

**THE 2008 FINANCIAL CRISIS: A NOTE ON THE
DYNAMIC INSTABILITY OF THE
AFFORDABLE-MORTGAGE GOALS SYSTEM**

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Abstract

Building on the work of Peter Wallison, I show that the 2008 crisis was not the result of a market-induced bubble. *As an analytical matter, the design of the affordable-mortgage system was certain to fail because the regulations made the economy dynamically unstable.* This point has not been previously recognized. Incredibly, the regulations announced for 2005-2008 implied an eventual homeownership rate for below-median income households that was *above* that for above-median income households. Understanding the dynamic instability of the affordable-mortgage program and its effect on house prices is essential to a complete understanding of the financial crisis of 2008.

JEL Codes: D78; E32; E44; G18; G28; N22; O18; P16;

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(Statements and Speeches of William Poole [<https://fraser.stlouisfed.org/title/statements-speeches-william-poole-485?browse>]).

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The subtitle to this paper might well be “flaw found.”

The following exchange between Alan Greenspan and Chairman Henry Waxman in Congressional hearings October 23, 2008 has been endlessly repeated.

Mr. GREENSPAN: What I am saying to you is, yes, I found a flaw, I don't know how significant or permanent it is, but I have been very distressed by that fact. But if I may, may I just finish an answer to the question——

Chairman WAXMAN. You found a flaw?

Mr. GREENSPAN. I found a flaw in the model that I perceived is the critical functioning structure that defines how the world works, so to speak.

Chairman WAXMAN. In other words, you found that your view of the world, your ideology, was not right, it was not working.

Mr. GREENSPAN. Precisely. That's precisely the reason I was shocked, because I had been going for 40 years or more with very considerable evidence that it was working exceptionally well.

Everyone understands that *the* essential feature of the 2008 financial crisis was the house price bubble after 2000 and its collapse starting in 2006. Views differ as to the cause of the bubble but everyone understands that millions of mortgage defaults eroded the capital of thousands of financial firms, leading hundreds to fail. The contraction of credit ended the boom in residential investment and led to a severe decline in personal consumption expenditures. Absent the widespread mortgage defaults, the financial crisis and 2007-09 recession would not have occurred.

Peter Wallison has provided a convincing case—to me and many other observers—that the affordable-mortgage program was the root cause of excessive mortgage lending to households. See references at the end of this paper. What Wallison and others did not understand is that the affordable-mortgage system created a dynamically unstable housing sector. The regulations that the Department of Housing and Urban Affairs (HUD) issued were responsible. I have written this paper in as simple a form as possible; anyone with a Ph. D. in economics, of whatever vintage from whatever university, can read the paper in 30 minutes or so. Those familiar with the affordable-mortgage system can skip directly to the discussion of dynamic instability.

It turns out that there *was* a flaw in Greenspan's understanding. The same flaw has characterized many books, journal articles, speeches, magazine articles and millions of informal conversations of thousands of economists since the financial crisis of 2008. From my survey of the literature, not a single one of us understood that the affordable-mortgage goals system created a dynamically unstable economy. The demonstration in this paper is shockingly simple.

The uncontrolled supply of mortgage credit allowed homebuyers to bid up the prices of houses to a level that could not be supported out of disposable income. House prices fell as millions of homeowners defaulted on their mortgages. The centrality of the housing bubble to the crisis is widely understood.

What is not everywhere understood is that the GSEs were able to purchase mortgages with resources assumed to be backed by the full faith and credit of the United States and *required to do so by the HUD-enforced affordable-mortgage regulations that inadvertently created dynamic instability in the housing market*. This note explains the nature of the fatal flaw in the affordable-mortgage scheme, a fact not previously explained in the economics literature. Understanding that flaw is central to understanding the 2008 financial crisis—an event of great importance to macroeconomics and economic history. Also of central importance is another fact. As long as the affordable-mortgage regulations remained in effect, *traditional financial regulation could not have prevented the crisis*. If the GSEs had held much more capital, for example, they might have survived but they would still have pushed house prices to an unsustainable level.

It is a matter of considerable urgency that the dynamic instability explained in this paper be understood. The Housing and Economic Recovery Act of 2008 transferred authority to set affordable-mortgage goals from HUD to FHFA. The FHFA News Release reporting the appointment of Sandra L. Thompson to be acting director quotes her as saying that the agency must, “have a laser focus on mission and community investment. There is a widespread lack of affordable housing and access to credit, especially in communities of color. It is FHFA’s duty through our regulated entities to ensure that all Americans have equal

access to safe, decent, and affordable housing.” At present, the affordable-mortgage goals are far below where they were before 2008 but nothing prevents an escalation that would produce another housing bubble and financial crisis. There is no evidence in anything FHFA or HUD has published, or in the GSEs’ financial reports, that anyone understands the dynamic instability issue. The deck containing the cards to create another financial crisis is in place and ready to be dealt at any time.

