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THE INTERWAR HOUSING CYCLE IN THE LIGHT OF 2001-2011:
A COMPARATIVE HISTORICAL APPROACH

Alexander J. Field

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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 on residential housing post 2006 that is likely higher than during the 1930s. It concludes that balance sheet problems resulting from a prior residential housing boom pose greater obstacles to recovery today than they did in the interwar period.

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

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, 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 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 dissuade 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 is appreciated more than was true prior to 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 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. The thesis 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 implicated in the slow recovery then as well as now, and might have resulted in persistent output losses, even in the presence of 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 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 did 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 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 accommodation 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 compelling historical evidence that recessions associated with financial crises require significantly longer for recovery than those that don't. 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. 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 the International Monetary Fund's 2012 survey, 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.¹

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 weakened 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 post-crash stock market volatility (Romer, 1990)?

In this paper I will tread a narrow line, arguing on the one hand that we cannot understand the onset, depth, and duration of the Great Depression without giving as much attention to balance sheet issues as we are now giving 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

¹ 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.

has been true in the first cycle of the twenty first century. To argue that housing was at the epicenter of the downturn in 1929-31, as it was in 2007-2009, and as Gjerstad and Smith (2011) have recently maintained, would require significant changes in what have become established narratives of the origin of the downturn in the interwar period. That doesn't 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.² 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 – 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,³ or that the market recovered considerably in the first four months of 1930, or that big declines in output and employment didn't begin until months after the crash – the

² Another difference is that net inflows of foreign capital, an important factor in the 2000s, were entirely absent in the 1920s, when the US, running current account surpluses, was a net capital exporter.

³ Romer (1990) suggests that less than 2 percent of American households held stock at the time of the crash, citing Galbraith (1955, p. 78). But the empirical basis for this assertion is questionable. 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 per cent. I am grateful to Gavin Wright for drawing my attention to the unresolved question of how extensive stock ownership was at this time.

October 1929 drop and subsequent downward trajectory retain a central place in narratives of origin.⁴

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.⁵

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 continued at least through early 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.⁶

⁴ See, e.g. 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, p. 190, who reference stock market effects on balance sheets throughout the economy.

⁵ 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, 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.

⁶ 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 2000s). 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

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.⁷

latter was worse, suggesting that a focus on the liability side of balance sheets is the key to understanding why this was so.

⁷ White (1990) argues that credit was not “pushed” on borrowers, but rather “pulled” by speculative fever in the stock market. His evidence is that under pressure from the Fed, 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. Rapaport and White (1994) summarize evidence that margins rose from 10-25 percent in the early to mid-1920s to 40-50 percent in 1928 and especially 1929. Although a

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.⁸ The end of the tech boom

brokers' loan was in principle collateralized, but creditors still bore risk because of the possibility that in price freefall, a lender might not be able to sell quickly enough to secure his initial investment. Higher margins partially compensated for this. Rapaport 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. There can be little doubt, nevertheless, that through whatever channels, and at whatever price, credit, widely available, 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, p. 75). This availability stands in contrast with the opportunities for leveraged acquisition of equities during the Tech boom of the second half of the 1990s. Thus I cannot completely accept White's assertion that "Brokers' loans did not contribute to the stock market boom" (White 1990, p. 76) or its aftermath.

⁸ 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, although she did not directly address the liquidity effect. The wealth effect is relatively easy to understand. Typical econometric estimates are that a dollar decline in household wealth will reduce consumption by 4 or 5 cents. The liquidity mechanism is more subtle and complex. It predicts that if financial liabilities rise, or if the illiquid portion of assets rises (because a greater share of assets are now in consumer durables or real estate), then demand for new durables and house ownership may decline. The composition of the household balance sheet, not just net worth, therefore has the potential to influence the amount and composition of consumption (new house construction is considered part of investment, but has associated with it the acquisition of many consumer durables). Leveraged acquisition by households of stocks, as opposed to real estate or consumer durables, was, however, less likely to generate liquidity effects, because of the nature of brokers' 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. The household would experience a loss in wealth, but would not necessarily be made insolvent. The more damaging effects of leveraged stock acquisitions during the 1920s may be found on bank balance sheets, since banks were the ultimate source of most brokers' loans, and when prices fell too rapidly for collateral to be recovered by sale of the securing asset, it was banks that took the hit in terms of a loan gone bad. Banks had 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 (Banking and Monetary Statistics, Table 19, p. 76). Bank creditors (depositors and other lenders to the bank) did not have collateralized loans that could be extinguished by simply passing the now devalued asset on to them, but rather obligations due that were fixed in nominal terms. A collapse of stock prices could therefore more easily contribute to bank as opposed to household insolvency, and did. This

