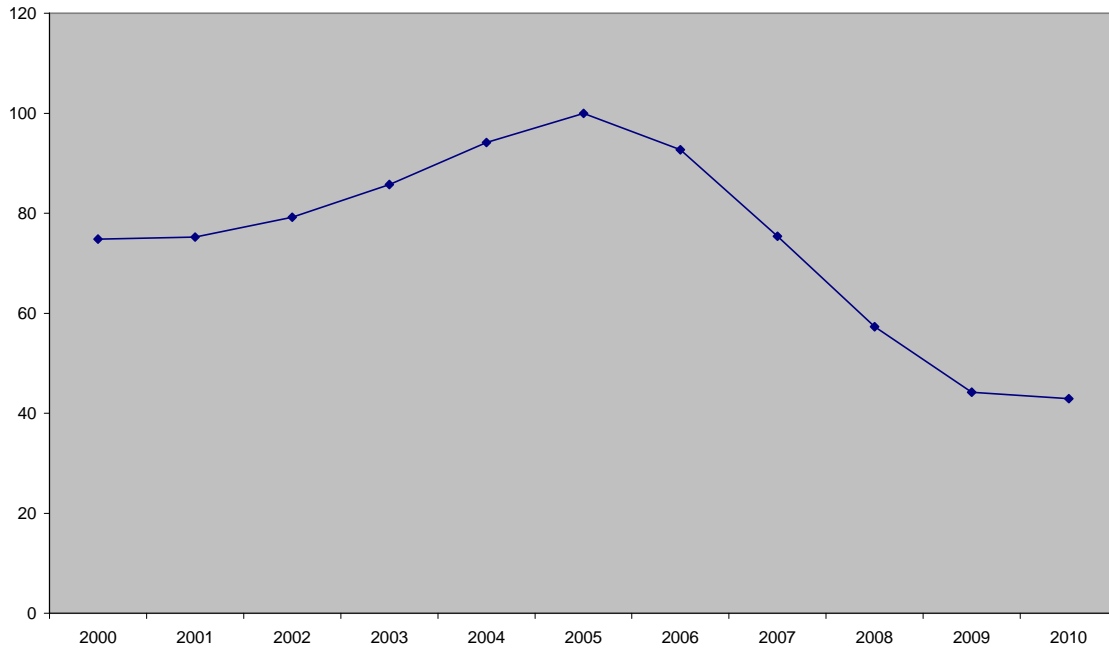
Between 2006 and 2011, in contrast, the collapse of the housing boom was associated with an approximately \$7 trillion hit to household balance sheets. To get a sense of how large this is, consider that the flow of U.S. GDP flow is today running at

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 declined only modestly, while nominal house prices fell sharply. The consequence was a big reduction in household real estate wealth. Given the uneven distribution of mortgage debt this pushed millions of homeowners underwater, in the sense that they owed more than their homes were worth. The 2006-2008 American Community Survey showed that of approximately 75.4 million owner occupied U.S. housing units, 51.4 million had a mortgage (U.S. Bureau of the Census, 2011, series B25087) . Of these, more than one in four were underwater in May of 2011. Even though there were tens, indeed hundreds of thousands of foreclosures during the Depression, the phenomenon during the most recent episode has likely been more widespread and more severe in its consequences. During the Depression the problem was not typically that people owed more on the house than it was worth. The problem was simply that they couldn't 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.

Figure 6
Index of Real Residential Construction, United States, 2000-2010



Source: <http://www.bea.gov>, NIPA Table 1.1.3.

Why were the price movements and wealth effects so much more muted during the interwar period than in 2001-2011? The most compelling answer is simply that residential housing was less leveraged in the 1920s than it became in the 2000s. Mortgage “innovations” such as option 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, standard terms were fifty percent down, five year mortgage 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 2000s, the overall picture is one of conservatism (White, 2009, p. 26 reaches a similar conclusion).

