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Household Expenditure Cycles and Economic Cycles, 1920 – 2010

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Comments

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Abstract

The recent recession differs from other post-war recessions in two important respects: it has seriously disrupted the financial system, and it has already exhibited strong resilience to monetary stimulus. Yet, as we demonstrate in this paper, the recent recession shares two important features with other post-war recessions: most recessions originate in a pronounced downturn in expenditures on new single-family and multi-family housing units, and the housing sector is the primary transmission channel for monetary policy in both downturns and recoveries. We argue that there are three reasons this recession differs from past recessions. Excessive mortgage credit – augmented by large foreign capital inflows – created a house price bubble. When it collapsed, many households and financial firms were left burdened with extreme balance sheet problems. Consequently, accommodative monetary policy has had a muted impact on households that seek to de-leverage rather than borrow for new housing assets. Moreover, in a saturated housing market, residential construction, which has led all sustained post-war recoveries, has also been suppressed.

KEYWORDS: Business cycles, durable goods, financial crises, inflation, investment, monetary policy, residential construction

JEL Codes: E22, E31, E32, E52, N1, N6

1. Introduction

The recent economic crisis – already deservedly labeled the 'Great Recession' – continues to plague the health of the economy as a whole and has motivated us to probe its characteristic features and compare it to recent historical economic downturns, the Great Depression, and to the anomalous recession of 2001.[1] The boom began with an unprecedented house price bubble from 1997 to 2006 that was financed by a surge in the net flow of mortgage credit between 1998 and 2006. The large increase in net mortgage credit was itself fed by an equally rapid increase in the current account deficit, which surged from $157.2 billion in 1997 (1.60 percent of GDP) to $773.0 billion in 2006 (5.96 percent of GDP).[2] Events in the unraveling of the bubble were sharply delineated, progressing from (1) a precipitous decline in expenditure on new single-family and multi-family housing units that began in the second quarter of 2006 to (2) a rapid house price decline beginning early in 2007, (3) a credit market seizure in August 2007, (4) a substantial decline in prices of financial firms' stocks in the first half of 2008, (5) deterioration of the financial system in 2008, (6) an aggressive and unprecedented Federal Reserve intervention in September 2008, and (7) a sharp decline in output in the fourth quarter of 2008 and the first quarter of 2009. In the aftermath of these events, many households have suffered extreme balance sheet damage that has suppressed borrowing for new assets and durable goods consumption. Households' decreased expenditure on new housing units and durable goods have in turn led to a sharp decline in non-residential fixed investment.

This order of real and financial sector declines and the events that led up to it have provided a fresh perspective with which to examine past economic cycles. We believe that this perspective is likely to change how economists, policy makers, investors and others think about monetary policy, housing cycles, and what have commonly been described as "business cycles."

We find that eleven of the most recent fourteen economic downturns in the U.S. – from the Great Depression that began in 1929 to the Great Recession starting in late 2007 – were led by

[1] In Gjerstad and Smith (2009a) and Gjerstad and Smith (2009b), we describe the interactions between monetary policy, financial developments, the housing bubble, and the course of the recent recession. In Smith and Gjerstad (2010) we compare movements of the components of aggregate output in the Great Depression and the Great Recession. This paper extends our evaluation of movements in GDP components in the last article to the ten post-war recessions that preceded the Great Recession. Our examination of the cycles in these components – and particularly the predominant roles of housing and consumer durable goods expenditures in economic expansions and contractions – establishes basic facts of economic cycles that are necessary background for more adequate models of the role that monetary policy plays in exacerbating or moderating economic cycles.

[2] All dollar amounts in this section and in the remainder of the paper are inflation adjusted to 2005 dollars unless otherwise noted.

declines in expenditure on new single-family and multi-family housing units. In these eleven downturns, percentage declines in expenditures on new housing units and consumer durables preceded and exceeded percentage declines in every other major component of GDP. In the 1945 recession – one of the three recessions in which housing was not implicated – national defense expenditures fell while all major components of private expenditure rose. The other two – in 1937-38 and 2001 – resulted primarily from declines in non-residential fixed investment. Figure 1 shows the percentage of GDP contributed by expenditure on new single-family and multi-family housing units over the past 90 years.

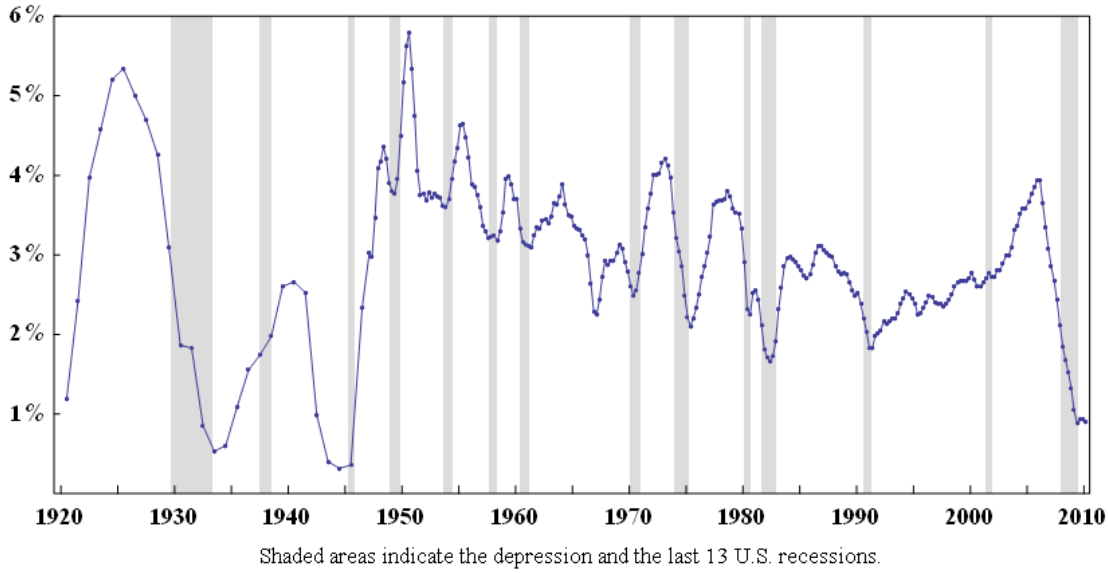


Figure 1: Expenditure on new single-family and multi-family housing units as a percentage of GDP.

Although expenditure on new housing units is not a large component of GDP – which may explain its limited role in typical macroeconomic accounts of recessions – it is volatile, it has declined before ten of eleven post-war recessions and the Great Depression, it has rarely declined substantially without a recession following soon afterward,[3] and the extent of its decline emerges as a good predictor of the depth and duration of the recession that follows. In addition to its role as a leading indicator, and its volatility over the economic cycle, expenditure

[3] In 1950-51 expenditure on new housing units declined sharply and remained at its lower level without a recession following soon afterward. Durables fell too during the same period, but defense expenditure increased 90 percent more than the decline in housing plus durables expenditures. From early 1964 to early 1966, expenditure on new housing units declined, but households' durable goods consumption increased sharply so that the sum of households' expenditure on new housing units and consumer durables rose from the first quarter of 1964 to the first quarter of 1966. During 1966, the sum of housing and durable goods declined, but defense expenditures increased slightly more than housing and durables declined, while a recession was narrowly averted.

on new housing units has recovered faster than any other major sector of the economy after every recession since 1920-21, with the single exception of the 1980 recession when the housing recovery faltered after two quarters and a new recession began two quarters later.

One of our main objectives in this paper is to demonstrate that interest rate sensitive components of household expenditures play a large role in economic fluctuations. In order to demonstrate this, we examine movements in four key GDP components from the National Income and Product Accounts (NIPA): consumers' expenditure on non-durable goods and services (C), consumers' durable goods expenditures (D), expenditure on new single-family and multi-family housing units (H), and non-residential fixed investment (I).[4] These four elements of private expenditure have accounted for an average of 78.5 percent of GDP between 1947 and the first quarter of 2010. Most of the remaining 21.5 percent has been accounted for by government spending, which has averaged 20.2 percent of GDP since 1947.

We find that changes in households' expenditure on new housing units and changes in investment (primarily firms' investments in structures and equipment) differ systematically prior to and during recessions, and in recoveries.[5] Moreover, housing has varied much more over the economic cycle in percentage terms than non-residential fixed investment in nine of the eleven post-war economic cycles; also, the dollar amount of the sum of expenditure on new housing units and on consumer durable goods has varied more over the economic cycle than investment in eight of eleven post-war cycles. Although housing is a small portion of the

[4] For brevity we refer to personal consumption of services and non-durable goods (NIPA Table 1.1.5 lines 5 and 6) as 'consumption' (C), households' durable goods expenditures (NIPA Table 1.1.5 line 4) as 'durables' (D), expenditure on new single-family and multi-family housing units (from NIPA Table 5.4.5 line 36 and Table 5.3.5 line 19) as 'housing' (H), and non-residential fixed investment (NIPA Table 1.1.5 line 9) as 'investment' (I). For 1920 to 1928, expenditure on new single-family and multi-family housing units is from Grebler, Blank, and Winnick (1956) Table B-3; consumption and durable goods expenditures are from Swanson and Williamson (1972) Appendix A; investment is from Swanson and Williamson (1972) Table A-2 Column 3 minus expenditure on new housing units from Grebler, Blank, and Winnick (1956) Table B-3; and GNP is from Swanson and Williamson (1972) Table 1. All series are converted from nominal to real figures by dividing by GNP or GDP deflators. For 1920 to 1929 the GNP deflators are from Balke and Gordon (1989) Table 10. For 1929 to Q1 2010 the GDP deflators are from NIPA Table 1.1.5 line 1 divided by Table 1.1.6 line 1.

[5] National Income and Product Accounts and macroeconomic accounts of economic cycles treat housing as an investment, but housing expenditures have a strong impact on economic cycles that differs systematically from the impact of non-residential (primarily business) investment. Regardless of whether these expenditures are investment or consumption, they are determined by households, and their expenditure decisions have a different temporal pattern than firms' investments. Therefore, in this paper we will use "housing" or "housing expenditure" to indicate expenditures on new single-family and multi-family residences, rather than "housing investment."

economy, its movements over economic cycles are sufficient to account for a large portion of GDP changes, even before taking account of how the decline of income from housing construction or the decline of household wealth from loss of housing equity affect demand in other sectors.[6] Since changes in household expenditure on housing and durables precede and exceed changes in non-residential investment, we argue that "business cycle" is a poor description for the economic fluctuations in the U.S. over the past ninety years. We offer evidence that an "economic cycle" is driven by a "household expenditure cycle" which in turn generates an "investment cycle": the combination of a household expenditure cycle and an investment cycle comprises an economic cycle.

The evidence clearly indicates that housing fluctuates more over the economic cycle than any other major component of GDP, so it is natural to consider what causes its movements. Temporary saturation of the housing market appears to be one factor: it certainly has been in the current recession. We also present substantial evidence that supports the principle argument in Friedman and Schwartz (1963): monetary policy has a clear effect on the course of the real economy. But we take their argument a step forward by demonstrating that housing is an important transmission channel for monetary policy. Housing responds first to tightened policy and typically recovers first when policy is relaxed.

We also argue that there are two conditions in which monetary policy is deprived of much of its power: both conditions are present in the aftermath of the recent recession. First, accommodative monetary policy primarily affects new residential construction, and therefore a saturated housing market has only a muted response to monetary easing. Second, when household balance sheets are damaged in the aftermath of a serious housing bubble and collapse, households remain unresponsive to accommodative monetary policy as their focus turns to de-leveraging rather than borrowing for new housing assets or durable goods. In extreme cases the net flow of mortgage funds turns negative: this occurred in both the Great Depression and the Great Recession. (The third occurrence, in WWII, was the result of government controls on new construction and mortgage financing.)

In Section 2 we evaluate the eleven post-war recessions and the Great Depression. Section 3 summarizes percentage changes in major GDP components during these twelve downturns; it also summarizes the dollar values of declines in housing, durable goods expenditures, and non-

[6] An account of the transmission of a decline in mortgage-financed expenditures on new housing units into the broader economy must address its impact on households' and financial firms' balance sheets. We've evaluated this transmission for the 'Great Recession' in Gjerstad and Smith (2009a) and (2009b). An examination of the transmission in other post-war recessions is a task that we plan to undertake in a subsequent paper.

residential fixed investment. In Section 4, we offer conclusions from our evaluation of these downturns, and propose a schematic model of the interactions between monetary policy, inflation, and changes to GDP components over the economic cycle.