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 bubble⁹ 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 little movement to alter the incentives that even bigger and more interconnected financial institutions have to make risky bets with borrowed money.¹⁰ As a consequence the likelihood that the U.S.

channel was much weaker in the stock crash of the early 2000s, as evidenced by the limited number of financial institution failures that ensued. One should note however that, in the absence of deposit insurance, when a bank failed or had to write off bad loans, households suffered, because ultimately households were either creditors of the bank (as depositors or other lenders) or the owners of its equity. These additional negative wealth effects could represent a further adverse influence on consumption spending. The consequences of financial crisis in the early 1930s, in which large number of banks failed, went beyond these wealth effects, however, since failures disrupted the process of financial intermediation with persisting deleterious effects.

⁹ 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 the unprecedented increase in the ratio of house prices to median household income in the 2000s could not continue indefinitely.

¹⁰ The failure in November 2011 of Jon Corzine's firm, MF-Global, was a stark reminder that a newer and more effective regulatory regime, one less subject to exploitation of loopholes and political manipulation, remained most definitely a work in progress. Corzine had placed highly leveraged bets (using leverage

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 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

ratios of more than 30 to 1 -- higher than investment banks, somewhat chastened by recent past events, 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. A footnote of interest to academics: TIAA-CREF was the fifth largest shareholder in MF-Global, and a major participant in the consortium that lent the firm hundreds of millions of dollars several months prior to its failure. See <http://blogs.wsj.com/deals/2011/10/31/mf-global-bankruptcy-the-biggest-losers/>.

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).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 2006-2011, 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 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 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 debt burdens due to 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

¹¹ 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 to these calculations, therefore, 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, p. 271.

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 1929-33.¹²

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 threatening the solvency of financial institutions in the 2007-2011 period. But the argument (Gjerstad and Smith, 2011) 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 housing contributed by commercial banks: a fifth or less prior to 1937 (Morton, 1956, table C-2, p. 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.

¹² 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 that subsequently “reset.”

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. 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 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 the 2000s, and is in this sense supportive of what Gjerstad and Smith are trying to advance.

Indeed, it sometimes seems that wherever and whenever one digs into the failure of a commercial bank during the Depression, the words “bad real estate lending” are almost sure to follow. This is true for the famous case of the Bank of the United States (see Lucia, 1985; O’Brien, 1992; Trescott, 1992), although loans on stock, in particular loans to affiliates and others to support holding the bank’s own stock, were also implicated in its failure.¹³ 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, p. 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.

¹³ Temin (1976, p. 92) also attributed the failure of the Bank of the United States, to bad loans, particularly real estate loans.

Wicker (1980) attributed the failure of Caldwell and 120 other banks to poor loans and investments made in the 1920s (1980, p. 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 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 the 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, p. 85, and Friedman and Schwartz, 1963, p. 355).

As does Wicker, Guglielmo (2011) links poor lending in the 1920s to vulnerability in the 1930s, 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. And, of course, unconstrained by Glass-Steagall, commercial banks were exposed because they could take large positions in equities, holding them either for their own account or for subsequent sale to investors.¹⁴

There is therefore 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. This suggests strong parallels with the 2000s, and would again seem to provide support for the Gjerstad/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

¹⁴ Thus bank exposure to equities could be found both in the loans and in the investments portions of their balance sheets. In contrast, for reasons discussed in the text, the exposure of commercial banks to real estate was more limited. This was particularly the case for federally chartered banks.

Recession. Particularly for federally chartered banks, lending on stocks was considerably more important than lending on real estate (see footnote 9). To the degree that real estate lending was implicated in bank failures in the 1920s, and it was considerable, the loans involved were 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 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, 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, p. 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. 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 5 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 2000s (White, 2009, figure 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 paper.