This conservatism was not because government regulators had mandated higher down payments. One suspects that it had to do with expectations based upon a prior history of land and real estate speculation, in which lending standards had been at times less, leading to sometimes extreme cycles of boom and bust in house prices prior to the 1920s. This conservatism was perhaps reinforced by the role of double liability exposure among bank shareholders (Grossman, 2001) and the absence of a Too Big to Fail expectation (White, 2009), although this does not seem to have constrained getting into trouble in equities.

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.* My suggestion is that decades of experience of real estate in the nineteenth and early twentieth centuries had persuaded lenders 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 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 can't service their mortgages, become delinquent, and eventually face foreclosure. As they struggle to meet their mortgage obligations, non-housing

consumption is adversely impacted. Foreclosures were an important feature of the early 1930s (see Wheelock, 2008), but they weren't 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 had their source elsewhere, that generated 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 2007-2009.

Foreclosures

Foreclosures during the 1930s, although a very real and painful phenomenon, were proportionately less common than has been true in the years since 2006. To make the case for this, we begin with interwar data for non-farm housing units, over three fourths of the occupied housing units in 1930, for which the statistical information is better. The number of foreclosures for non-farm 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 (Historical Statistics, Millennial edition, Series Dc1255). The 1930 census reported 23,235,982 occupied nonfarm housing units (Historical Statistics, Millennial edition, 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

non-farm occupied housing stock was foreclosed upon in the worst year of the Depression. This number is probably biased slightly upwards 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.⁴ This represented 2.23 percent of all U.S. housing units. The fact that more than twice the proportion of all housing units were foreclosed upon in 2010 as compared with the proportion of non-farm 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 real housing prices that have marked the more recent cycle.

The data for the 1930s in the above calculations are of course for the nonfarm housing sector. Adding in data on farm occupied housing units might 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 non-farm units (there were 29,904,663 total units, so farm housing units were about a quarter of the total). The rate 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 16 farm housing units would have had to have

⁴ The data on filings include notices of default, scheduled auctions, and REO (real estate owned) property.

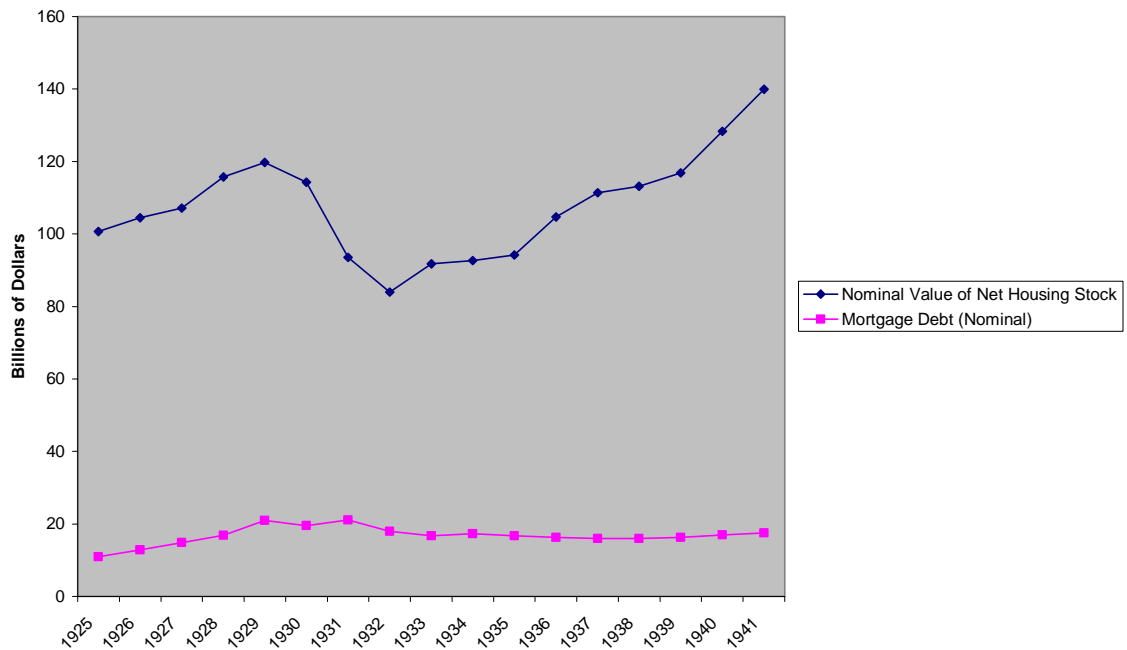
been foreclosed upon in 1933 in order to make the overall foreclosure rate on residential housing equal to what it was in 2010.