2. Post-war recessions and the Great Depression

In this section, we examine the development of post-war economic cycles. In a typical cycle, inflation remains low while housing expands. Then inflation begins as housing slows. In response to developing inflation, monetary policy is tightened and housing begins a sharper decline. The resulting downturn in the household expenditure cycle reduces inflationary pressure, but also leads to a turn in the investment cycle as firms encounter reduced demand for housing and consumer durable goods. The combination of this household expenditure cycle and the investment cycle form an economic cycle. Seven of the ten post-war downturns fit this pattern closely. The 1948-49 and 1953-54 recessions fit this pattern in most respects, but large defense expenditures and wage and price controls disrupted the patterns somewhat. The 2001 recession deviates from this pattern, but there is substantial evidence that the pattern was disrupted by the huge influx of foreign investment into the housing market.

2.1 The Major Downturns

In the post-war era, three downturns stand out for their duration and their depth: the Great Recession, the 1973-75 recession, and the "double dip" recessions of 1980 and 1981-82. We look first at the Great Recession because it is the most familiar episode, it continues to inflict damage on households and the economy, and recovery from it is uncertain. We then consider the Great Depression and the other two major post-war recessions.

2.1.1 The Great Recession

The recent recession is widely attributed to a housing bubble that began about 1997 and culminated with huge house price increases between 2003 and 2005. During the period of most rapid price increases – between July 2003 and July 2005 – the Case-Shiller composite index of housing prices in 20 U.S. cities increased 35 percent. Much of the increase was driven by people who – for a variety of reasons – purchased homes that they could only afford (even temporarily) if they were able to refinance after house price appreciation. As the flow of mortgage funds into the market leveled off in late 2005, house prices also began to level off, and many homeowners who relied on price increases to refinance became financially distressed. Mortgage delinquencies began to rise rapidly toward the end of 2006 when house

prices flattened out. Increases in serious delinquency were especially acute in states where house price appreciation had been the greatest: serious mortgage delinquency increased between the third quarter of 2006 and the second quarter of 2007 by factors of 3.02 in Arizona, 2.75 in California, and 2.68 in Nevada.[7]

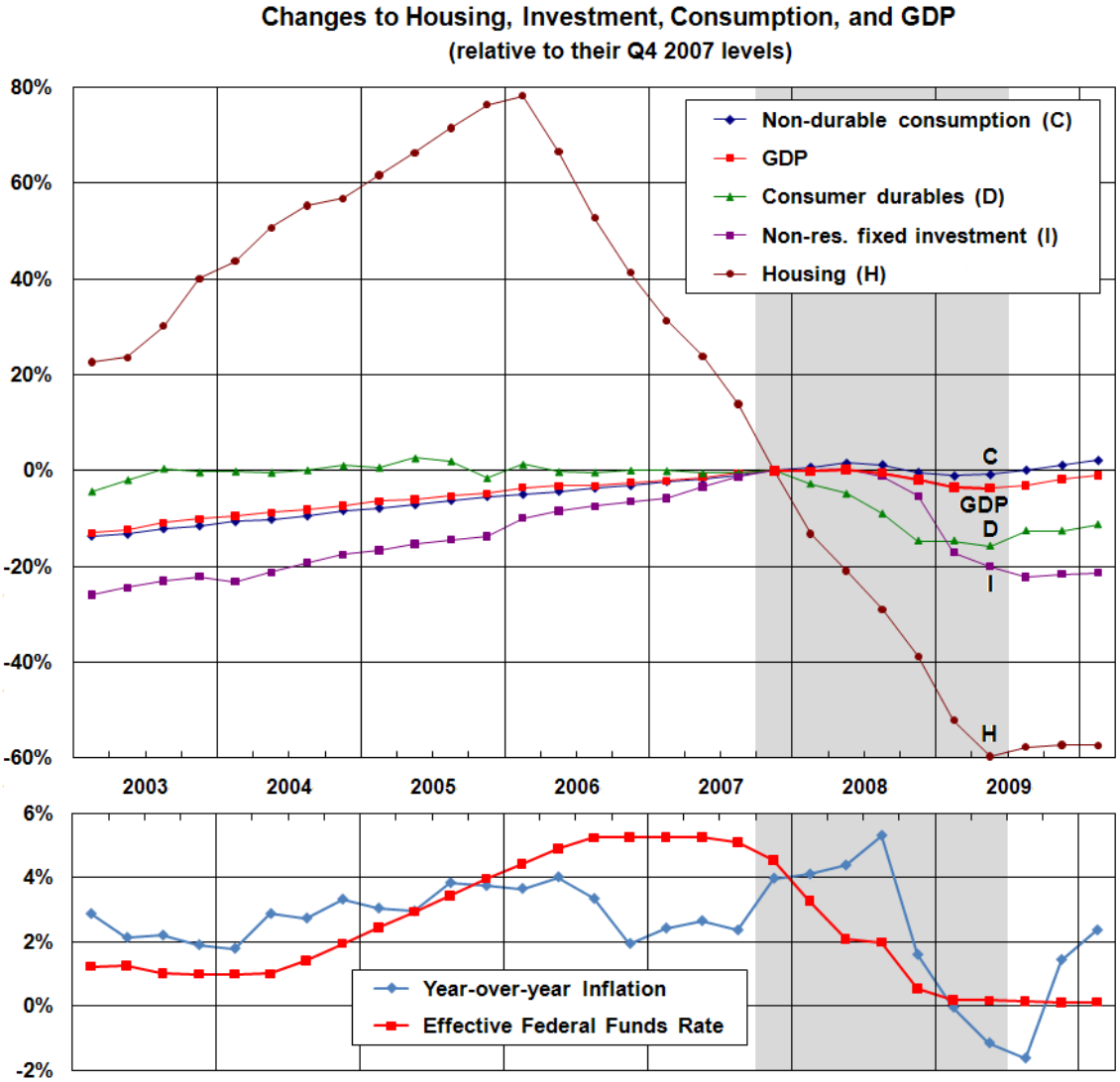


Figure 2: Percentage changes to GDP and its major components before, during, and after the Great Recession. Housing (H) represents the percentage difference between real expenditures on new housing units in the indicated quarter and its level at the start of the recession in the fourth quarter of 2007. For example, housing was 78.2 percent higher in Q1 2006 than it was in Q4 2007; it was 59.7 percent lower in Q2 2009 than it was in Q4 2007. Other series are interpreted similarly (e.g., real non-residential fixed investment was about 20 percent lower in Q3 2004 and Q2 2009 than it was in Q4 2007).

[7] These figures are calculated from the Q3 2006 and Q2 2007 National Delinquency Survey from the Mortgage Bankers' Association.

During the period of rising house prices, the net flow of mortgage funds increased rapidly. Between Q1 2002 and Q1 2006 the real mortgage debt of U.S. households increased from $5.97 trillion to $8.97 trillion, an increase of just over 50 percent. This large flow of mortgage credit into the market supported house price increases, which in turn supported refinancing among those buyers in the weakest financial condition, thereby accommodating loose underwriting standards. Obviously, this positive feedback loop would eventually be interrupted. The rapid increase in serious delinquency in late 2006 and 2007 finally broke the chain when it frightened investors: between Q2 2006 and Q2 2007, the net flow of mortgage funds fell by one third. Three quarters later the net flow of mortgage funds turned negative for the first time in the post-war era. After eight consecutive quarters of decline, nominal home mortgage credit outstanding has fallen $372.2 billion below its peak level in Q1 2008.

The decline in the flow of mortgage funds then accelerated the price collapse: without credit flowing into the housing market, there was nothing to support house prices, and the house price decline gathered momentum. Since so many mortgages had been written with slender down payments, the house price collapse impacted banks: many banks suffered an impaired flow of mortgage payments from distressed homeowners, asset value losses on foreclosed homes, and declining values of mortgage securities on their books.

The impact of these developments on the housing sector is apparent in Figure 2: residential construction began to collapse in Q2 2006. When investment peaked in Q2 2008, housing plus durables had been falling for nine quarters and had already fallen $349.0 billion, which was almost as much as investment fell during the course of the recession. The damage eventually spread from a large fraction of the nearly six million subprime loans to the broader economy.[8]

The grey area in Figure 2 shows the recession. We have assumed that the NBER Business Cycle Dating Committee will eventually date the end of the recession sometime in Q2 2009,

[8] In Gjerstad and Smith (2009a) and (2009b) we argue that financing in the low-price tier pushed prices up there, and increased equity of incumbents in that tier, who in many cases traded up, causing prices to rise in the next tier. When financing in the low-price tier collapsed, prices there collapsed fastest and farthest. This generated several problems, each of which reinforced the general decline. Homeowners' lost equity in the low-price tier ended the process of 'trading up', which reduced demand in higher tiers. (This argument is similar to a model by Ortalo-Magne and Rady (2007). Ho, Ma, and Haurin (2008) test data from the Hong Kong housing market and find that movements in lower price tiers precede movements in higher price tiers.) Lost home equity led to financial distress among homeowners. Their distress reduced the flow of mortgage payments to lenders, which created financial sector losses. With both households' and financial firms' balance sheets under pressure, construction of new homes, sales of durable goods, and non-residential investment all fell. Each of these problems led to declining employment, which fed back to generate distress among more homeowners and further consumption declines.

although there is some uncertainty about this. As of the Q1 2010 NIPA estimates, real GDP has still not recovered to its peak level in Q2 2008, or even to its level in Q4 2007, and the recoveries in both housing and investment are weak, as Figure 2 shows.

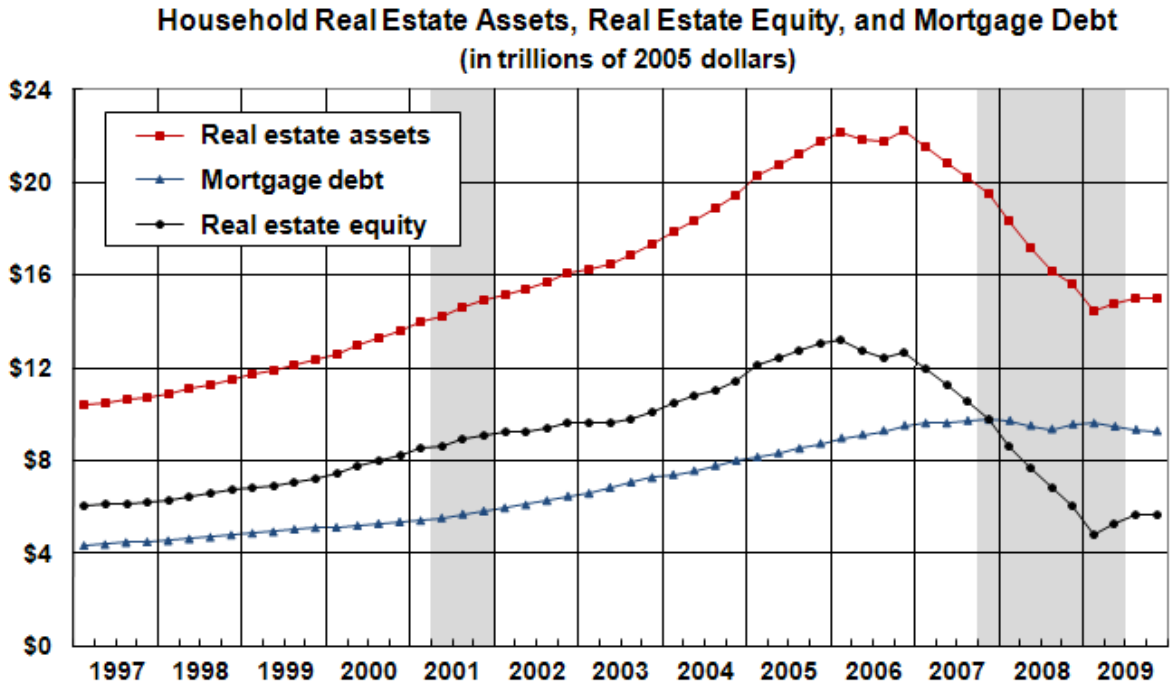


Figure 3: Housing value, mortgage debt, and housing equity (value minus debt) grew steadily during the bubble, but after the bubble collapsed, households were left with high mortgage debt loads and diminished equity. Although real estate assets are only 30 percent of households' assets, unlike financial assets, they are widely distributed across households and for many households they are highly leveraged.