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 2000s) 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. 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. 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) 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 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 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 market 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. p. 410). That table shows nominal commercial bank loans for purchasing or acquiring securities to have fallen from \$8.278 billion in 1929 to \$7.251 billion in 1930 (these are listed in the table as end of year values).¹⁵ 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

¹⁵ Banking and Monetary Statistics (Table 19, p. 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.

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 took place between 1929 and 1932. But it seems on the face of it 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 much 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. As footnote 9 suggests, however, the situation differed for banks, which faced substantial exposure due to their loans on securities.

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 no longer the case in 1933 (\$50.9 billion vs \$81.7 billion) (data are nominal and are from Woolf and Marley, 1989, table 15.A.1, p. 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. Wolff and Marley give a 1929 value of total equities held of \$235.4 billion. That includes 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 nominal and 60 percent real 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 nominal and 44 percent real between the two years, 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. Considering 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.

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 below) 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 negligible. 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 broadly consistent.

On the other hand, the interactions of real estate debt and deflation clearly became very important in 1931 and 1932, so the negative wealth effect on the liability side was significant. 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. Declines in stock prices also had much greater potential than real estate price decline to wreak havoc on the balance sheets of federally chartered commercial banks.

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 2006-2011 period. In the latter period, not only, as I will show, 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, p. 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, by 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 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. Because average loan to values were so much lower as were nominal price declines, the phenomenon of underwater homes (loan balances greater than house values), endemic today (2011), was less common during the Depression (see footnote 18, but see also Guglielmo, 2011, p. 13, who asserts the contrary, although without evidence). 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 the second edition of Irrational Exuberance (the first dealt only with the stock market boom), 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, 2012), 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 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 2011:4, and monthly data for the beginning of 2012 indicate that they continue to decline.. 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, actually left the index in 2011:4 below where it had been in 1998:4, thirteen years earlier.

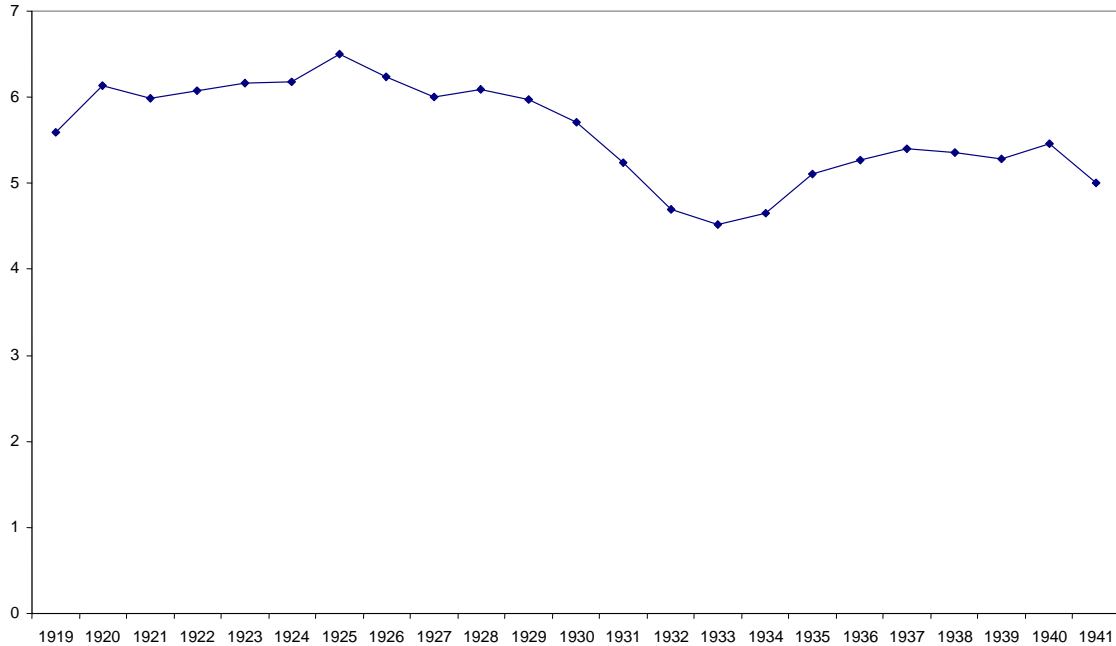
That kind of loss is what investors are taught they must be prepared to take if they are to enjoy the upside potential of assets such as stocks. But it is not what individuals expected from housing, certainly in the postwar period. The expectation that houses would hold and possibly increase their value 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 2012 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 ending of the 1907 crisis benefited from the intervention of J.P. Morgan (Friedman and Schwartz, 1963, p. 160), and 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.