The rate of foreclosure on farm housing is almost inextricably entangled with the rate of foreclosures on farms, which is not exactly the same. Nevertheless, they are closely related, and we do have some data on the latter. Alston (1983, p. 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. Nevertheless, I am reasonably confident that, even if we take into account all occupied housing units (farm and non-farm), we will eventually still conclude that the foreclosure rate in 2010 was higher than it was in the worst year of the Depression. This higher foreclosure rate has been 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 moving in real housing prices in the years immediately after the war. 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 national level only by boomlets in the late 1970s and again during the S and L fueled 1988-1990 period, but each of these subsided relatively quickly.

Figure 7
Nominal Housing Value and Mortgage Debt, United States, 1925-41

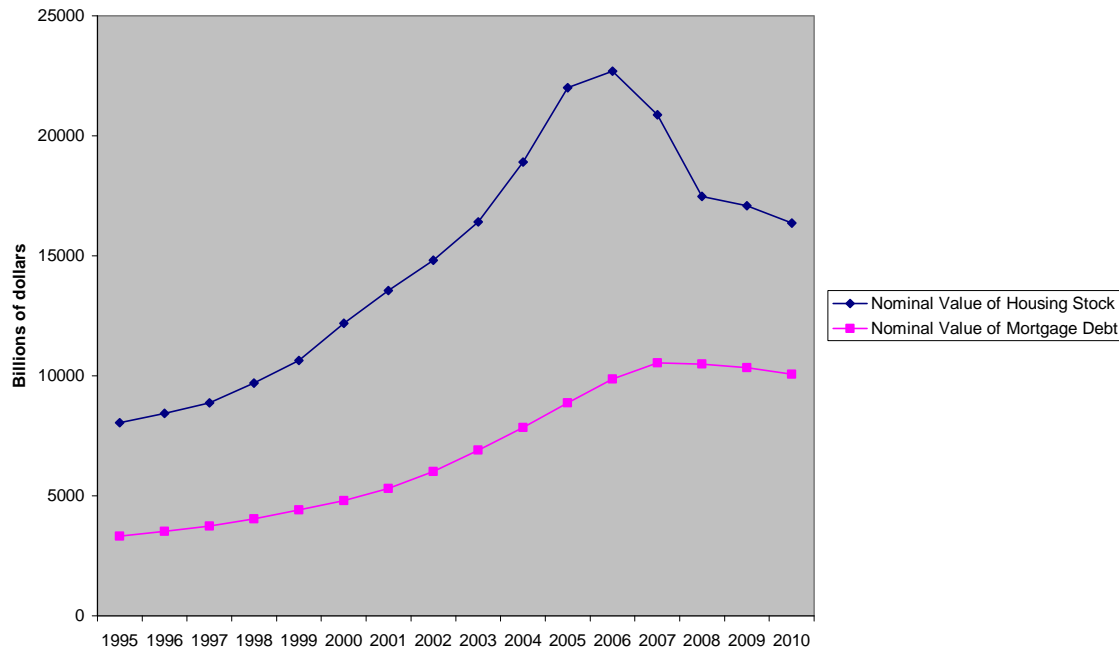


Sources: Nominal Value of Net Housing Stock: <http://www.bea.gov>, Fixed Asset Table 1.1, accessed June 6, 2011; Nominal Value of Mortgage debt on residential structures: Historical Statistics, Millennial Edition, sum of series Dc916-922.

Beginning in the 1980s under President Reagan and gathering steam under President Clinton in the 1990s, 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 2000s, on which it is

often blamed), emerged the housing boom and the near catastrophic financial meltdown that followed.