I start with the basic background needed to understand how the affordable mortgage system worked. Next comes a simple dynamic model. Finally, I offer a few speculations on how market participants misunderstood the affordable mortgage system and how the rest of us failed to see the obvious.

Background

In 1992 Congress passed and President George H. W. Bush signed the Federal Housing Enterprises Financial Safety and Soundness Act of 1992, the “GSE Act.” This act established a regulatory authority—the Office of Federal Housing Enterprise Oversight (OFHEO)—and provided that HUD was to set annual “affordable” mortgage goals for the Government Sponsored Enterprises (GSEs), Fannie Mae and Freddie Mac. The affordable home mortgage was to be one that households with below median income (for the locality where they lived) could handle. HUD was the mission regulator and OFHEO was the safety and soundness regulator.

Mortgage originators made mortgage loans and then sold many of them to the GSEs. The principal dimension of the goals was a simple count of the number of mortgages a GSE purchased as a percentage of the total number of mortgages it purchased year by year. Exhibit 1 shows HUD’s initial implementation of the GSE Act. The system had substantial

complexity, which is irrelevant for understanding how it created a dynamically unstable economy. However, the complexity, I will argue latter, helps to explain why economists failed to see the dynamic instability.

Exhibit 1

Goal ²	1993	1994	1995	1996	1997	1998	1999	2000	2001	1996 Goals	1997-2000 Goals	2001-03 Goals
Low- and Moderate-Income:												
Fannie Mae	34.2%	44.8%	42.3%	45.6%	45.7%	44.1%	45.9%	49.4%	51.5%	40%	42%	50%
Freddie Mac	29.7%	37.4%	38.9%	41.1%	42.6%	42.9%	46.1%	49.9%	53.2%			
Ratio	0.87	0.83	0.92	0.90	0.93	0.97	1.00+	1.01	1.03			
Geographically Targeted:												
Fannie Mae	23.6%	29.5%	31.9%	28.1%	28.8%	27.0%	26.8%	31.0%	32.6%	21%	24%	31%
Freddie Mac	21.8%	25.2%	26.4%	25.0%	26.3%	26.1%	27.5%	29.2%	31.7%			
Ratio	0.92	0.85	0.83	0.89	0.91	0.97	1.03	0.94	0.97			
Special Affordable:												
Fannie Mae	9.7%	15.2%	14.1%	15.4%	17.0%	14.3%	17.6%	19.2%	21.6%	12%	14%	20%
Freddie Mac	7.0%	11.3%	12.8%	14.0%	15.2%	15.9%	17.2%	20.7%	22.6%			
Ratio	0.72	0.74	0.91	0.91	0.89	1.11	0.98	1.08	1.05			
Special Affordable Multifamily³:												
Fannie Mae	\$1.64	\$1.74	\$1.34	\$2.37	\$3.19	\$3.53	\$4.06	\$3.79	\$7.36	\$1.29	\$1.29	\$2.85
Freddie Mac	\$0.14	\$0.46	\$0.69	\$1.06	\$1.21	\$2.69	\$2.26	\$2.40	\$4.65	\$0.99	\$0.99	\$2.11

² **Abbreviated definitions of goals:**
Low- and Moderate-Income: Households with income less than or equal to area median income (AMI).
Geographically Targeted: Dwelling units in metropolitan census tracts with (1) tract median family income less than or equal to 90 percent of AMI or (2) minority concentration of at least 30 percent *and* tract median family income less than or equal to 120 percent of AMI; dwelling units in nonmetropolitan counties with (1) median family income less than or equal to 95 percent of the greater of state or national nonmetropolitan median income or (2) minority concentration of at least 30 percent and county median family income less than or equal to 120 percent of the greater of state or national nonmetropolitan median income.
Special Affordable: Households with income (1) less than or equal to 60 percent of AMI or (2) less than or equal to 80 percent of AMI and located in low-income areas.
For the low- and moderate-income and special affordable goals, AMI is median income for the MSA for borrowers in metropolitan areas, and the greater of county or state nonmetropolitan median income for borrowers outside metropolitan areas.

Source: U. S. Department of Housing and Urban Development, Office of Policy Development and Research. Overview of the GSEs' Housing Goal Performance, 1993-2001, and Goals for 1996-2003. July 2002
[\[https://www.huduser.gov/datasets/GSE/gse2001.pdf\]](https://www.huduser.gov/datasets/GSE/gse2001.pdf)

In November 2000, HUD announced new goals for 2000-2003 (later extended to 2004.) The goals applied to a simple count of mortgages the GSEs were to purchase on a geographically defined basis—metropolitan areas, counties and later census tracts. For simplicity, call each geographic area a “region.” Some

mortgages would count toward several goals. For example, a mortgage loan to a very low-income household at 55% of a region's median income would count for both the special affordable goal and the low and moderate-income goal.