In contrast with evidence of large declines in the real price of housing prior to the 1920s, or in 2006-12, 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 2001-2012, are mild.

Figure 1
Nominal House Price Index, United States, 1919-41
2000=100.0



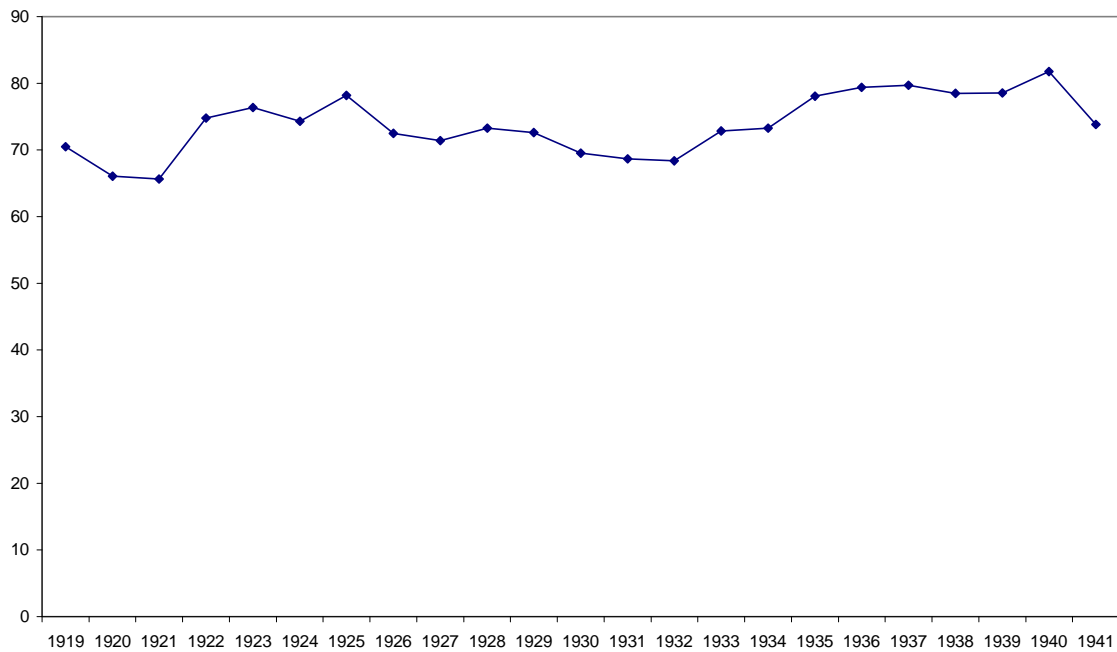
Source: Shiller 2011, Housing data, available at <http://www.econ.yale.edu/~shiller/data.htm>.

Let's look first at nominal prices (figure 1). 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). Comparing figure 2 with figure 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 2001-2012 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 2
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 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 2011), the nominal decline in the context of mortgages with fixed nominal interest payments still had 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 2001-2012. Assuming house prices bottomed out in 2011:4 the 2006-2011 peak to trough decline in real housing prices of 42 percent was 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.

Critiques 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 however 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 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, 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 which which Shiller has emphasized 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 a number of 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. The most important is that the housing stock was different in 1930, 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 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 older, more decrepit units. 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 newly built 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 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.

Another reason to have some faith in the 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 housing 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 may not accurately reflect changes in quality adjusted house prices, and therefore do not necessarily cast doubt on the reliability of Grebler, Blank, and Winnick as an index of 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 can decrease the value of 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 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.