Figure 8
Nominal Value of Housing Stock and Mortgage Debt, United States, 1995-2010



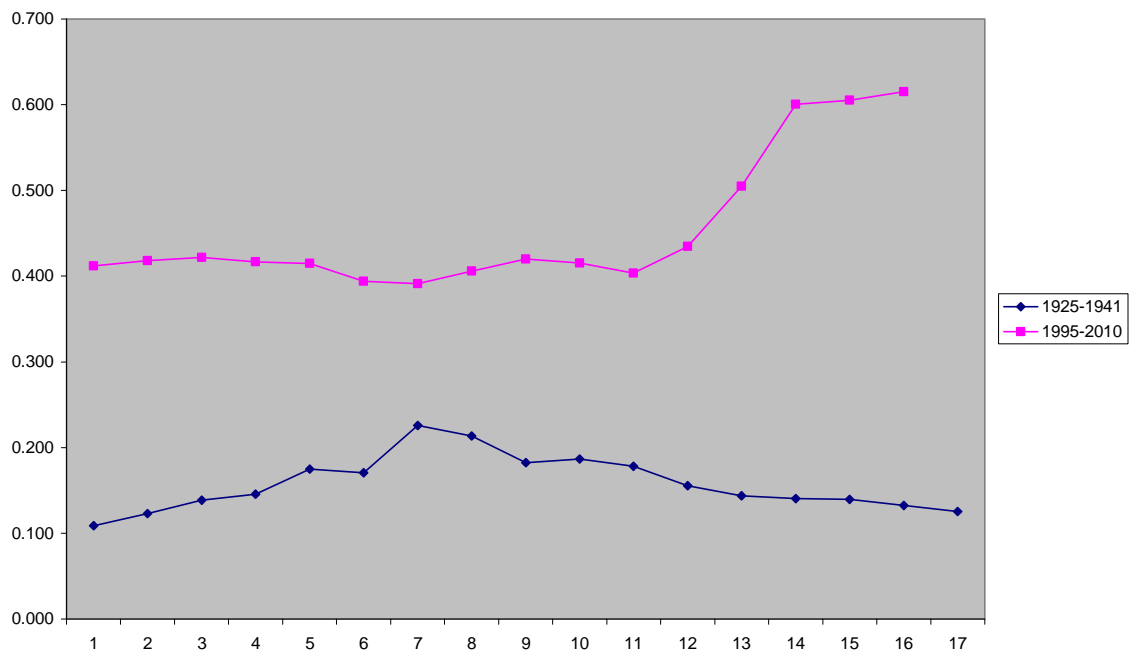
Sources: <http://www.bea.gov>, Fixed Asset Table 1.1; Historical Statistics, Millennial Edition, Series Dc916-922; <http://www.federalreserve.gov>, Flow of Funds accounts, table B-100, lines 4 and 33.

Figures 7 and 8 illustrate dramatically the very different degrees of housing leverage in the interwar cycle as compared with 2001-2011. Figure 7 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 9), 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 in

homeowners 1932 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 was at over 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 has remained at that level through 2011.

The comparative trends in housing debt to asset ratios, comparing 1925-41 with 1995-2010 are illustrated in figure 9.

Figure 9
Debt to Asset Ratios in Housing, United States, 1925-1941 and 1995-2010



Sources: <http://www.bea.gov>, Fixed Asset Table 1.1; Historical Statistics, Millennial Edition, Series Dc916-922; <http://www.federalreserve.gov>, Flow of Funds accounts, table B-100, lines 4 and 33.

Conclusion

Using a comparative historical approach, this paper has argued that there are several important differences in the housing sector's characteristics and contributions to macroeconomic instability in the 1930s and 2001-2011. First, the interwar housing cycle was considerably more severe than 2001-2011 in terms of the volatility of residential construction activity, whether measured in absolute terms or as a share of GDP. Second, the interwar cycle was *less* severe in terms of fluctuations in the real price of housing. Finally, housing was substantially more leveraged in 2001-2011 than was true during the interwar period.