In November 2004 HUD announced new goals for 2005-2008, as shown in Exhibit 2. For simplicity in the section that follows, I will assume that HUD sets the single goal that 50% of GSE mortgage purchases must be for households below median income for the region where the house is located.

Exhibit 2

HUD No. 04-133 Lemar Wooley (202) 708-0685		For Release Monday November 1, 2004			
HUD FINALIZES RULE ON NEW HOUSING GOALS FOR FANNIE MAE AND FREDDIE MAC					
	Current	2005-2008 Goals			
	Goals	2005	2006	2007	2008
Low- and Moderate-Income					
Current	50%				
Proposed		52%	53%	55%	57%
Final		52%	53%	55%	56%
Special Affordable					
Current	20%				
Proposed		22%	24%	26%	28%
Final		22%	23%	25%	27%
Underserved Areas					
Current	36%				
Proposed		38%	39%	39%	40%
Final		37%	38%	38%	39%

One other point to appreciate in analyzing the affordable-mortgage system is that the market assumed that the U.S. government would bail out Fannie and/or Freddie if they got into financial trouble. GSE notes and bonds traded in the market at yields very close to Treasury yields. GSE-issued mortgage-backed securities traded at somewhat higher yields because individual MBSs traded in

thinner markets and the mortgage loans backing them were subject to prepayment risk. However, the GSEs guaranteed their MBSs, which meant that there was no credit risk to the owner of an MBS.

Peter Wallison, in his dissent to the report to the Financial Crisis Inquiry Commission, documented what happened. Wallison's AEI colleague Edward Pinto assembled the data.

“There are always many factors that could have caused an historical event; the difficult task is to discern which, among a welter of possible causes, were the significant ones—the ones without which history would have been different. Using this standard, I believe that the *sine qua non* of the financial crisis was U.S. government housing policy, which led to the creation of 27 million subprime and other risky loans—half of all mortgages in the United States—which were ready to default as soon as the massive 1997-2007 housing bubble began to deflate. If the U.S. government had not chosen this policy path—fostering the growth of a bubble of unprecedented size and an equally unprecedented number of weak and high risk residential mortgages—the great financial crisis of 2008 would never have occurred.” (Wallison dissent, FCIC, p. 444)

What this note adds to Wallison's work is a model of dynamic instability.

A Simple Model of Dynamic Instability

Think of a 19th Century reciprocating steam engine in a Mississippi River boat. It had a governor to prevent the engine from running too fast. The governor controlled valves to prevent too much steam from being fed into the cylinders. If the governor failed, the engine ran faster and faster until it flew apart. The engine without the governor was dynamically unstable. That was the reality of the

affordable-mortgage goals system. In the 19th Century, engineers and mathematicians created an extensive knowledge of control theory, some of which economists later used in studying macroeconomic policy. Because of the dynamic instability of the affordable-mortgage scheme, the housing market flew apart and wrecked the economy in 2008.

Consider the simple illustration in Exhibit 3, designed to show the effects of annual goals that ignore accumulation from the past. To make the illustration as simple as possible I have used one table with one equation below the table.

Exhibit 3 illustrates a hypothetical economy with 200 dwelling units (to match the way the affordable goals are defined. Hereafter, I will use the term “household” because it is the household and not the physical dwelling unit that has income.). The A households—half the total—are above median income and the other half—the B households—are below median income. The affordable mortgage goals require that GSE’s annual purchases of mortgages are 50% from households with below-median income.

To begin, in year 0 (1992), every A household already has a mortgage, and no B household does. Although these are 30-year mortgages, every year 20% of the A households are assumed to retire existing mortgages when they move or refinance; each of them then takes out a new mortgage. Thus, the annual production of new A mortgages is assumed to be 20, which maintains the steady state of 100 A households with outstanding mortgages. Starting the GSE goals system in period 1, the GSEs now begin to buy B mortgages. Because the number of A mortgages available is 20, the GSEs now buy those 20 plus 20 from the B households. The total number of new mortgages is 40 and the B household share is 50%, meeting the HUD mandate in year 1. Whatever might be the situation facing other investors in mortgages, Exhibit 3 illustrates the situation facing the GSEs.