The impact of these developments on households' balance sheets is indicated by Figure 3, which shows households' residential assets, their mortgage debt, and their housing equity (residential assets minus mortgage debt). The three series grew in roughly similar proportions throughout the formation of the bubble. When house prices collapsed in 2007 and 2008, a large portion of the asset value increase was lost, but the higher debt load remained.

2.1.2 The Great Depression

Changes in output by sector in the Great Depression are uncharacteristic of recessions only in their magnitudes. In every post-war recession except 2001 consumer durables, investment, and housing all declined, but their percentage declines have never matched the declines during the depression. During the Great Depression, durable goods expenditures declined 49.2 percent, investment declined 68.6 percent, and housing declined 91.9 percent. In the average

of eleven post-war recessions from 1948 to 2007, the corresponding declines were 11.4 percent (durables), 11.8 percent (investment), and 32.5 percent (housing).

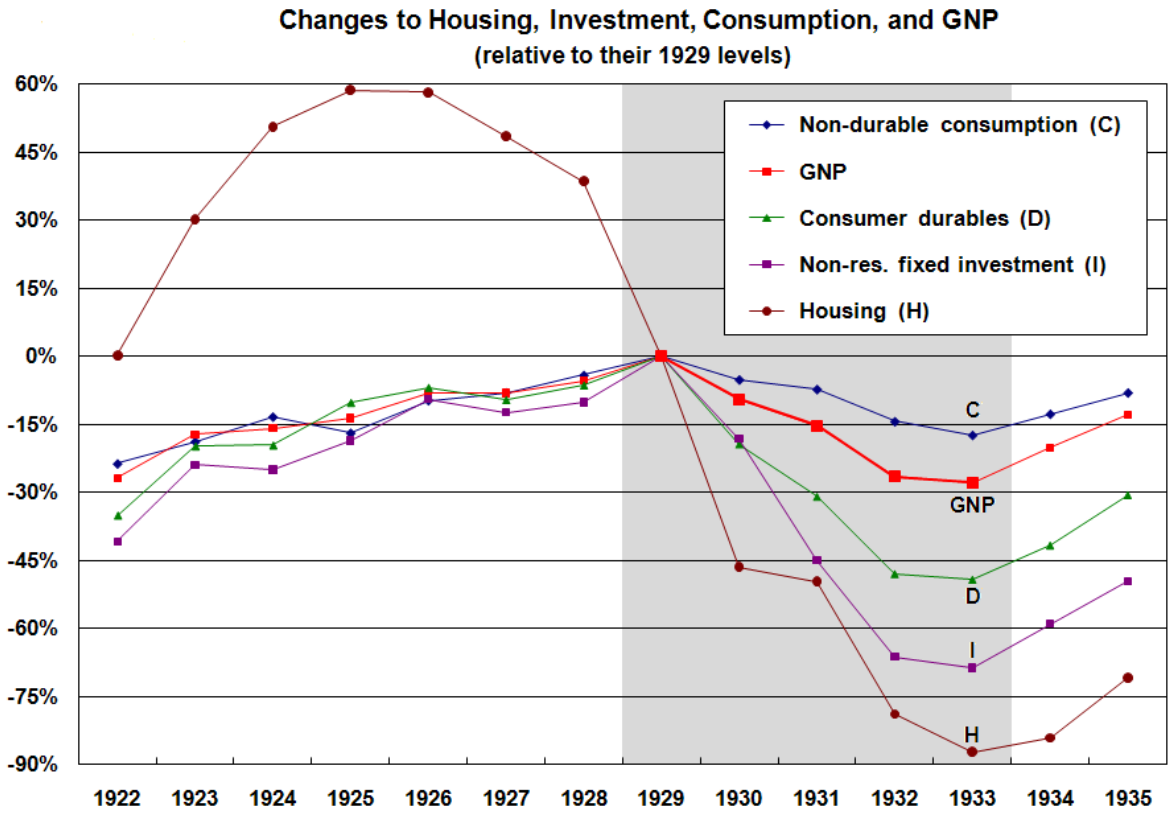


Figure 4: Percentage changes to GNP and its major components before, during, and after the Great Depression. The interpretation of the series for each component is similar to the interpretation of the series in Figure 2 for the Great Recession.

In the depression, real gross national product (GNP)[9] declined 27.7 percent and every major component of output declined: even non-durable consumption fell by an unprecedented 17.3 percent. In Figure 4 housing peaked in 1925 at a level 58.7 percent higher than its 1929 level. Other major components of GNP – and GNP itself – all continued to rise until 1929. Every major component of GNP fell in 1930, but none fell as much as housing. By 1933, housing was only 12.9 percent of its 1929 level and a paltry 8.1 percent of its peak level in 1925.

[9] In the NIPA data, Gross Domestic Product (GDP) has been emphasized as the measure of aggregate output since the 1991 NIPA revision. GDP is the value of products and services produced within the U.S., whereas GNP is the value of products and services produced by U.S. residents and U.S. owned firms. The 1991 NIPA revision only applied to the official Commerce Department estimates from 1929 on. For the period from 1919 to 1929, Swanson and Williamson (1972) revised earlier estimates by Kuznets (1961) so that their expenditure categories conform to the 1965 Department of Commerce definitions. These authors use GNP as the measure of aggregate output – the standard when they compiled their estimates – so we report GNP in our evaluation of the depression.

2.1.3 The 1973-75 Recession

Measured by its average depth times duration, the recession from Q4 1973 to Q1 1975 was the third largest of the post-war era, exceeded only by the Great Recession and the 1981-82 recession. Though the recession has often been attributed to the Arab oil embargo that began in October 1973, housing declined for two quarters before the embargo, and the $103.8 billion housing decline was more than double the additional cost of imported oil and over 2 ½ times as large as the $40.7 billion investment decline. The decline in housing plus consumer durables, at $177.2 billion, was 4.35 times as large as the investment decline.

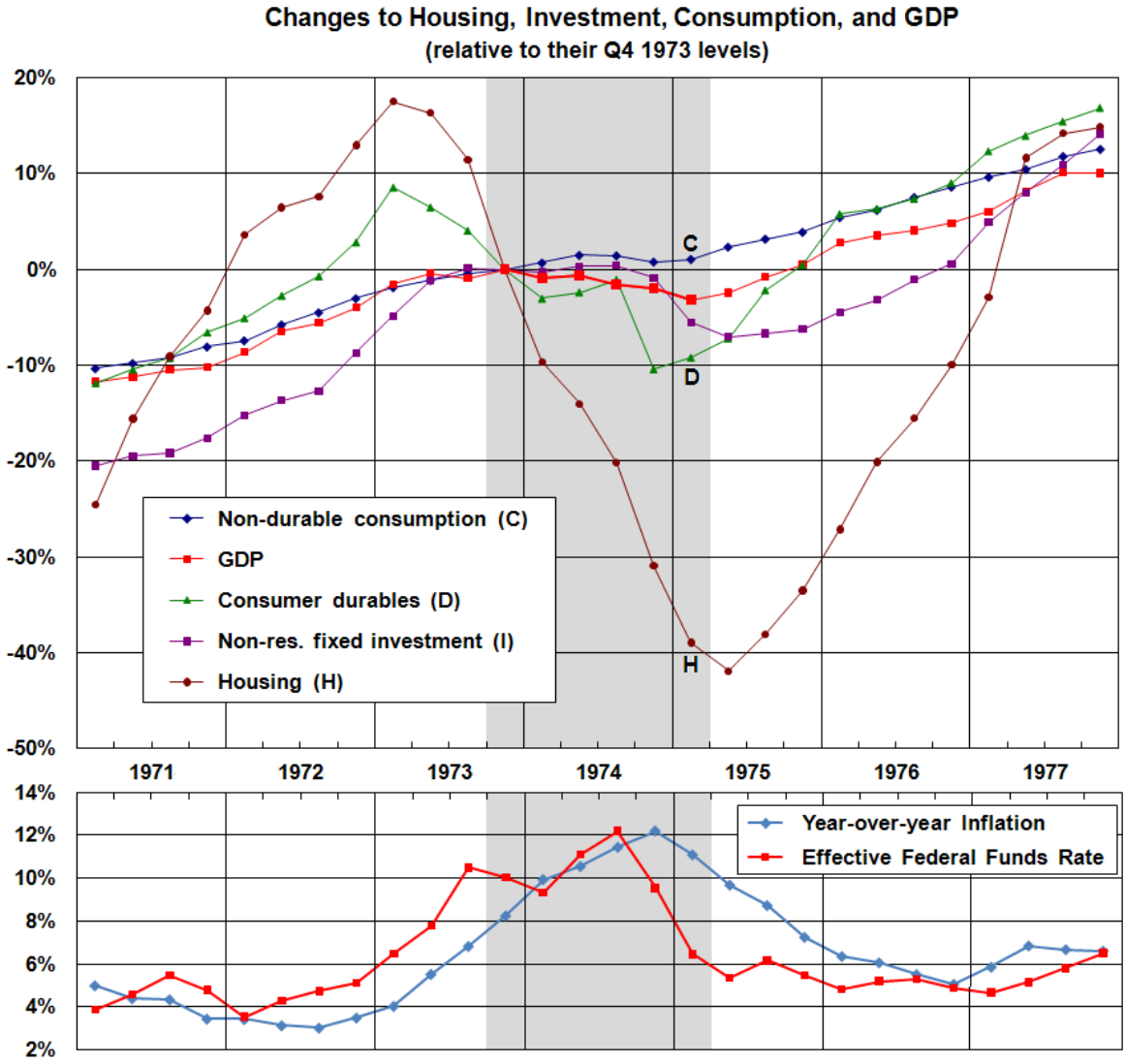


Figure 5: Percentage changes to GDP and its major components before, during, and after the recession of 1973-75. The housing decline was the second largest of the post-war era, as was the decline in durables, while the investment decline was delayed and moderate. In a common pattern, inflation rose sharply after housing peaked and inflation peaked during the recession.

The 50.6 percent decline in housing was the second largest of the post-war era, exceeded only by the decline of the Great Recession.[10] The 17.5 percent decline in durable goods consumption was the largest of any post-war recession before the Great Recession. The 7.4 percent investment decline was, however, surprisingly small given the depth of the recession. Moreover, investment peaked three quarters after the recession began.

Monetary policy impacted the onset of and the recovery from the recession. Monetary policy was loose throughout 1972. Between February 1973 and February 1974 inflation surged from under 4 percent to 10 percent. In response to surging inflation, monetary policy was tightened in Q1 1973, housing began to fall in Q2 1973, and the cyclical peak came in Q4 1973, two quarters later. Inflation peaked seven quarters after housing began to decline, just before housing reached its trough. The housing decline continued until two quarters after monetary policy was eased in Q4 1974. Once the federal funds rate was reduced to a level comparable to its 1972 level, a rapid recovery in housing and in the economy began.

2.1.4 The 1980 and 1981-82 "Double Dip" Recessions

Measured by its average depth times its duration, the 1981-82 recession was the second most severe of the post-war era, exceeded only by the Great Recession. Housing fell sharply from two quarters before until the first quarter after the Q1 1980 cyclical peak, then briefly recovered before it began a second sharp decline before the 1981-82 recession. Housing fell 40.6 percent during the first decline from Q3 1978 to Q3 1980; during the second decline from Q1 1981 to Q2 1982 housing fell 36.0 percent. Over an almost four year period, from Q3 1978 to Q2 1982, housing fell 55.2 percent. During those 15 quarters, real GDP grew by a total of 2.2 percent, a growth rate of about one half percent per year, considerably below the 3.8 percent average growth rate from Q1 1947 to Q3 1978. Investment rose 9.9 percent during this period when housing collapsed by 55.2 percent. Over the course of the two combined recessions, housing – which peaked six quarters before the cyclical peak in Q1 1980 – fell $120.9 billion before it reached bottom in Q2 1982. Investment peaked in Q4 1981 – thirteen quarters after the housing peak and two quarters before its trough – and fell $131.5 billion over the next six quarters. Between Q4 1978 and Q2 1982 the sum of housing and durables fell $201.7 billion.