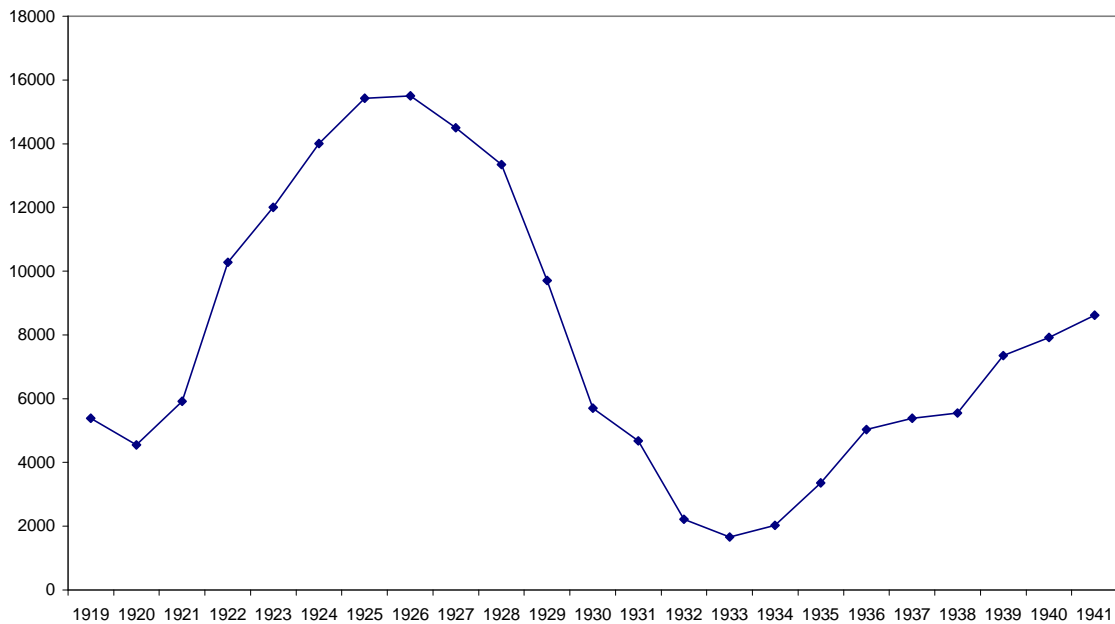
All of the decline in real house prices in the interwar period had already taken place by 1929, with no apparent ill effects on the economy. Real housing prices were actually higher in 1933 than they had been in 1929. In order for the magnitude of the decline in real house prices in the interwar period to approach what has taken place since 2006, either the 1929 figure suggested by Shiller/ Grebler, Blank and Winnick would have to be 40 percent too low or the 1933 figure 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 has been 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.¹⁶ In the 2001-2005 boom, the share of 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 3
Residential Construction, United States, 1919-41
 Millions of 1957-59 dollars



Source: Historical Statistics, Millennial Edition, Series Dc262.

¹⁶ 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 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.

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, the drop is even more dramatic in the interwar period, as figure 3 indicates. 1926 to 1933 witnessed an 89 percent decline in real construction activity.

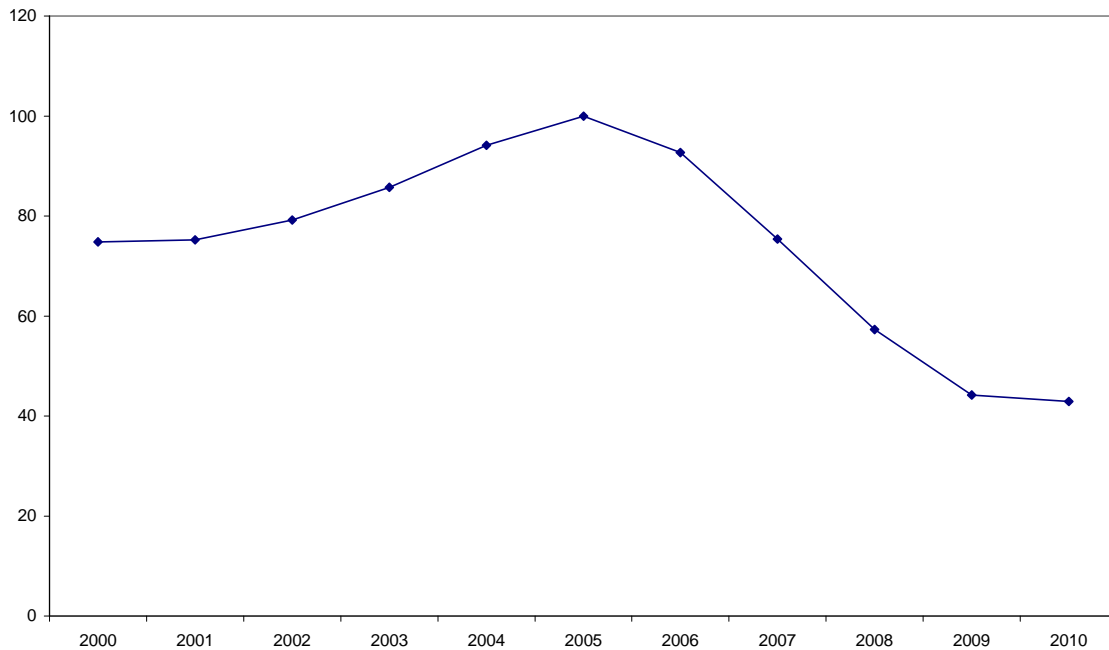
In comparison, assuming that the housing construction cycle has now bottomed out (I am writing in November of 2011), we see a peak to trough decline of 57 percent in real construction activity between 2006 and 2011. From the standpoint of construction activity, the 1920s boom and bust was proportionately 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, 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 in 2011 was 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 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.¹⁷ 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.