Exhibit 3

	A Households	B Households	
Number of households	100	100	
	GSEs	GSEs	GSEs
	A households	B households	TOTAL
Mortgages retired per year	20 % of stock	20 % of stock	
New Mortgages per year (incl refi-s)	20	20	40
	A Households with Mortgage Year End	X = B Households with Mortgage Year End	
Year 0	100	0	
1	100	20	
2	100	36	
3	100	49	
4	100	59	
5	100	67	
6	100	74	
7	100	79	
8	100	83	
9	100	87	
10	100	89.3	
11	100	91.4	
12	100	93.1	
13	100	94.5	
14	100	95.6	
15	100	96.5	
	Example: $X_t = 20 + 0.8 X_{t-1}$		
	In general: $X_t = F + T X_{t-1}$		
	Limit $X_t = F/(1-T)$		
	As $t \rightarrow \infty$		

The top part of the table shows annual GSE purchases of mortgages year by year. I assume that the B households behave just like the A households once the market has been “liberalized” by the new GSE mandate. At the start of year 2, there are 20 B households with mortgages from period 1; in period 2, 20%—4—of them are repaid or refinanced. Thus, at the end of period 2 there are 36 mortgages outstanding—16 from period 1 plus 20 new ones.

Each year the GSEs purchase twenty A mortgages and twenty B mortgages; the purchase of 20 B mortgages meets the 50% goal of all mortgages purchased. The GSE portfolio of A mortgages is constant at 100 and the stock of B mortgages in the portfolio grows as shown. The stock of B mortgages at the end of each year is assumed to be 0.8 times the stock at the end of the previous year plus 20 as shown in the bottom part of the table. The parameter $T = 0.8$ is called the retention parameter. The two kinds of households—A and B—are assumed to behave in the same way.

The GSEs securitize mortgages into MBSs and sell a large fraction of them each year. However, the number they securitize and sell does not affect their exposure to credit risk because the GSEs *guarantee* their MBSs. Thus, Exhibit 3 illustrates the growth in GSE obligations for mortgages held in their portfolios and held by others as MBSs.

The final few entries in Exhibit 3 are unrounded to show the approach toward the limit of 100; think of the units in Exhibit 3 in terms of thousands or millions of mortgages to avoid the idea of a fractional mortgage. In general, as is easy to verify, the limit of X —the number of mortgages in the steady-state portfolio of B mortgages—is $F/(1-T)$. The parameter F is the annual flow, assumed fixed and equal to the number of new A mortgages, and T is the retention parameter—the rate at which mortgages remain in the portfolio from one year to the next. As is easy to verify, the series $X_t = 20 + 0.8X_{t-1}$ converges to 100—the stock of mortgages is five times the annual flow. The retention parameter need not be the same for both A and B mortgages and can change over time.

The parameter T must be interpreted to reflect B mortgages held or securitized by the GSEs. If a household refinances using a mortgage not sold to the GSEs, then neither Fannie nor Freddie holds that *new* mortgage but has space to buy another B mortgage. The illustration assumes $T = 0.8$. An assumption of

$T = 0.5$ would imply that of 100 mortgages outstanding at the end of period 1 only 50 would be outstanding at the end of period 2, which is not realistic. Setting T at 0.8 seems realistic enough for this illustration. If the retention parameter for B households were 0.85 instead of 0.80, the steady-state portfolio of B mortgages would be 133, or 1/3 above the number of A mortgages *even though the annual purchases of B mortgages would remain 20* and consistent with the HUD goals requirement.

If the retention parameter is about the same for A and B households, with a 50% affordable mortgage goal the conclusion is unavoidable that a few years after passage of the 1992 law the GSEs would end up owning about as many B mortgages as A mortgages. In his dissent to the FCIC report, Wallison estimated that by 2008 there were 27.7 million non-traditional (i.e. risky) mortgages out of a total of 55 million. (Wallison FCIC, p. 462). Given that B households are less credit worthy than A households, eventual GSE insolvency was built into the affordable mortgage system from the start.

More importantly, however, extending the analysis beyond risk from GSE insolvency, note that the GSE supply of mortgage credit bid the price of houses up to an unsustainable level. When homeowners began to default in volume, the economy crashed. The essential issue was not GSE solvency but homeowner solvency.

We can easily change the assumptions in the simple dynamic instability model without changing the conclusion. HUD stated its affordable-mortgage goals on an annual basis, without regard to either how many B households already had mortgages or to the credit-worthiness of new borrowers. The only way to reduce pressure on the GSEs to buy weak mortgages would have been for these companies to reduce purchases of perfectly sound—and profitable—mortgages from A households.

Discussion

Over time, the number of B households with mortgages grows. The affordable-mortgage scheme seems to be working just fine at the beginning. In the early years, the GSEs are buying mortgages from reasonably credit-worthy households. Over time, however, to meet the affordable-mortgage regulations the GSEs are forced to reach ever deeper into the population of risky households. Although not illustrated in the table, the GSEs have increasing difficulty in finding *new* B mortgages because more and more B households already have a mortgage. The GSEs need to buy B mortgages so they can buy the profitable, and relatively safe, A mortgages. Mortgage brokers work with the GSEs to find B mortgages. The brokers create and the GSEs buy adjustable-rate mortgages, interest-only mortgages, negative-amortizing mortgages and Alt A mortgages. They lend to some borrowers with very low credit ratings.