[10] The 55.2 percent housing decline between Q3 1978 and Q2 1982 that was associated with the "double dip" recessions of 1980 and 1981-82 exceeded the 50.6 percent decline between Q1 1973 and Q2 1975, and – as we show in the next subsection – there is a good case to make that the double dip recessions were one recession interrupted by a sharp monetary stimulus between May and September 1980, but we follow the convention of treating the recessions separately in the statistics that we report.

Households' interest rate sensitive components of consumption had a stronger impact on the development of this serious downturn than non-residential fixed investment: housing plus durables peaked twelve quarters before investment, and the dollar amount of their decline exceeded the investment decline by 53.4 percent.

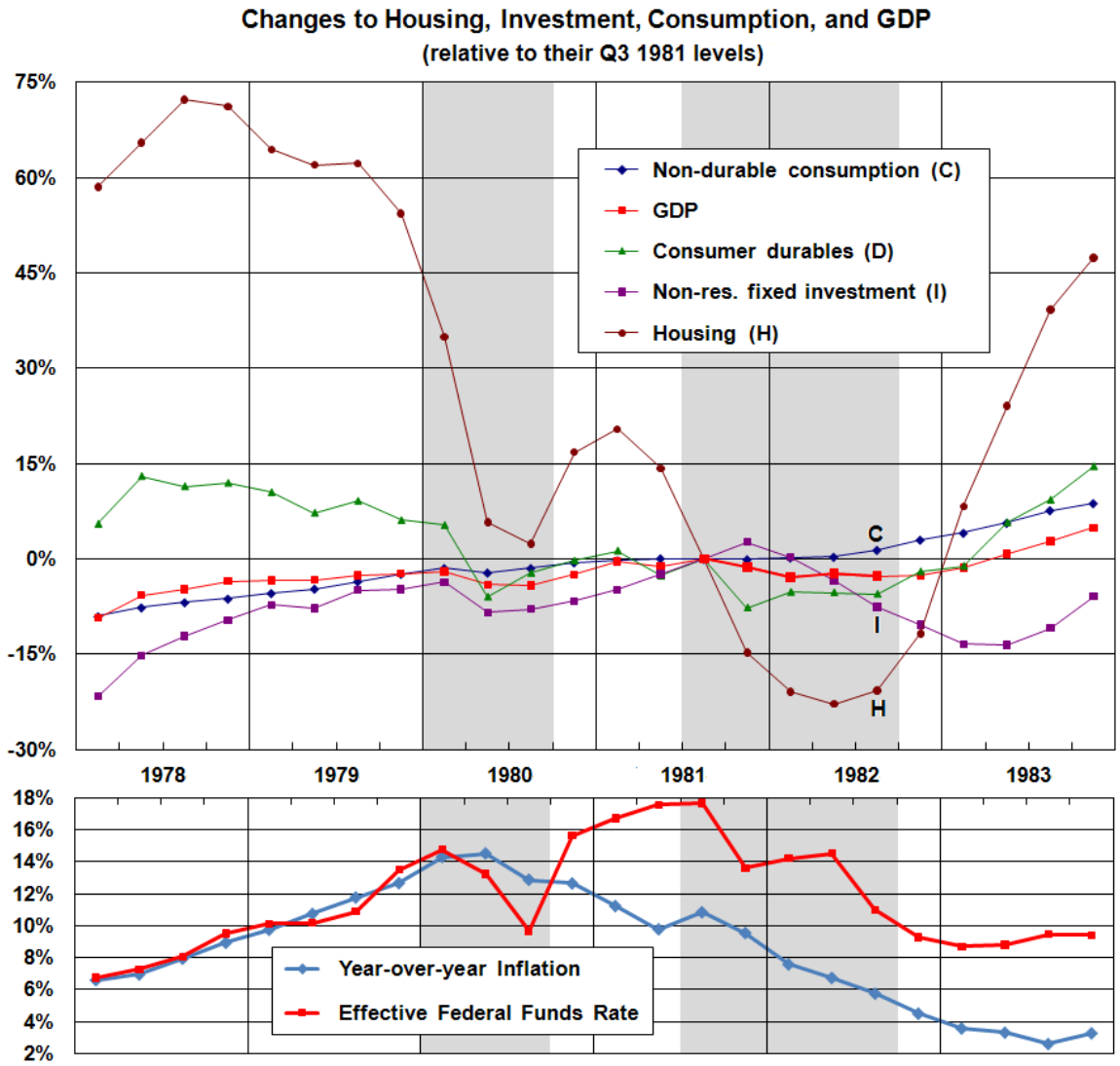


Figure 6: Percentage changes to GDP and its major components before, during, and after the "double dip" recessions of 1980 and 1981-82. The combined double dip recessions of 1980 and 1981-82 included large declines in housing and consumer durables, and a three year long period – from Q3 1979 until Q3 1982 – when real GDP fell. During that three-year period housing fell 51.1 percent yet investment fell only 2.8 percent during the same period.

Monetary policy left a clear imprint on real sector developments over the six year period represented in Figure 6, and its most pronounced impact was on housing. When President Carter appointed Paul Volcker as Chairman of the Federal Reserve on August 6, 1979, the Fed

targeted money supply growth rates, using the federal funds rate as its instrument to affect the money supply. Volcker increased the federal funds rate from 9.6 percent when he took office to 19 percent eight months later. Monetary tightening had a significant effect, especially on housing, which declined 34.8 percent between Q3 1979 and Q2 1980. By April 1980, the money supply was contracting rapidly, but the Fed had only sought to reduce its growth rate. In response, the federal funds rate was reduced from 19.4 percent in early April 1980 to 9.5 percent seven weeks later in late May; it then kept the rate below 10 percent until the end of August. The effect on housing was sharp, and operated with only a one to two quarter lag.

The housing decline ended in Q3 1980 and an upturn began the next quarter. Monetary policy, however, was once again tightened with an increase in the federal funds rate from under 11 percent at the end of September 1980 to over 20 percent at the beginning of January 1981. Housing started down again in Q2 1981, this time falling 36.0 percent in five quarters to a new post-war low of less than 1.7 percent of GDP in Q2 1982.

In the first two quarters of 1980 when Volcker's tightened monetary policy first began to have a strong effect on housing, the inflation rate averaged 14.4 percent. By Q4 1982 when the recovery began, inflation averaged 4.7 percent. Monetary policy had been tight in ten of eleven quarters from Q4 1979 to Q2 1982, bringing inflation under control. When monetary policy was finally eased sharply in Q3 1982, housing again responded almost immediately: housing increased 92.0 percent between Q3 1982 and Q2 1984.

This episode demonstrates a key argument in Friedman and Schwartz (1963): monetary policy has a clear impact on the real economy – an argument that has been widely accepted for 30 years. But this natural experiment, in which monetary was tightened and then eased twice in quick succession, demonstrates another point: monetary policy operates primarily through interest rate sensitive components of household consumption, especially housing. This point will be reinforced by our examination of other post-war recessions.

2.2 The Minor Recessions

The three major downturns of the post-war era all conform to our description of economic cycles. Housing peaks well before downturns, inflation develops as housing levels off or declines, and monetary policy tightening – a natural response to developing inflation – accelerates the housing downturn and initiates a sharp decline in inflation. As inflation subsides, monetary policy is eased, and housing increases sharply. Most post-war economic cycles conform to this pattern. We now describe the other seven post-war recessions.

2.2.1 The 1948-49 Recession

Housing growth between 1945 and Q2 1948 was the strongest of the past century. Between 1932 and 1945, housing averaged only 1.3 percent of GDP. The stock of housing was depleted during the depression and the world war. Pent-up demand and households' accumulated wartime savings led to a surge of housing construction between 1947 and 1956. During those ten years, housing averaged 4.1 percent of GDP. The housing expansion between late 1945 and Q2 1948 was more rapid than any other major component of GDP. By Q2 1948 housing expenditures reached 4.4 percent of GDP.

During the rapid recovery that followed WWII, the consumer price index (CPI) increased by 28.9 percent between June 1946 and June 1948. Federal Reserve open market operations were limited as a policy instrument from the depression until the Treasury-Fed accord in March 1951. During this period the Fed was required – through its bond price support program – to passively monetize short-term Treasury debt.[11] With limited means to control the money supply, inflation escalated after the war, and the Federal Reserve was forced to resort to changes in banks' reserve ratio (their ratio of reserves on deposit with the Fed and vault cash to their customers' deposits) to control lending.[12]

The major surge in housing came in 1946, when it increased by a factor of four over its 1945 level. Inflation rose rapidly at the same time but had already peaked in Q1 1947 at 18.9 percent, though much of the rise resulted from lifting of wartime wage and price controls.[13] Nevertheless, the Fed decided to raise the reserve ratio in three equal steps – on February 27, June 11, and September 24, 1948 – from 20 percent to 26 percent. Banks reacted with a contraction to lending that further curtailed inflation but also led to a recession. The money supply peaked in the same month that the reserve ratio was first increased; housing peaked in

[11] Hetzel and Leach (2001) provide an excellent account of the economic issues and political context that led to the Treasury-Fed accord on March 4, 1951.

[12] For a history of reserve ratios, including changes to required reserves, see Feinman (1993).

[13] Freidman and Schwartz (1963, pp. 557-8) note several effects of wartime price controls, such as shortages of products with small price increases and substitution to available products with greater increases, "changes in quality or in the services rendered along with the sale of a commodity" with the result that "the elimination of price controls in 1946 did not involve any corresponding jump in 'prices'; rather it reflected largely the unveiling of price increases that had occurred earlier." This is the only post-war economic cycle in which prices fell before housing peaked. Some combination of the measurement problems described by Friedman and Schwartz and of actual price increases on the lifting of price controls most likely impacted the unusual course of prices in this economic cycle.

Q2 1948, several months later. The cyclical peak lagged the first reserve ratio increase and the fall in the money supply by 10 months, and it lagged the housing decline by two quarters.

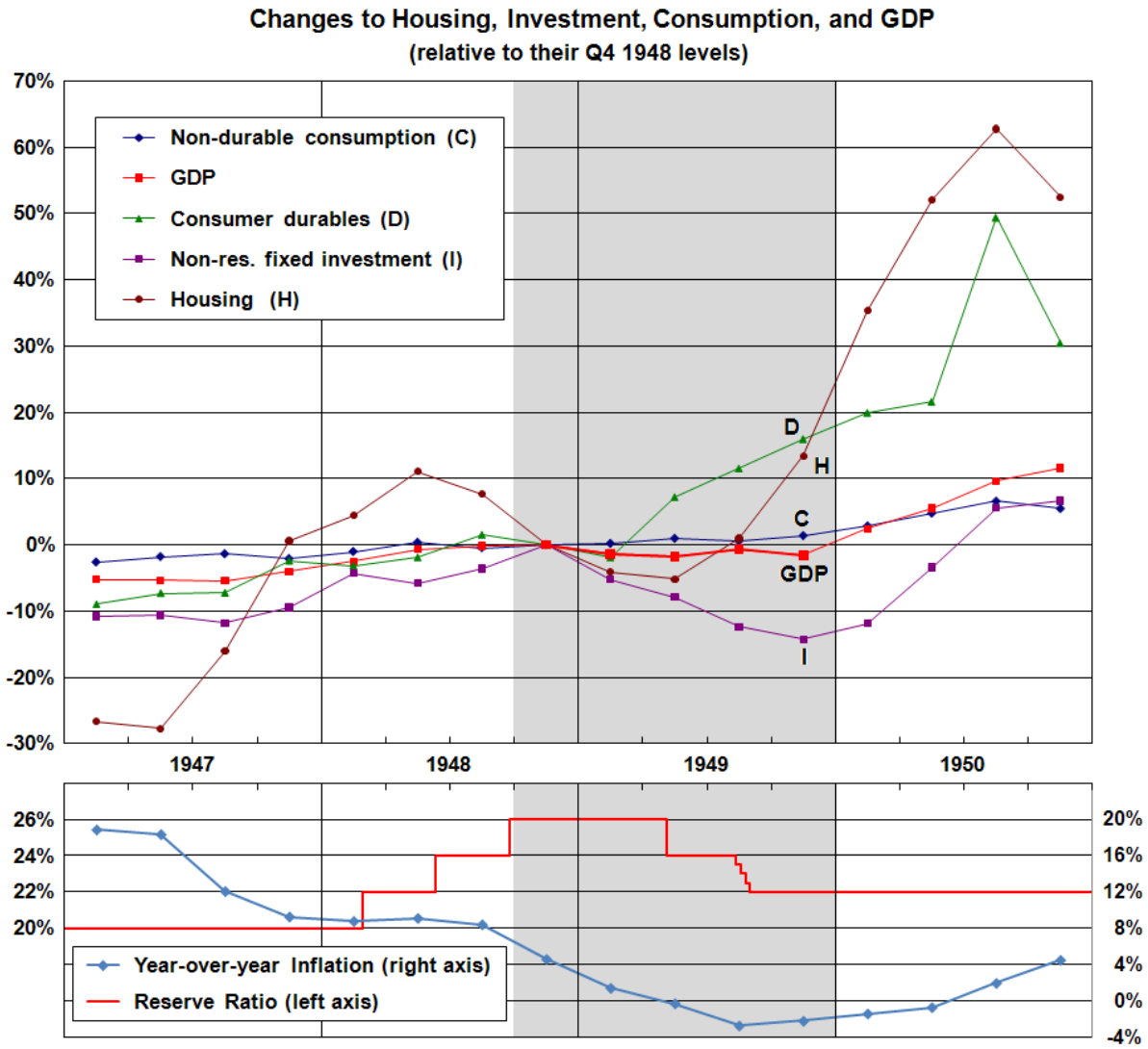


Figure 7: Percentage changes to GDP and its major components before, during, and after the 1948-49 recession. Bank reserve ratios were increased once in each of the first three quarters of 1948. Housing peaked in Q2 1948 and continued to fall until the reserve ratio was lowered in May 1949.