The paper argues that there is a connection between the second and third of these differences. During the 1920s, the historical experience of housing booms and busts had disciplined lenders to treat housing as a quite 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 weakened as the decade of the 1920s proceeded, the overall result was still a housing sector that was much less levered than in 2001-2011. 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 "innovative" ways to finance housing.

This analysis has important implications. The impact of the housing bust 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 2000s, 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 consumption through a direct wealth effect was weaker, certainly in comparison to the effect on consumption of the collapse of stock prices and household balance sheets (Mishkin, 1978).

In contrast, in 2001-2011, with an almost \$7 trillion drop in house values, this effect was stronger. Because of the much higher degree of leverage in 2001-2011, the problem of debt overhang and underwater homeowners has been 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 real estate lending to pose a systemic threat to U.S. 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 are well documented elsewhere, for example in the final report of the Financial Crisis Inquiry Commission (2011).

When New Deal reformers set their minds to mitigating the likelihood of a recurrence of the Great Depression, they did address housing, but placed more emphasis on the travails of the stock market. They insisted on separating commercial and investment banking (which back then actually meant firms that channeled loanable funds to corporations through new equity and bond offerings, as opposed to organizations that derived the bulk of their profits from trading on their own account). In the Depression,

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 Newmann, 2010). In the Securities Act of 1933 and the Securities and Exchange Act of 1934 Congress demanded new transparency in security issues and corporate reporting.

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 30 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 towards 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 relatively little, the 89 percent nominal decline in the Dow Jones index reflected a drop in the real value of the highly levered stock market that had more severe consequences, at least initially. 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 2008-2009 financial crisis and economic recession. The differential legislative attention during the New Deal is consistent with the narrative developed in this paper.

BIBLIOGRAPHY

- Alston, Lee J. 1983. "Farm Foreclosures in the United States During the Interwar Period." Journal of Economic History 43 (December): 885-903.
- Bernanke, Ben. 2002. Speech given at birthday party for Milton Friedman. Available at <http://www.federalreserve.gov/BOARDDOCS/SPEECHES/2002/20021108/default.htm>.
- Calomiris, Charles, Stanley Longhofer, William Miles. 2009. "The (Mythical?) Housing Wealth Effect." NBER Working paper No. w15075 (June).
- Carter, Susan et al. 2006. Historical Statistics of the United States: Millennial Edition. Cambridge: Cambridge University Press.
- Case, Karl E, John Quigley and Robert Shiller. 2005. "Comparing Wealth Effects: The Stock Market vs. The Housing Market." Advances in Macroeconomics 5. Available at <http://www.bepress.com/bejm>.
- Clark, Gregory. 2007. A Farewell to Alms: A Brief Economic History of the World. Princeton: Princeton University Press.
- Eichengreen, Barry, and Kris J. Mitchener. 2004. "The Great Depression as a Credit Boom Gone Wrong." Research in Economic History 22: 183–237.
- Federal Reserve Board. 2011a. April 27 release. Available at <http://www.federalreserve.gov/newsevents/press/monetary/fomcprojtab120110427.pdf>
- Federal Reserve Board. 2011b. Flow of Funds Accounts. Available at <http://www.federalreserve.gov> .

- Field, Alexander J. 1992b. "Uncontrolled Land Development and the Duration of the Depression in the United States." Journal of Economic History 52 (December): 785-805.
- Field, Alexander J. 2011. A Great Leap Forward: 1930s Depression and U.S. Economic Growth. New Haven: Yale University Press.
- Financial Crisis Inquiry Commission. 2011. Final Report of The National Commission on The Causes Of The Financial And Economic Crisis In The United States. Washington: Government Printing Office.
- Fishback, Price V., Alfonso Flores-Lagunes, William C. Horrace, Shawn Kantor, and Jaret Treber. 2011. "The Influence of the Home Owners' Loan Corporation on Housing Markets during the 1930s." Review of Financial Studies 24: 1782-1813.
- Fisher, Ernest M. 1951. Urban Real Estate Markets: Characteristics and Financing. New York: National Bureau of Economic Research.
- Fisher, Irving. 1933. "The Debt-Deflation Theory of Great Depressions." Econometrica 1: 337-57.
- Friedman, Milton and Anna J. Schwartz. 1963. A Monetary History of the United States, 1867-1960. Princeton: Princeton University Press.
- Galbraith, John Kenneth. 1955. The Great Crash 1929. Boston: Houghton Mifflin.
- Gjerstad, Steven and Vernon L. Smith. 2012. Prosperity and Recession: U.S. Economic Cycles and Consumption Cycles During the Past Century. New York: Cambridge University Press (forthcoming).