The problem was that the GSEs and the mortgage originators that serve them had an incentive to sell a new mortgage to a B household that was perfectly content with the 30-year mortgage it already had. This incentive was one of the root causes of predatory lending practices.

At a 50% goal, the system meant that the total number of B mortgages the GSEs hold in their portfolios, or securitize and guarantee, would tend to equal the total number of A mortgages. Given the 50% *actual* HUD goal, this point goes beyond the Exhibit 3 toy example to the *reality* of the accumulation of GSEs credit risk. We know that the average credit quality of mortgages from households below median income is below that of households above median income.

The implication of the HUD targets for 2005-2008 above 50% is startling. If the retention parameter for A and B households is the same, the goals system implies a steady-state homeownership rate for B households that is *above* that for A households. From Census data, the homeownership rate for households with family income greater than or equal to the median family income reached a

maximum of 84.6 % in quarter 4 of 2004. (U.S. Census Bureau, Historical Tables, Table 17. “Quarterly Homeownership Rates by Family Income: 1994 to Present.”) In contrast, the maximum for households with family income below the median was 53.1% in 2005 Q4. How best to describe the implicit goal of pushing the homeownership rate for those below the median to a level *above* that of households above median income? The goal was crazy irresponsible! Yet, the Bush administration pushed the GSEs hard to hit the goal.

The Exhibit 3 table plus the dynamic equation makes the fundamental point of dynamic instability. Growth in B mortgages outstanding—the GSE portfolio plus guaranteed MBSs at the end of each year—occurred because it *had* to occur if the GSEs were to continue to purchase A mortgages. In the early years, the risky B mortgages constitute a small part of the total GSE portfolio and the GSEs can report robust earnings, which they did. In time, defaults become common and earnings growth declines. Eventually, the share of weak mortgages becomes large enough to threaten the GSEs with insolvency.

Any reasonable parameters in the simple model will imply that GSE holdings of weak mortgages will grow to rival, in number, those of A households. In dollars, the aggregate value of A mortgages exceeds that of B mortgages because the average size of A mortgages is higher than B mortgages. Nonetheless, B mortgages default more often and when defaults occur, it is likely that the recovery rate on foreclosed B properties is below that of A properties. Consistent with this model, the GSEs reported robust earnings in the early years after 1992.

The problem for the GSEs became increasingly acute after early 2000 as long-term interest rates fell. Homeowners refinanced prime mortgages in volume. For every A mortgage refinanced and purchased by a GSE, the GSEs *had* to buy a B mortgage. GSE mortgage books—their portfolios and securitized mortgages together—accumulated B mortgages in volume. The GSEs could have reduced their purchases of A mortgages but these were profitable. Moreover, such

purchases cemented relationships with mortgage originators who knew they could always sell solid prime mortgages to the GSEs. The mortgage purchases with an endless supply of federally guaranteed capital drove house prices higher.

Interestingly, Robert Shiller discusses a contagion model but does not understand that the affordable-mortgage policy fits that model closely and was the source of the contagion.

“Every disease has a contagion rate (the rate at which it is spread from person to person) and a removal rate (the rate at which individuals recover from or succumb to the illness and so are no longer contagious). If the contagion rate exceeds the removal rate by a necessary amount, an epidemic begins. The contagion rate varies through time because of a number of factors. For example, contagion rates for influenza are higher in the winter, when lower temperatures encourage the spread of the virus in airborne droplets after infected individuals sneeze.” (Shiller. 2008/2012, p. 44)

In the context of Exhibit 3, the affordable-mortgage goals defined the number of “toxic”—the term often used during the crisis—mortgages the GSEs purchased each year as a ratio to all GSE mortgage purchases. The goals defined the contagion rate. The parameter T—the rate at which the toxic mortgages remained in the GSEs’ portfolio was a function of market behavior. That is, $1-T$ is Shiller’s removal rate.

In the early years following the 1992 legislation it was easy to bring into the GSE portfolios mortgages issued to lower-income borrowers with relatively high credit ratings. Over time, however, there are fewer and fewer such new mortgages available because credit-worthy borrowers already have mortgages. Some homeowners must be talked into refinancing an existing mortgage—perhaps a tempting cash-out refi. Buying a refinanced mortgage helps the GSEs to meet the goals but does nothing to help more people own homes. It would not be difficult to make Exhibit 3 more complicated but that would muddy the basic

argument that before the 1992 legislation the mortgage market worked fine for A households (once the S & L mess was cleaned up) and for *credit-worthy* B households. After 1992, the GSEs were forced by HUD regulation to buy weak mortgages. Advocates of regulation should take note—regulations can be destructive if not designed properly. In this case the poor design was a mistake but HUD and the politics of housing enforced it until the economy crashed.