¹⁷ 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.

Figure 4
Index of Real Residential Construction, United States, 2000-2010



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

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 2001-2011? 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, common 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).

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, p. 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 fifty 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 5 year non-amortized 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 2000s, remained conservative.¹⁸

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, 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/Fed announced a willingness to rescue systematically 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).

¹⁸ Whether the same can be said for loans on commercial and CBD 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.

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 – 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 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 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 2007-2009.

Foreclosures

There was indeed a serious foreclosure problem during the Great Depression, but it was more specifically a farm foreclosure problem, rather than one associated with housing per se. Two decades of farm prosperity came to an end at the conclusion of the 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 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 less ambiguous. 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.¹⁹ This represented 2.23 percent of all U.S. 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 the 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 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.

¹⁹ The data on filings include notices of default, scheduled auctions, and REO (real estate owned) property.

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 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 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 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, 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.

Citing Federal Reserve Board data, Alston, Grove, and Wheelock (1994, p. 415) indicate that 42 percent of owner occupied farms had a mortgage in 1930. Parker (2005, p. 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 2000s 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.

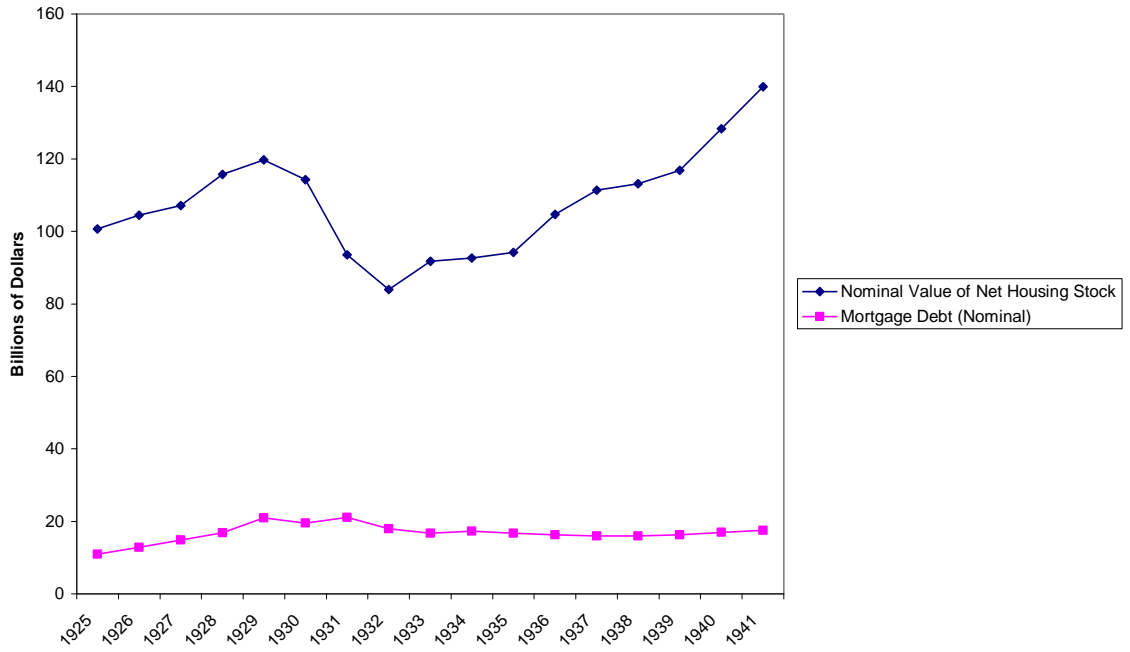
Some conclusions can however be stated without qualification. If we restrict our attention to nonfarm residential housing units, or to *actual* foreclosures on all residential units (considering a foreclosure on a farm as equivalent to a foreclosure on a farm housing unit) the foreclosure rates in 2010 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. 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.