With inflation rapidly falling and largely contained and a recession underway, the Fed lowered the reserve ratio two percentage points on May 5, 1949 and then lowered it one half percentage point four times between August 11 and September 1, 1949. Housing and durables began to recover soon after the first reserve ratio reduction and the recovery began in Q1 1950 as housing surged. As in every post-war recession except 1980, housing and durables responded first, and responded most, to monetary easing.

2.2.2 The 1953-54 Recession

The 1953-54 recession was the fourth largest of the post-war era (also measured by its average depth times duration). A substantial and sharp decline in housing reached bottom in Q1 1952, five quarters before the cyclical peak, and then remained near its new lower level for the next eight quarters. That decline might be considered a false indication of a recession, and the recession that did follow five quarters later might be considered a recession that was not led by a housing decline. But the $37.0 billion decline in housing between its peak in Q3 1950 and its trough in Q1 1952 was swamped by the $173.7 billion increase in national defense expenditures during the same period. Had defense expenditures remained fixed at their level in Q2 1950 (the last quarter before hostilities began), GDP would have peaked in Q4 1950 and declined from Q1 1951 through Q2 1952, just after housing reached its trough.

After the outbreak of the Korean War, households anticipated another long war and the possibility of wartime restrictions on durable goods. Purchases of durables surged 24.0 percent between Q2 and Q3 1950. Inflation once again shot up, this time from -1.4 percent in Q1 1950 to 8.9 percent in Q1 1951. The year-over-year inflation that we show understates the surge in inflation late in 1950: the annualized 3-month CPI increase reached 17.2 percent on February 1, 1951.

The Fed responded with an increase to the reserve ratio, as it had in 1948, this time from 22 percent to 24 percent, in two equal steps on January 11 and January 25, 1951. Wage and price controls, instituted on January 26, 1951, may have contributed to the slowdown of inflation, but did not stop it. Although housing had already been falling, the housing decline accelerated after the increase in the reserve ratio. Inflation peaked three quarters after housing peaked, in spite of the large increase in defense expenditures that sustained GDP growth for two more years. In most post-war economic cycles, inflation has developed as housing leveled off, and then subsided as housing contracted. The same pattern occurred in this period, but it is surprising that in this episode inflation subsided during the housing contraction even as the government generated a large fiscal stimulus – defense expenditure increased 4.7 times as much as housing declined – in its effort to contain communist expansion in the Korean peninsula. Even in this unusual episode, in which aggregate output continued to rise due to fiscal stimulus, the inflation cycle was more closely related to the housing cycle than to movements in aggregate output.

Defense expenditure continued to increase for five quarters after housing reached its trough, in effect forestalling the recession until the July 1953 Korean armistice. Defense expenditures

fell substantially in the seven quarters following the armistice, from 14.9 percent of GDP in Q2 1953 to 11.7 percent of GDP in Q1 1955. Over the course of the recession, GDP fell less than the total decline in defense expenditures. Many components of private expenditure fell only slightly during the recession, but – in a typical pattern – the recession only ended when housing began to increase rapidly in the middle of 1954.

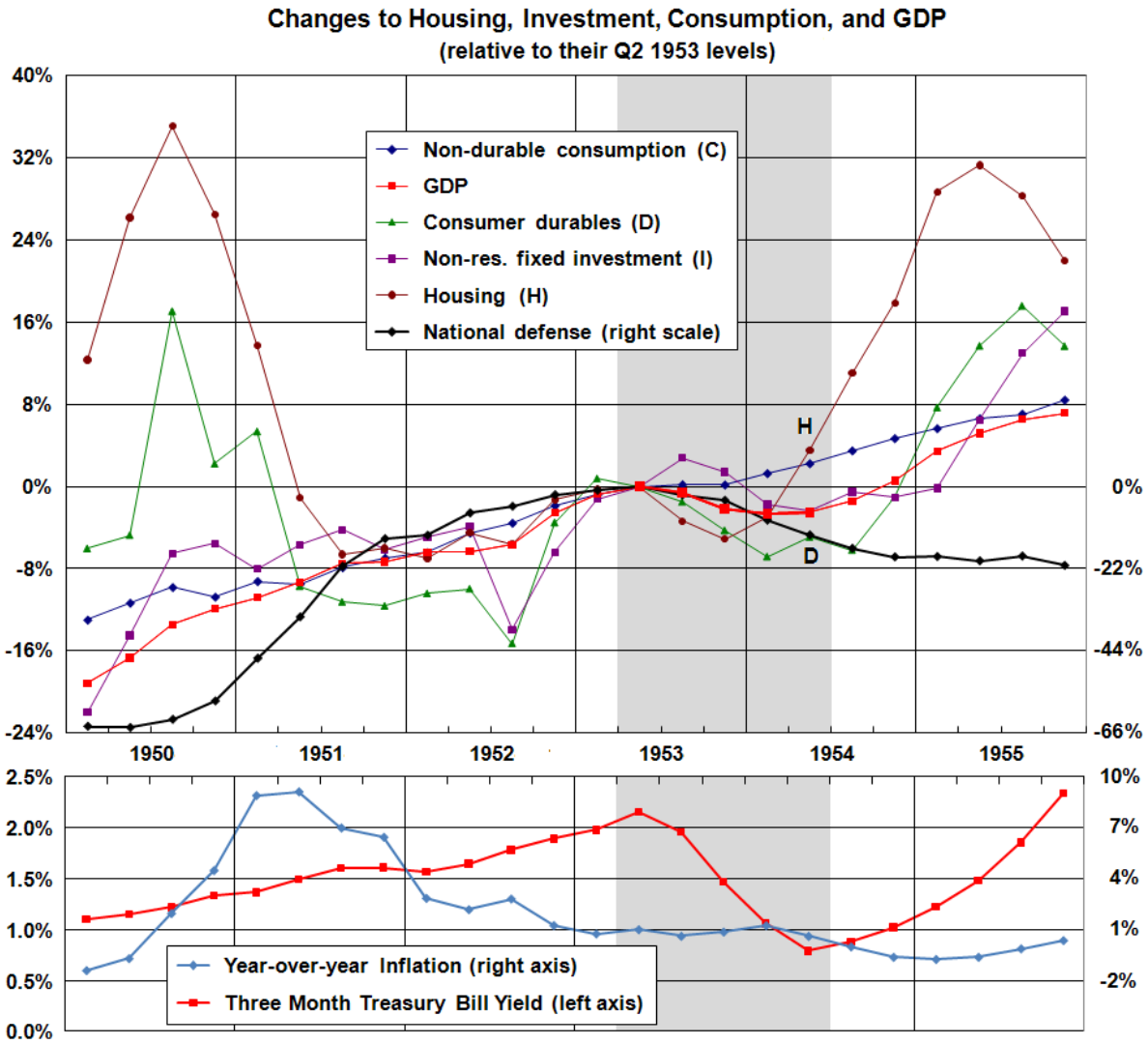


Figure 8: Percentage changes to GDP and its major components before, during, and after the 1953-54 recession.

2.2.3 The 1957-58 Recession

The 1957-58 recession was the fifth largest post-war recession. It was the deepest of the post-war era (slightly deeper than the Great Recession), but unlike the Great Recession, it was short, the recovery from it was sharp, and housing responded quickly and substantially to a

reduction of the effective federal funds rate from an average of over 3 ¼ percent in Q4 1957 to under 1 percent in Q2 1958. In the five quarters after the trough of the recession GDP increased 10.2 percent, an 8.1 percent annual growth rate.

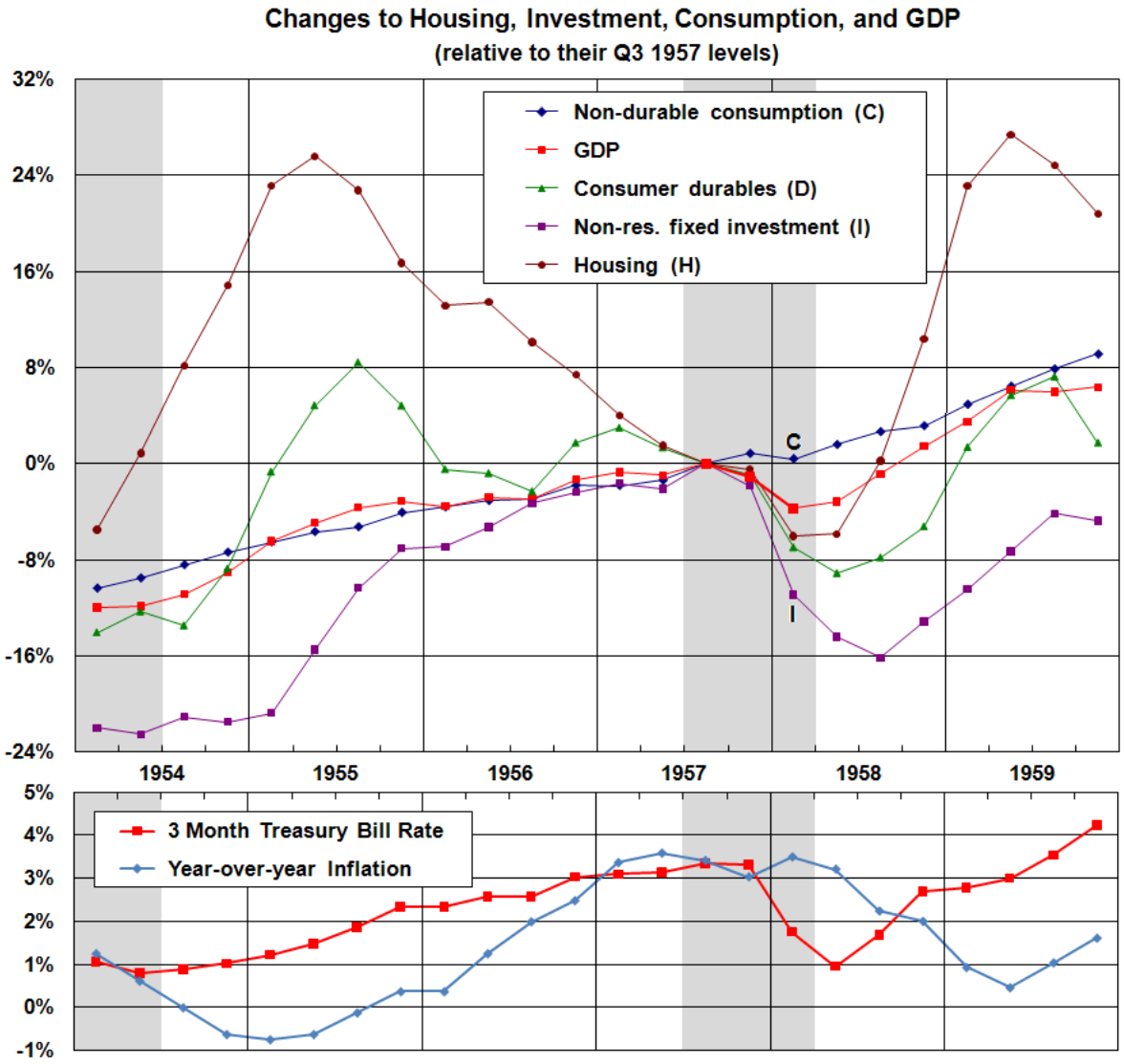


Figure 9: Percentage changes to GDP and its major components before, during, and after the sharp recession in 1957-58.