All the while, GSE mortgage cash is helping to bid up the price of houses. As house prices rose after the mid-1990s, some buyers learned the rewards of becoming investors—“flippers” in the jargon of the day. They—especially if below median income for their region—could finance new houses and condos relatively easily. Mortgage originators needed only a limited amount of capital because they could easily sell the mortgages to the GSEs and certain commercial and investment banks. The banks in turn sold a large volume of private-label securitized mortgages to the GSEs as well as to the market.

The reader can easily change the assumptions of this simple model. The inescapable fact is that the GSEs could not avoid accumulating an increasingly large portfolio of weak mortgages given that on average B mortgages carry more credit risk than do A mortgages. Obviously, if B households were on average as credit-worthy as A households there would never have been a case for the 1992 legislation in the first place. Fan and Fred could and did borrow without constraint because their obligations were assumed to be backed by the Treasury. They borrowed themselves into insolvency and bid up the price of houses along the way.

Yet another way to look at the situation is that the *implicit* goal, for better or for worse, was that every B household should own its own house. Or, perhaps, that the B household ownership rate should equal the A household ownership rate. The number of mortgages provided to A households per year is literally irrelevant to *that* goal. Given the goal that the B household ownership rate should be Y, the

target for the GSEs should have been stated differently. One possibility would have been the percentage of B households owning a house. Or, the increase in the ownership rate over some base period. In actuality, the 1992 statutory requirement instructed the GSEs to pursue an illogical and ultimately destructive policy.

Worse yet, when HUD increased the goal to above 50% starting in 2005, it made the dynamic instability even worse. A goal of 55% implies that in the steady state the homeownership rate for B households will be above that of A households, assuming that the retention parameter is the same for both. HUD kept the pedal to the medal until the machine fell apart.

There was another aspect of dynamic instability indirectly related to the affordable mortgage program and GSE behavior. Because the GSEs purchased too many mortgages from households that did not have adequate income to support the monthly payments, mortgage lenders kept many mortgages afloat by refinancing them on the security of higher property values. The level of house prices depends critically on the availability of mortgages to finance purchases. That meant that for several years after 2002 the *level* of house prices depended in part on the *rate of change* of house prices.

Personal income provides the fundamental support for the level of house prices. Although the level of house prices is not fixed in any deterministic way to the level of personal income, property values cannot rise indefinitely relative to personal income. It was inevitable that prices would at least level off relative to personal income, and that meant that the rate of change of house prices could not indefinitely support mortgage refinancing to keep unsound mortgages afloat.

Fannie Mae's 10-K annual reports provide sound evidence that this mechanism was at work. The restated 10-K for 2004 (released December 2006) reported that for new business volume for 2002, 2003 and 2004 the percentage of borrowers with a credit score below 620 was 6%, 4% and 6%, respectively (Table 28). A credit score of 620 was well below the conventional cut-off of 660

defining a subprime mortgage. The 10-K for 2010, after Fannie had been brought into federal conservatorship, reported the percentage of borrowers with that low credit score was 3% in 2008 and less than 0.5% for 2009 and 2010 (Table 40). In 2004, interest-only mortgages were 5% of business volume, 2% in 2008 and less than 0.5% in 2009 and 2010.

As house prices topped out in 2006, Fannie had to relax mortgage terms further. Here is some revealing language in its restated 2004 10-K issued in December 2006.

... “The most notable change in the overall risk profile of our single-family mortgage credit book of business since the end of 2004 has been in product types. As a result of the rise in home prices over the past several years, there has been a shift in the primary mortgage market to mortgage loans with features that make it easier for borrowers to qualify for a mortgage loan and that offer lower initial monthly payments by allowing the borrower to defer repayment of principal or interest. These products include interest-only mortgage loans that are available with both fixed-rate and adjustable-rate terms and ARMs that have the potential for negative amortization.

... Interest-only loans, which represented approximately 5% of our conventional single-family business volumes ... in 2004, increased to approximately 10% in 2005 and approximately 15% for the first nine months of 2006. Most of the interest-only products we acquired during 2004 and 2005 had adjustable-rate terms.” (p. 145).

Why?

There are three distinct but nevertheless related “why” questions.

- Why was the affordable mortgage goal stated in a way that would inevitably create a problem of dynamic instability?

- Why is it that the market did not understand what was happening?
- Why have economists to this day not understood that the affordable-mortgage system made the economy dynamically unstable?