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.

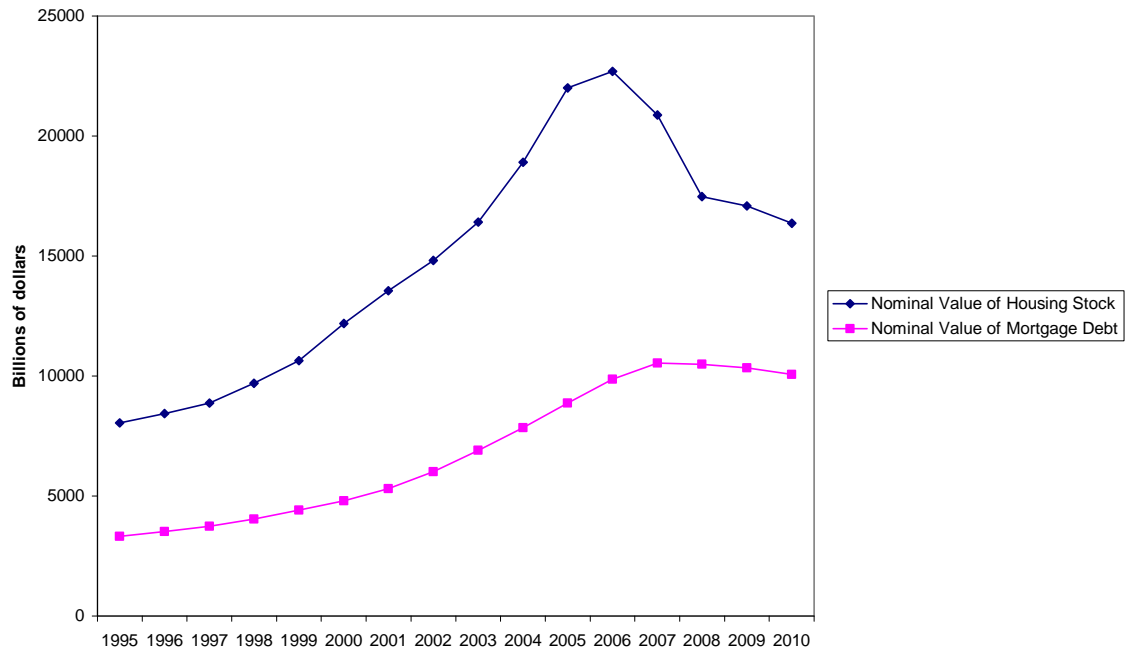
Figures 5 and 6 illustrate dramatically the very different degrees of housing leverage in the interwar cycle as compared with 2001-2011. Figure 5 shows the nominal value of the net housing stock along with the nominal value of residential mortgage debt from 1926 through 1941. The debt to asset ratio never rose above 25 percent during these years (see figure 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 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.