When investment peaked in Q3 1957 at the peak of the economic cycle, the sum of durables and housing had already declined in seven of the previous eight quarters, and their $48.5 billion decline at that point exceeded the $43.9 billion investment decline over the course of the recession that followed. From peak to trough, the $73.8 billion decline in housing plus durables was 68.1 percent larger than the investment decline, and the timing of the declines reinforces the idea that the household expenditure cycle forces the investment cycle.

In eight of the nine quarters prior to the start of the recession, housing fell. Expenditure on consumer durables fluctuated before the recession, but they had fallen 7.8 percent in the two years prior to the cyclical peak. By contrast, non-residential fixed investment increased in eight of the nine quarters prior to the recession. During and after the recession, investment fell 16.2 percent, which was the largest percentage decline in any post-war recession prior to the 2001 recession. Yet this large investment decline wasn't as large in percentage terms as the decline in housing, which fell 30.4 percent.

As in the period preceding the 1973-75 recession and the 1980 and 1981-82 recessions, inflation was low while housing surged from Q1 1954 until Q2 1955, and only began to rise as housing fell during before the recession. As inflation rose in 1956, monetary policy was gradually tightened and housing continued to decline. Inflation peaked eight quarters after housing began to decline, a delay one quarter longer than in the 1980 recession and the 1973-75 recession, and – as in the 1973-75 and the 1980 recessions, and as we'll see, in the 1969-70 and 1990-91 recessions – most of the inflation reduction came after the recession ended.

2.2.4 The 1960-61 Recession

In the 1960-61 recession, as in all post-war recessions other than 2001, the housing decline preceded the investment decline. As in all recessions other than 1948-49 and 2001, the fall in housing plus durables was considerably larger than the investment decline. Housing had already declined $16.6 billion when investment peaked in Q2 1960 one quarter after the cyclical peak. From the housing peak to trough, its $23.3 billion decline was 30.2 percent larger than the $17.9 billion investment decline. From its peak to trough, the sum of housing and durables fell $47.3 billion, which was over 2.6 times as large as the investment decline.

The 1960-61 recession was mild, both in depth and duration, and may have been avoided altogether had the monetary tightening of 1959 been discontinued several months earlier. Recovery from the 1957-58 recession was – like the two previous recessions – very sharp. The strong recovery led to some concern that inflation might begin again, as it had in 1956 and early 1957 at the end of the 1954-57 expansion. The Federal Reserve increased the federal funds rate from under 0.7 percent in July 1958 to an average of just over 3 percent in Q2 1959 when housing peaked.

Although housing peaked in Q2 1959, the Fed continued raising the federal funds rate until October 1959 when it reached 4 percent, where it was kept until May 1960. By that time a recession had taken hold, with a large plunge in housing from Q1 to Q2 1960. The Fed responded with a looser monetary policy starting in Q3 1960. By Q2 1961 the federal funds

rate was below 2 percent; the sharp recovery in housing began the next quarter and continued for eleven quarters, yet inflation remained low until the late stage of the expansion when it began to rise in 1968 and early 1969.

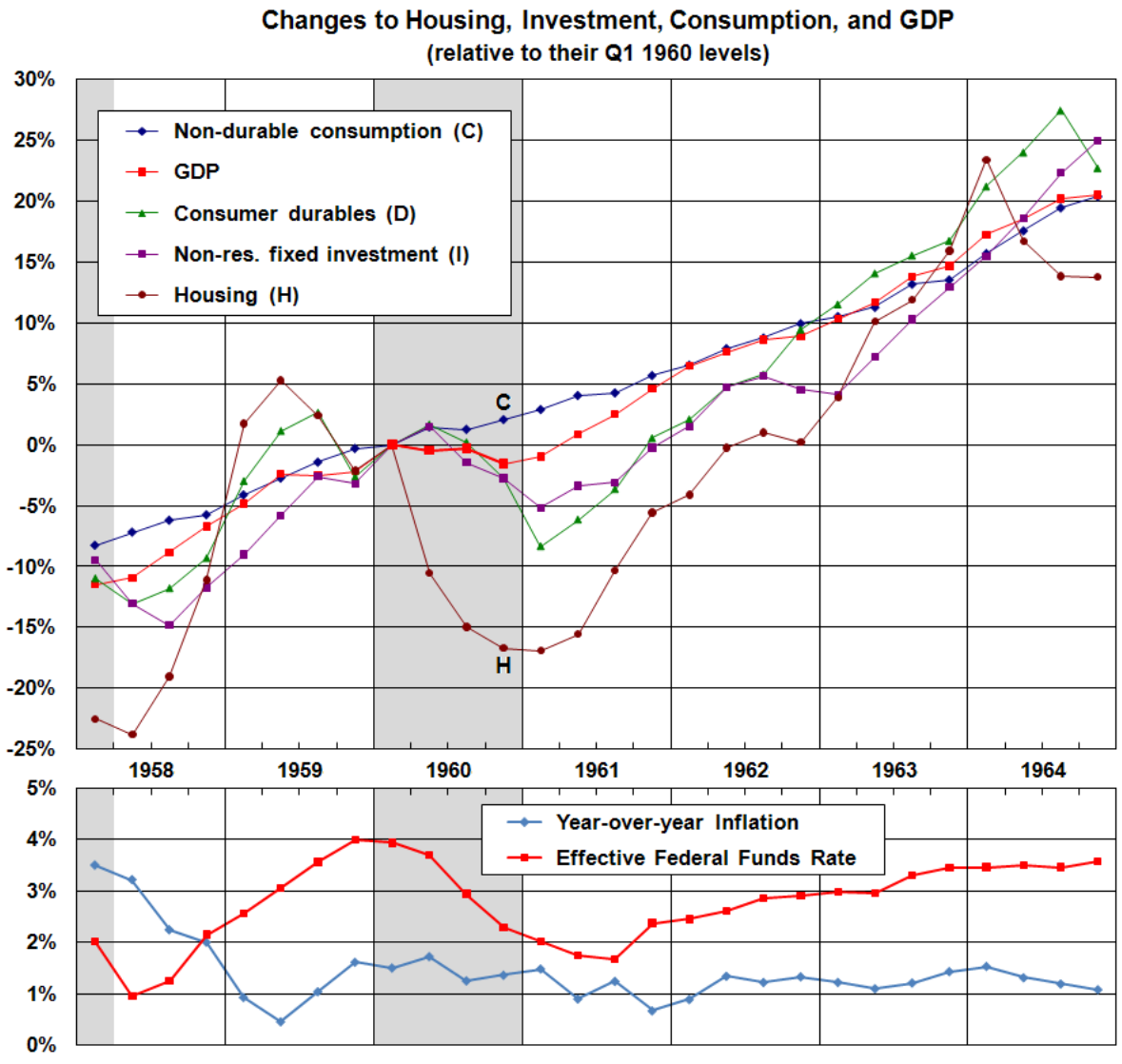


Figure 10: Percentage changes to GDP and its major components before, during, and after the 1960-61 recession.

2.2.5 The 1969-70 Recession

In the 1969-70 recession housing and durables began to decline before the recession, and both dropped more sharply than investment after the recession began. From peak to trough housing fell 20.2 percent, durables fell 11.3 percent, and investment fell 5.1 percent. Housing plus durables fell $59.0 billion, 2 ½ times more that the $23.3 billion investment decline.

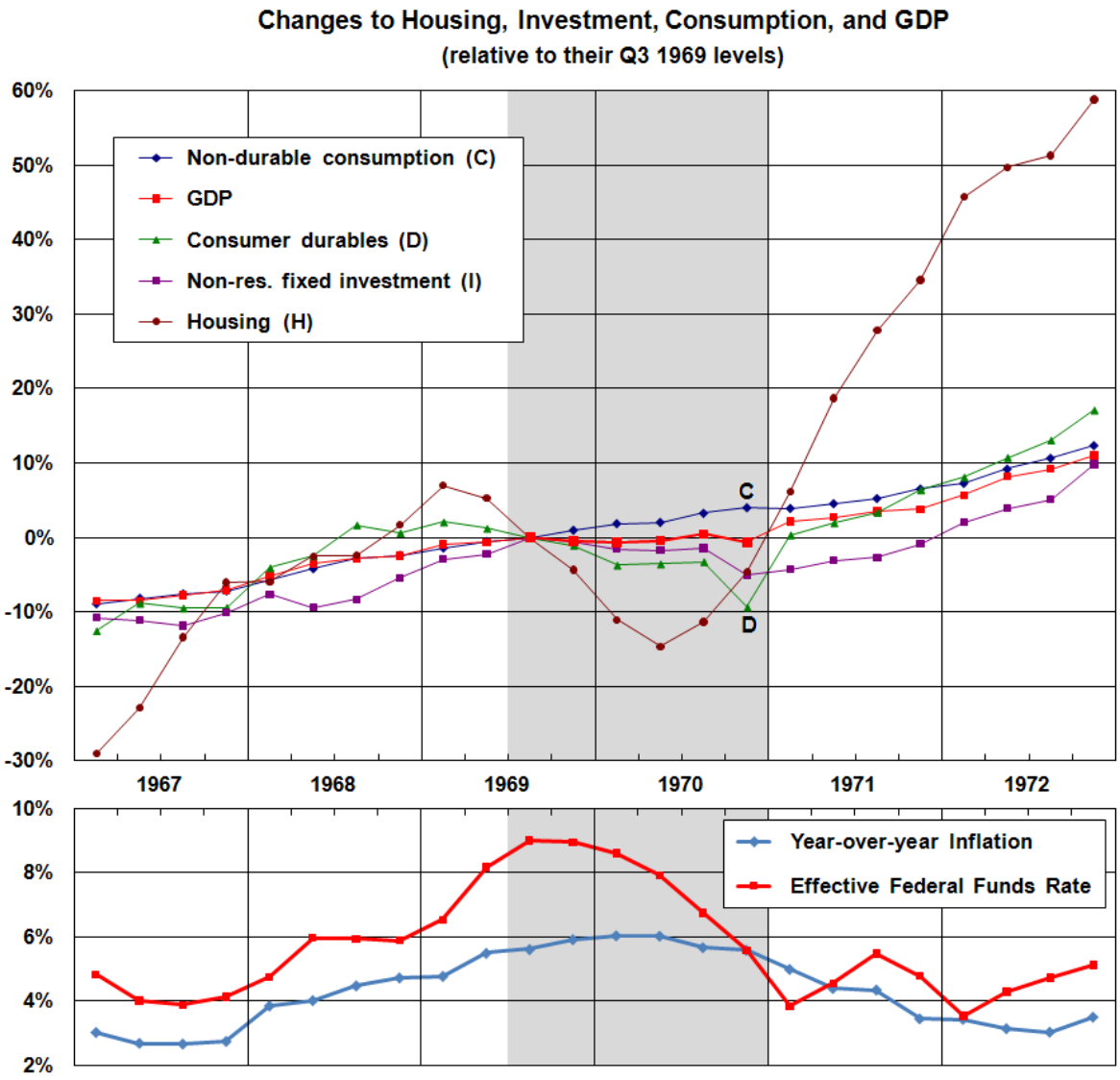


Figure 11: Changes in GDP and its major components before, during, and after the 1969-70 recession.