The questions are related because we know now things about the economy we did not always know. Knowledge accumulates. Those of us who missed the boat before 2008 can kick ourselves but take some comfort from the fact that in the 1930s a leading economist of the day—Irving Fisher—did not understand the Great Depression. Not until the Friedman-Schwartz *Monetary History*, published in 1963, did we have a convincing explanation.

After 1992, no one understood the dynamic instability issue. Many found it politically attractive to appeal to “fairness.” *It just is not fair that the GSEs should assist middle-class borrowers move to the suburbs while doing nothing for inner city residents.* Etc, etc. The “ownership society” was a central tenant of the Bush-43 presidency.

The bibliography to this paper includes several books that examine the politics of the GSEs. GSE managements were quite well paid and they had an incentive to keep the game in play. In Congress, Democrats especially found the politics of housing an attractive way to appeal to various community groups. For the Bush administration, the Ownership Society was both a political slogan and a policy principle.

What about the market? Experts in financial firms depend on knowledge but did not figure out what was happening. They knew many facts about the increase in house prices and the increase in risky mortgages, but did not connect the two properly.

Many of us thought that the main issue was potential instability of the GSEs because they had so little capital. Amazingly, it seems to me now, we did not connect the affordable-mortgage program properly to the house-price bubble.

For evidence on this matter, see materials relating to the Fed's FOMC meeting of June 2005. (FOMC historical materials on Federal Reserve website) We discussed housing but never connected the affordable-mortgage program to the house-price bubble. Fed staff experts did not see what was happening, nor did the economists who were Fed Board members and Reserve Bank presidents see what was happening.

Why did we economists and experts in financial firms not figure out *after* the fact what had happened? Peter Wallison, in his FCIC dissent, did display the facts clearly. He expanded his analysis in a 2015 book. Wallison's work is an essential input to further analysis of what happened.

Unfortunately, many have ignored his work. On the extreme left, observers have been content to offer the crisis as just another example of the "crisis of capitalism." The FCIC majority (all Democrats), while admitting that the affordable mortgage program had a "marginal" role, wanted to pin the blame on Alan Greenspan. The argument was that the Federal Reserve had the regulatory authority to prevent the disaster. Three Republican dissenters on the Commission wanted to deflect blame from the Bush administration. The argument was that the U.S. house-price bubble was part of a world-wide credit bubble.

Many economists have argued that tighter regulation would have prevented the crisis. Anyone who accepts the dynamic instability argument presented here should believe that those dynamics would surely overwhelm any possible regulatory regime that focused on the quality of mortgage underwriting. It is essential to understand that the elected part of government—Congress and President—favored the affordable-mortgage system. Under what theory of democratic government could regulators have stopped the program? Or, *should* have stopped the program?

There is another relevant feature of economists' mode of thought—we are accustomed to thinking in multiple regression terms. In that model, a variety of

conditions were at work. Our professional training is that we measure each condition and find the appropriate coefficient to attach to it.

Peter Wallison, with a degree from Harvard Law School, has a different instinct. Dating back to Roman law, the principle of *sine qua non* plays an essential role in assigning responsibility. The principle is nicely stated in a recent Supreme Court case, *BOSTOCK v. CLAYTON COUNTY, GEORGIA* (decided June 15, 2020). Justice Gorsuch wrote the majority opinion.

“And, as this Court has previously explained, the ordinary meaning of ‘because of’ is ‘by reason of’ or ‘on account of.’ In the language of law, this means that Title VII’s ‘because of’ test incorporates the ‘simple’ and ‘traditional’ standard of but-for causation. That form of causation is established whenever a particular outcome would not have happened ‘but for’ the purported cause. In other words, a but-for test directs us to change one thing at a time and see if the outcome changes. If it does, we have found a but-for cause. [Citations omitted.]” [Some interior quotation marks also omitted.]

Wallison argues persuasively that *but-for* the affordable-mortgage program the 2008 crisis would not have occurred. What I have argued is that no conceivable regulatory regime could have stopped the crisis in the face of the affordable-mortgage program. Forcing the GSEs to hold more capital would not have worked. In 2005, OFHEO *did* require that they hold a 30% capital surplus over the requirements in the GSE Act. The GSEs reduced growth in their portfolios, which had a statutory requirement of 2.5% capital, and that freed up capital to support growth in their MBSs, which had a capital requirement of 0.45%. Multiply those requirements by four, if you like and, in time, with the same GSE Act in effect, the same sort of crisis would have occurred. The

conclusion is that if elected officials of government are hell-bent on proceeding with an inefficient and dangerous policy, then no amount of regulation will stop it.

The simple contagion model shows how a program responding to 1992 legislation might not have seriously adverse effects for a decade or more. In principle, under rational expectations the market should have understood all the remote and distant effects of the 1992 legislation. Without getting into the literature on rational learning, I'll note that economists, myself included, did not understand the remote effects any better than did the market.