Figure 5
Nominal Housing Value and Mortgage Debt, United States, 1925-41



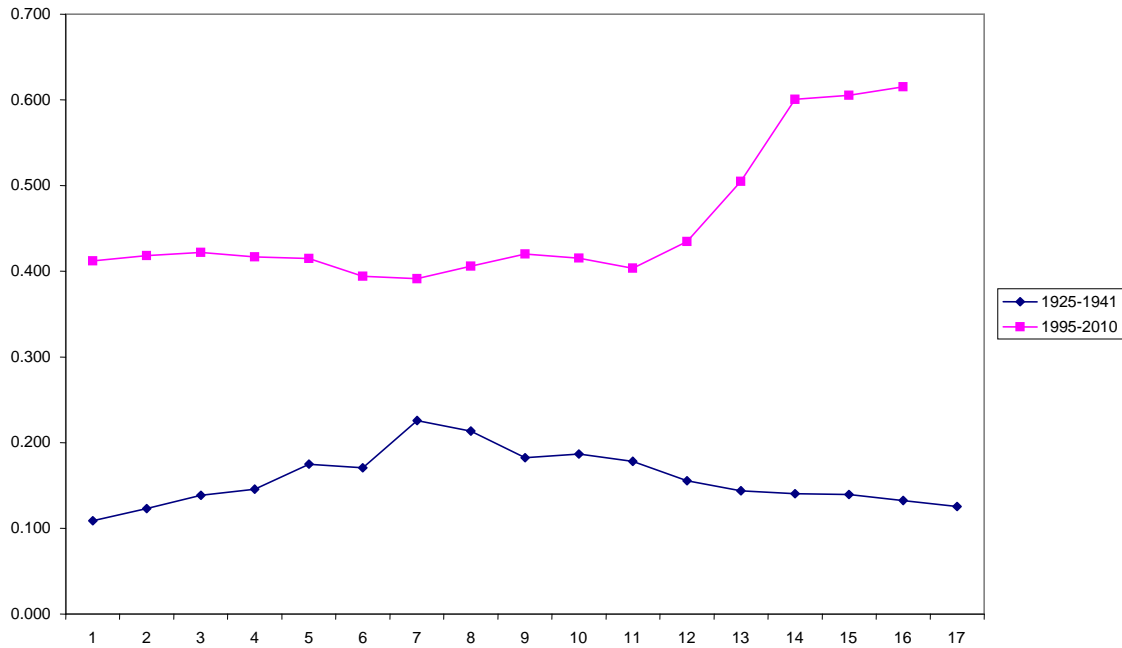
Sources: Nominal Value of Net Housing Stock: <http://www.bea.gov>, Fixed Asset Table 1.1, accessed June 6, 2011; Nominal Value of Mortgage debt on residential structures: Historical Statistics, Millennial Edition, sum of series Dc916-922.

Figure 6
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.

Figure 7
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.

The comparative trends in housing debt to asset ratios, comparing 1925-41 with 1995-2010 are illustrated in figure 7.

Conclusion

Using a comparative historical approach, this paper has identified several important differences in the housing sector's characteristics and contributions to macroeconomic instability in the interwar period as compared with 2001-2011. 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 2001-2011. But it was *less* 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 paper 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 2001-2011. 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 deregulation, “innovative” ways to finance housing, and shoddy and sometimes fraudulent work by mortgage appraisers, originators, securitizers, and ratings agencies.

This analysis has important implications. 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 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 household consumption through a direct wealth effect was weaker, certainly in comparison to the effect of the collapse of stock prices.

In contrast, in 2001-2011, with an almost \$7 trillion drop in house values, this effect was stronger. And because of the much higher degree of leverage in 2001-2011, the problems of debt overhang and underwater homeowners have 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 a prior real estate lending boom 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 in the 2000s are well 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 post-boom 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 S and L 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 the 2000s, left vacant and allowed to deteriorate, may ultimately have to be bulldozed. 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 2000s. 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 more emphasis on the travails of the stock market. They insisted on separating commercial and investment banking.²⁰ 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 Newmann, 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

²⁰ 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 is intended to prohibit proprietary trading by commercial banks..

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 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.²¹ Indeed, while the Securities and Exchange Act of 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 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

²¹ 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, p. 190).

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.

There is broad consensus that the 2007-2011 financial crisis and recession originated in U.S. housing markets, and that it was precipitated by imprudent real estate loans, enabled by lax regulation and indefensible 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 2000s, 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 40 percent drop in real house prices between 2006 and 2011 included impaired household balance sheets, effectively insolvent financial institutions, and extensive, lengthy, and drawn out foreclosure processes. These legacies are likely to exercise a persistent retardative effect on the macroeconomy, the result of which will be a large cumulative output loss, exceeding that associated with the 1982 recession.

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