This mild recession demonstrates interactions between inflation, monetary policy, housing and durables expenditures, and investment, since monetary policy appears to have initiated changes in all of the other variables. When inflation approached 4 percent in Q1 1968 (for the first time since Q4 1951), the Fed responded by tightening monetary policy in the first half of 1968: housing responded predictably to the change, peaking three quarters after the increase. Inflation was rising steadily but moderately throughout the period of monetary tightening. As the effective federal funds rate and three month Treasury bill rates increased in the middle of 1969 to their highest levels since the Treasury-Fed accord, inflation continued to rise, reaching 5 percent for the first time since the end of 1951 in Q2 1969. Housing reacted to tightening monetary policy, declining 20.2 percent between Q1 1969 and Q2 1970. Three quarters after

the housing decline began, monetary policy was gradually eased, housing reached its trough two quarters after the easing began, and inflation peaked when housing reached its trough.

2.2.6 The 1990-91 Recession

As is typical of post-war era recessions and the Great Depression, housing led the 1990-91 recession. Housing peaked fourteen quarters before the recession began, fluctuated but fell moderately over the next nine quarters, and then declined more sharply during the five quarters before the cyclical peak in Q2 1990. Durable goods and investment both peaked three quarters before the recession began. From their peaks to their troughs, housing fell 34.8 percent, investment fell 13.4 percent, and durable goods declined 12.8 percent.

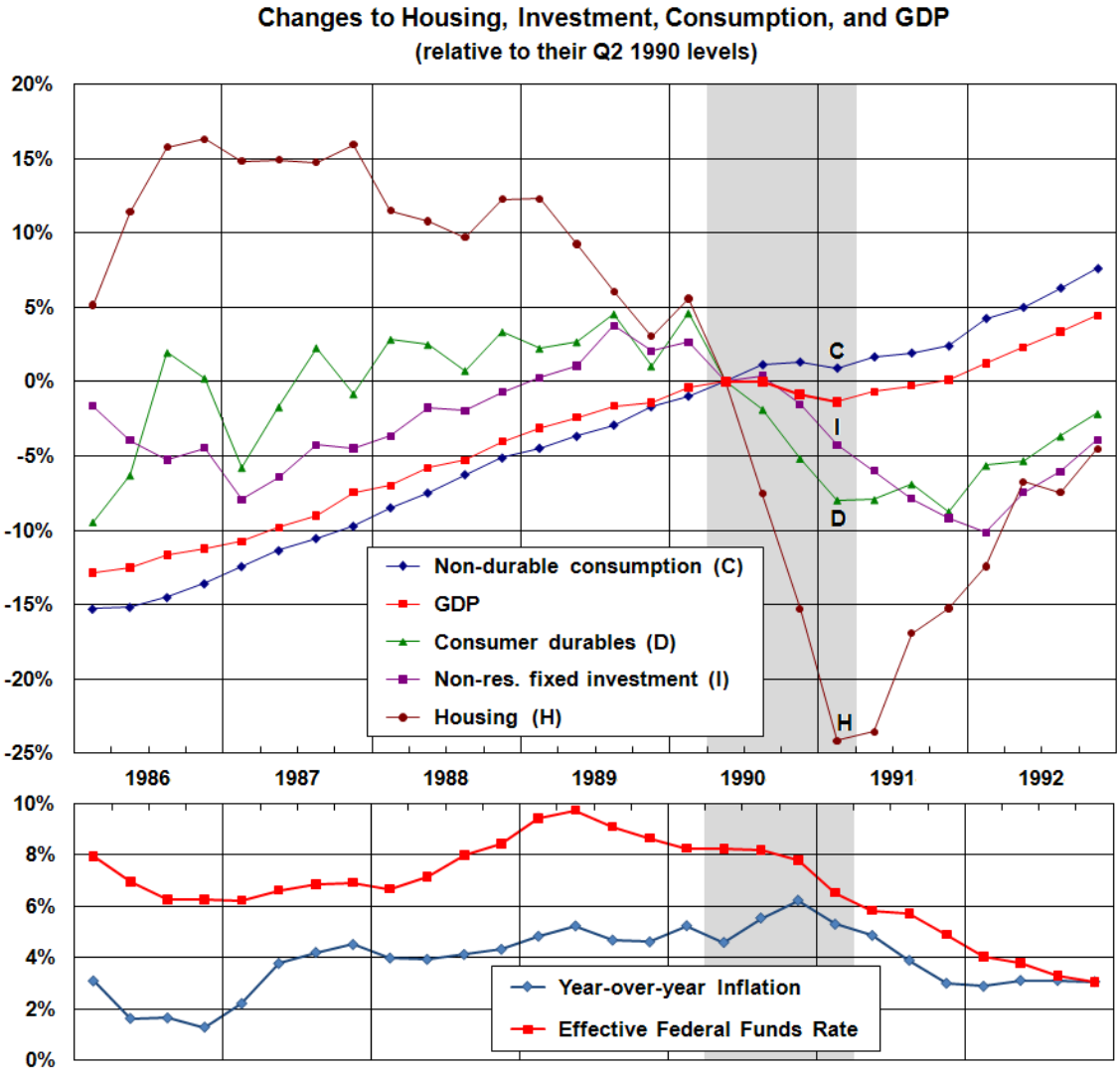


Figure 12: Percentage changes to GDP and its major components before, during, and after the 1990-91 recession.

In Q2 1986, fourteen quarters into the expansion, the federal funds rate was below 7 percent for the first time since 1978 and inflation was below 2 percent for the first time since 1965. Even with the relatively loose monetary policy, housing flattened out at the end of 1986 and remained flat through 1987 while inflation began to rise. Just as inflation was developing in early 1987 the federal funds rate was increased modestly, and the Fed was able to maintain the expansion and avoid inflation well into 1988. By late 1988 and early 1989, inflation was rising again and housing was fluctuating but overall housing was down from its peak in Q4 1986. When the Fed tightened monetary policy in the first half of 1989, housing began a sharper decline. The Fed responded with a slight easing in the second half of 1989, which it maintained through 1990 while the recession was developing. As we've seen in several other recessions – 1970, 1974, 1980, and 2008 – inflation peaked during the recession.[14] The Fed began a sharper easing of monetary policy in Q1 1991, just as inflation began to subside. A rapid housing recovery began in two quarters later in Q3 1991 as inflation continued to subside.

2.2.7 The 2001 Recession

The 2001 recession was clearly the anomaly of the post-war era, although it was more concordant with the common belief that business investment drives the economic cycle. Investment reached a plateau between Q2 and Q4 2000 and started to decline in Q1 2001. (The crash of the dotcom stock bubble started in Q1 2000 and extended through Q4 2002.) The Federal Reserve's concern about investment spending was revealed in its March 20, 2001 FOMC Press Release, stating that "persistent pressures on profit margins are restraining investment spending." The Fed responded as the slowdown developed by lowering the effective federal funds rate from 6.5 percent at the end of Q4 2000 to 5 percent by the end of Q1 2001. The federal funds rate was reduced another percentage point in each of the three quarters of the recession between Q2 2001 and Q4 2001, reaching 1.77 percent by the end of 2001. Even with this rapid reduction in the federal funds rate, investment continued to decline. During the first three quarters of 2002, the federal funds rate remained around 1 ¾ percent,

[14] Inflation peaked at 3.73 percent in March 1957, five months before the recession began, in the middle of the recession ten months later inflation was still at 3.62 percent. After the recession ended, inflation fell until it was under ½ percent in Q1 1959, then rose until it reached a new peak in Q2 1960 during the 1960-61 recession. Inflation peaked just before the 2001 recession in Q3 2000 at 3.5 percent, but in the first quarter of the recession it was still at 3.4 percent. Inflation has generally peaked during or just before a recession. The only exception was the 1981-82 recession, but even in this case, if we consider the double dip as one recession interrupted by a brief monetary stimulus from May to September 1980, then the course of inflation between 1978 and 1983 followed the standard pattern.

but investment continued to fall. The housing recovery failed to deliver its usual stimulation to the recession recovery. In the four quarters following the end of the recession, it increased only 7.8 percent, far below its 28.3 percent average increase in the four quarters after the previous nine post-war recessions.

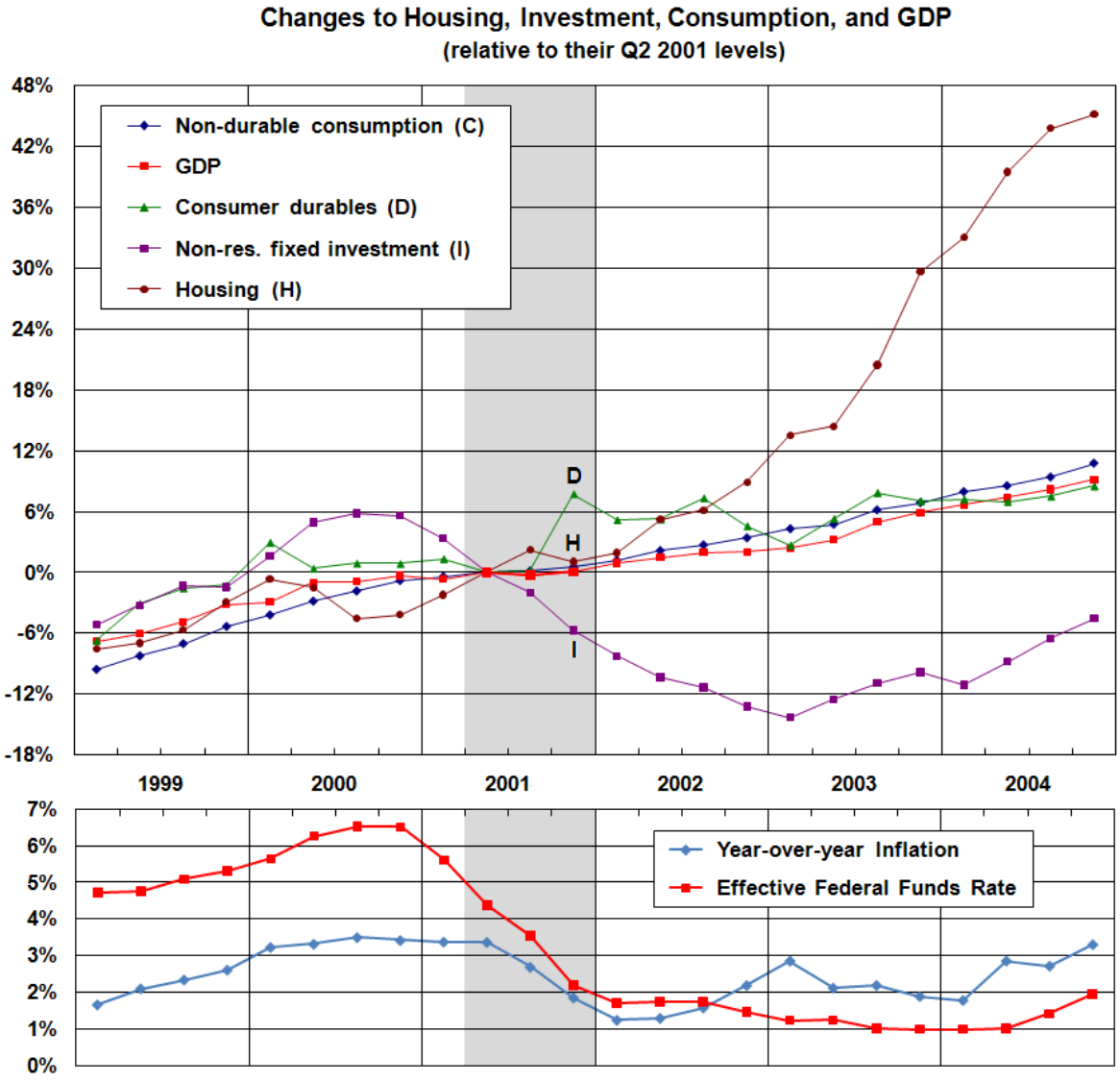


Figure 13: Percentage changes to GDP and its major components before, during, and after the 2001 recession.

In its November 2002 meeting minutes the FOMC lowered the federal funds target rate to 1 ¼ percent because "the generally disappointing data since the previous meeting ... pointed to a longer-lasting spell of subpar economic performance than they had anticipated earlier" and they concluded that "a relatively aggressive easing action could help to ensure that the current

soft spot in the economy would prove to be temporary and enhance the odds of a robust rebound in economic activity next year."