- Grebler, Leo, David M. Blank and Louis Winnick. 1956. Capital Formation in Residential Real Estate: Trends and Prospects. Princeton: Princeton University Press.
- Grossman, Richard S. 2001. "Double Liability and Bank Risk Taking," Journal of Money, Credit and Banking 33 (May): 143-159.
- Koo, Richard. 2009. The Holy Grail of Macroeconomics, Revised Edition: Lessons from Japans Great Recession. New York: Norton.
- Leonhardt, David. 2005. "Be Warned: Mr. Bubble's Worried Again." New York Times, August 21. Available at <http://www.nytimes.com/2005/08/21/business/yourmoney/21real.html?pagewanted=1>
- Minsky, Hyman. 1964. "Longer Waves in Financial Relations; Financial Factors in the More Severe Depressions." American Economic Review 54 (May): 324-335.
- Minsky, Hyman. 1975. John Maynard Keynes. New York: Columbia University Press.
- Minsky, Hyman, 1986. Stabilizing an Unstable Economy. New Haven: Yale University Press.
- Mishkin, Frederic S. 1978. "The Household Balance Sheet and the Great Depression." Journal of Economic History 38 (December): 918-937.
- Olney, Martha L. 1999. "Avoiding Default: The Role of Credit in the Consumption Collapse of 1930." Quarterly Journal of Economics 114 (February): 319-335.
- RealtyTrak. 2011. "Record 29 Million US Properties Receive Foreclosure Filings in 2010." Available at <http://www.realtytrac.com/content/press-releases/record-29->

million-us-properties-receive-foreclosure-filings-in-2010-despite-30-month-low-in-december-6309.

Reinhart, Carmen and Kenneth Rogoff. 2009. This Time is Different: Eight Centuries of Financial Folly. Princeton: Princeton University Press.

Romer, Christina D. 1990. "The Great Crash and the Onset of the Great Depression." Quarterly Journal of Economics 105: 597-624.

Standard and Poors. 2009. "S&P/Case-Shiller Home Price Index Methodology." Available at <http://www.standardandpoors.com/> .

Saulnier, Raymond J. 1956. Urban Mortgage Lending. Princeton: Princeton University Press.

Shiller, Robert. 2006. Irrational Exuberance, second edition. New York: Crown Publishers.

Shiller, Robert. 2011. Housing Data. Available at <http://www.econ.yale.edu/~shiller/data.htm>

Snowden, Kenneth. 2010. "The Anatomy of a Residential Mortgage Crisis: A Look Back to the 1930s." NBER Working Paper 16244.

Temin, Peter. 1976. Did Monetary Forces Cause the Great Depression? New York: Norton.

U.S. Department of Commerce, Bureau of Economic Analysis. 2011. Fixed Asset Tables. Available at <http://www.bea.gov>.

U.S. Department of Commerce, 2011, National Income and Product Accounts (NIPA). Available at <http://www.bea.gov>.

U.S. Department of Labor. 2011. Consumer Price Index – all Urban Consumers.

Available at <http://www.bls.gov>.

Wheelock, David. 2008. “The Federal Response to Home Mortgage Distress: Lessons from the Great Depression.” Federal Reserve Bank of St. Louis Review

(May/June): 90: 133-48.

White, Eugene N. “Lessons from the Great American Real Estate Boom and Bust of the 1920s.” NBER Working Paper 15573, December 2009.