The incentives at work were these: Mortgage brokers were incented by the fees they could earn to issue new mortgages, most of which they could sell to the GSEs. Too many homeowners were incented to refinance existing mortgages by the cash they could take out. The GSEs were incented to buy weak mortgages by the affordable-mortgage goals, bonuses and stock options the managements received and pressure from both HUD and congressional committees.

If I had understood this process while president of the St. Louis Fed, I would have made some very different speeches than I actually did. I had focused on the instability of the GSEs themselves and did not understand how they created dynamic instability in the housing market. The analysis seems so obvious now; how could I have missed it despite my almost continuous attention to the GSEs from 2001 to 2008 and my work on GSEs after I retired from the Fed?

References

Note: When a book has been issued in a Kindle edition with added material, I indicate that there are two editions by XXXX/YYYY

- Acharya, Viral V., Matthew Richardson, Stijn Van Nieuwerburgh and Lawrence J. White. 2011. *Guaranteed to Fail: Fannie Mae, Freddie Mac and the Debacle of Mortgage Finance*. Princeton University Press. Kindle Edition.
- Andrews, Edmund L. (2008). “*Greenspan Concedes Error on Regulation.*” NYT, Oct 23.
[<https://www.nytimes.com/2008/10/24/business/economy/24panel.html>]
- Calomiris, Charles W. and Stephen H. Haber. (2014). *Fragile by Design: The Political Origins of Banking Crises and Scarce Credit* (The Princeton Economic History of the Western World). Princeton University Press. Kindle Edition.
- Fannie Mae 10-K reports for 2003, 2004, 2005, 2006 and 2007
- Fannie Mae 10-K annual report for 2009. [<https://fanniemae.gcs-web.com/static-files/d5707198-c562-4e5e-a885-98eaaa1f66cc>]
- Federal Housing Finance Agency (2010). “The Housing Goals of Fannie Mae and Freddie Mac in the Context of the Mortgage Market: 1996 – 2009.” (Mortgage Market Note 10-2)
[https://www.fhfa.gov/PolicyProgramsResearch/Research/PaperDocuments/20100201_MMNote_10-2_508.pdf]
- _____. (2021). “Sandra L. Thompson Announced as Acting Director of FHFA.” FHFA News Release, 6/23/2021
- Financial Crisis Inquiry Commission *Report*. Majority and two dissenting reports
- Friedman, Milton and Anna J. Schwartz. 1963. *A Monetary History of the United States 1867-1960*. Princeton University Press.

- Greenspan, Alan. 2004. "On Government-sponsored enterprises," Testimony of the Chairman before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, February 11.
- Hagerty, James R. 2012. *The Fateful History of Fannie Mae: New Deal Birth to Mortgage Crisis Fall*. Arcadia Publishing. Kindle Edition.
- HUD (2000). "Proposed rule, new housing goal levels for Fannie Mae and Freddie Mac for calendar years 2000 through 2003." Federal Register / Vol. 65, No. 47, pp. 12632-12816.
- HUD. Office of Policy Development and Research. (2002). *Overview of the GSEs' Housing Goal Performance, 1993-2001, and Goals for 1996-2003*. (July) [<https://www.huduser.gov/datasets/GSE/gse2001.pdf>]
- HUD (2004). "HUD's Housing Goals for the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) for the Years 2005–2008 and Amendments to HUD's Regulation of Fannie Mae and Freddie Mac." Federal Register / Vol. 69, No. 211, pp. 63580-887.
- McDonald, Oonagh. 2012. *Fannie Mae and Freddie Mac*. Bloomsbury Publishing. Kindle Edition.
- McLean, Bethany, and Joe Nocera (2010). *All the Devils Are Here: The Hidden History of the Financial Crisis* (Kindle Penguin Publishing Group. Kindle Edition.
- Morgenson, Gretchen and Joshua Rosner. 2011. *Reckless Endangerment: How Outsized Ambition, Greed, and Corruption Led to Economic Armageddon*. Henry Holt and Co. Kindle Edition.
- Shiller, Robert J. 2008/2015. *The Subprime Solution* (p. 44). Princeton University Press. Kindle Edition.
- Shiller, Robert J. 2015. *Irrational Exuberance*, 3rd ed. Princeton University Press. Kindle Edition. Includes Nobel Prize lecture in Appendix.

U.S. Census Bureau, Historical Tables, Table 17. “Quarterly Homeownership Rates by Family Income: 1994 to Present.”

[<https://www.census.gov/housing/hvs/data/histtabs.html>]

Wallison, Peter J. 2015/2016. *Hidden in Plain Sight: What Really Caused the World's Worst Financial Crisis and Why It Could Happen Again*. Encounter Books. Kindle Edition.