Housing had been growing modestly while investment declined, though not enough to offset reduced investment. On June 25, 2003 the FOMC lowered the federal funds target rate to 1 percent, noting in its Press Release that the economy "has yet to exhibit sustainable growth" and "with inflationary expectations subdued, the Committee judged that a slightly more expansive monetary policy would add further support for an economy which it expects to improve over time." In Q2 2003, investment turned the corner and began to increase, but the federal funds rate remained at 1 percent for the next year. Investment growth was slow, even with the expansionary monetary policy, but housing surged 21.9 percent in the four quarters when the federal funds rate was 1 percent, from Q2 2003 to Q2 2004.

Although this 21.9 percent increase was large, it was well below the 28.3 percent average increase in housing during the first four quarters following the nine post-war recessions between 1948-49 and 1990-91, and this 21.9 percent increase came between the sixth and the tenth quarters after the recovery began. This suggests to some extent that the Fed didn't create the housing bubble through its lax monetary policy: it simply lowered short-term interest rates to a level that generated a recovery of residential investment that approached the housing recovery in other post-war recessions. Cross-country evidence in Bernanke (2010) supports this view. He finds that countries with low monetary policy rates (relative to the Taylor rule) had house price increases barely higher than countries with higher policy rates. He also replicates analysis in Fatás et al. (2009) which shows that countries with large trade deficits typically had high house price appreciation. A country finances a trade deficit largely by issuing or selling financial instruments; during the U.S. housing bubble, mortgage securities formed a large portion of the instruments issued to finance our trade deficits. A significant portion of the funds that supported our housing bubble came from foreign investors, and many of the mortgages that formed these securities were issued to borrowers in weak financial condition who eventually were unable to meet the terms of their loans. Thus, the large flow of foreign investment into the mortgage market and a lack of regulatory oversight of mortgage underwriting practices combined as significant factors in the formation of the housing bubble.

From the end of June 2004 until the end of June 2006, the Fed raised the federal funds rate ½ percentage point per quarter. Even so, housing increased for six more quarters, as investment funds sought out the high returns of mortgage securities rather than the anemic returns of short-term Treasury bills. The combination of massive foreign investment, expansionary

monetary policy, and loose mortgage underwriting standards that invigorated housing kept the 2001 recession the mildest of the post-war era, yet it also set the stage for the Great Recession.

3. Summary of GDP component changes

The graphs in this paper show that in recessions, housing typically declines first. Table 1 shows that its declines have been substantially greater in percentage terms than investment declines. Another way to consider whether housing or investment is more clearly associated with recessions is by looking at the correlation between the severity of the recession and the extent of housing declines, and then comparing that to the correlation between the severity of the recession and the extent of investment declines.[15] The correlation between recession severity and housing contraction is 0.796; between recession severity and investment contraction it is 0.313. The results aren't much changed if we use recession depth rather than recession severity in the correlations. The correlation between recession depth and housing contraction is 0.751; between recession depth and investment contraction it is 0.202. Serious recessions are more clearly associated with large declines in housing than with large investment declines.

In the last two columns of Table 1, we examine the growth of housing and of investment in the first four quarters following each post-war recession. Housing recovered more rapidly than investment in all recessions except the abortive recovery in between Q3 1980 and Q3 1981. The average growth of housing in the first four quarters of recovery has been 24.6 percent, whereas the growth of investment has been only 4.7 percent.

Housing is a much smaller percentage of GDP than investment. Between Q1 1947 and Q1 2010, it has averaged only 3.0 percent of GDP, whereas investment has averaged 10.7 percent of GDP. Yet – as shown in table 2 – in seven of the eleven post-war recessions, the dollar decline in housing has exceeded the investment decline. The dollar decline in housing plus

[15] The maximum percentage decline in GDP during a recession is the standard measure of severity. We rank severity based on the number of quarters that the economy is below peak output, times the average percentage that GDP is below its peak during the period when output is below the peak. The depth of a recession overstates the impact of a short, sharp recession like 1957-58 and understates the effect of a longer, shallower recession like 1981-82. The order of post-war recessions differs only slightly in the two measures. The 1973-75 and the 1981-82 recessions are reversed, as are the 1948-49 and the 1980 recessions. The other difference is that the 1957-58 recession was the deepest of the post-war era, but it was only the fifth largest under our measure of severity. A third method would be to examine deviations between GDP growth rates and trend growth rates, as in Leamer (2007). Although this has conceptual advantages, we decided against it because it would render the reference points for our measurements of changes in GDP components less transparent.

durables exceeded the investment decline in another recession. In the combined double dip recessions in 1980 and 1981-82, the sum of housing and durables declined $201.7 billion, substantially more than the $131.5 billion decline in investment. This leaves two post-war recessions, 1948-49 and 2001, in which investment declines dominated the downturn.

Recession	Depth	Ave. depth times length	Housing change	Durables change	Investment change	Housing recovery	Investment recovery
2007-09	–3.66%	–3.87%	–77.1%	–18.0%	–22.5%	7.7%*	–2.2%*
1981-82	–2.87%	–3.31%	–36.0%	–8.8%	–15.8%	75.5%	4.9%
1973-75	–3.19%	–2.89%	–50.6%	–17.5%	–7.4%	19.4%	1.1%
1953-54	–2.65%	–2.35%	–31.1%	–7.5%	–5.0%	26.8%	9.1%
1957-58	–3.73%	–2.20%	–30.4%	–16.2%	–16.2%	31.3%	8.3%
1948-49	–1.75%	–1.34%	–14.6%	–3.4%	–14.3%	34.4%	24.4%
1980	–2.23%	–1.18%	–40.6%	–16.8%	–5.0%	–2.3%	8.6%
1960-61	–1.58%	–0.84%	–21.1%	–10.7%	–6.6%	13.4%	7.0%
1990-91	–1.36%	–0.80%	–34.8%	–12.8%	–13.4%	15.4%	–6.2%
1969-70	–0.63%	–0.43%	–20.2%	–10.9%	–5.1%	41.1%	4.4%
2001	–0.27%	–0.07%	–1.1%	–2.9%	–19.0%	7.8%	–8.0%
Average	–2.17%	–1.73%	–32.5%	–11.4%	–11.8%	24.6%	4.7%

* Recovery from the 2007-09 recession is based on 3 quarters adjusted to annual rates.

Table 1: This table shows two measures of the severity of post-war recessions, changes in housing, durables, and non-residential fixed investment from their pre-recession peaks to their troughs, and the percentage changes in housing and investment in the first four quarters of the recovery.

Magnitudes of declines tell only part of the story. We've shown that housing declines preceded investment declines in the Great Depression and in every post-war recession except 2001. Green (1997, p. 266) examines the hypothesis that housing causes recessions and recoveries more formally, with Granger causality tests. He finds that "residential investment appears to Granger cause GDP … while non-residential investment appears not to Granger cause GDP. Thus residential investment seems to lead the nation into and out of recession, while non-residential investment does not. The question remains as to why this should be true." Ten years later, Leamer (2007, p. 193) suggests why this might be: "If we choose to stimulate [housing construction] today, tomorrow our ability to stimulate will be less." This is a reasonable hypothesis, and evidence suggests that the quantitative impact of housing stimulation is large. In Q1 2006, residential construction reached $4,446 per household; by Q2 2009 it had fallen 78.0 percent to $979 per household. In earlier economic cycles, large

changes also occurred. In Q1 1973 residential construction reached $3,031 per household, then fell 52.9 percent to $1,429 in Q2 1975. A new cycle began almost immediately, with an increase to $2,839 per household in Q4 1978, and a long 68.7 percent decline to $1,173 in Q2 1982. As we've seen, monetary policy stimulates housing construction and adds temporarily to output, in amounts that add meaningfully to household income, even before considering multiplier effects.

Recession	GDP	Housing	Durables	Housing + Durables	Investment
1948-49	–$29.5	–$11.8	–$5.8	–$14.4	–$27.2
1953-54	–$59.8	–$37.0	–$70.2	–$105.9	–$5.1
1957-58	–$97.7	–$35.1	–$41.3	–$73.8	–$43.9
1960-61	–$45.1	–$23.3	–$27.0	–$47.3	–$17.9
1969-70	–$26.8	–$26.8	–$43.0	–$59.0	–$23.3
1973-75	–$157.8	–$103.8	–$84.1	–$177.2	–$40.7
1980	–$131.9	–$88.8	–$90.8	–$168.7	–$29.6
1981-82	–$163.8	–$55.0	–$42.8	–$86.3	–$131.5
1990-91	–$109.4	–$77.4	–$92.4	–$148.0	–$119.5
2001	–$31.2	–$12.0	–$30.4	–$23.4	–$275.4
2007-09	–$489.7	–$392.3	–$202.0	–$579.6	–$358.2
TOTALS	–$1342.7	–$863.3	–$721.8	–$1482.6	–$1072.3

Table 2: This table shows total GDP declines (in billions of 2005 dollars) during the eleven post-war recessions. It also shows declines in housing, durables, and investment. The decline in housing plus durables is slightly lower than the decline in housing plus the decline in durables in each recession, because the peaks and troughs of the declines in these two series differ slightly.

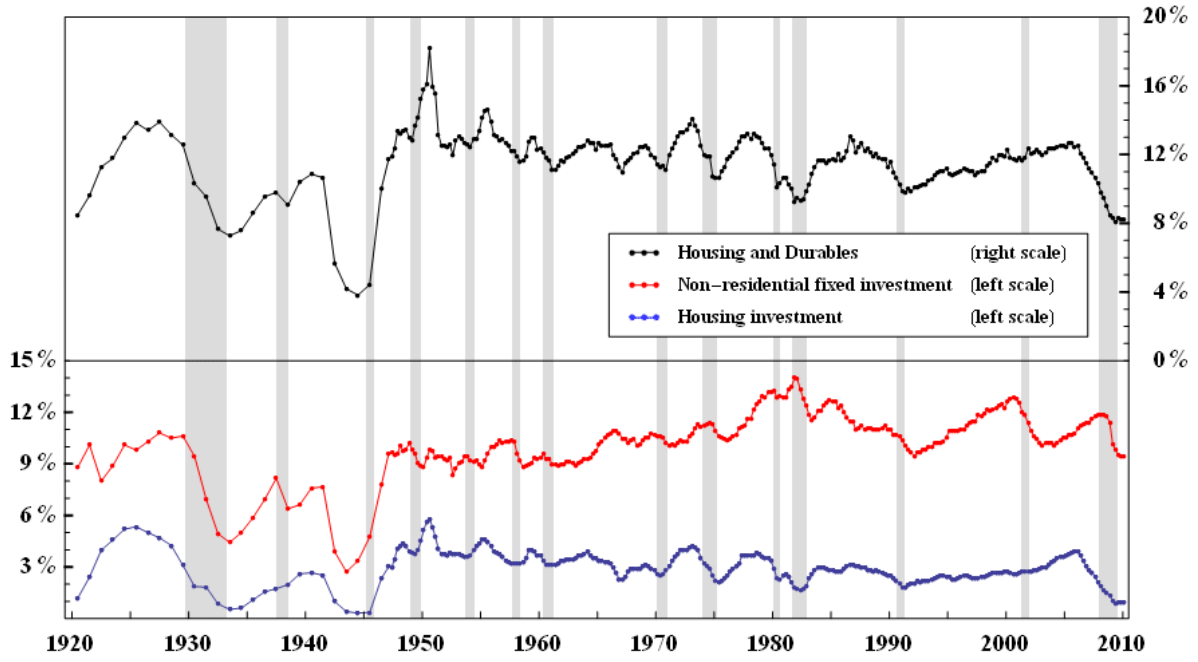
Between 1997 and 2007, large trade deficits were financed by selling financial instruments to our foreign suppliers, and a large portion of their investment found its way into U.S. housing markets, which allowed us to sustain a housing construction boom for longer than usual.[16] But housing does react to and correct for excessive and prolonged stimulation. Given the large role of housing fluctuations in economic activity, a better approach to economic stabilization would include an effort to stabilize housing rather than attempts to work through periods of weak economic growth with esoteric methods – such as large foreign capital inflows provided to

[16] The $773.0 billion current account deficit in 2006 amounted to $6,758 per U.S. household, based on the census bureau estimate of 114,384,000 households in the U.S. This is a serious financial stimulus program, even if it brought to us by the invisible hand.

weak borrowers through relaxed underwriting standards – to stimulate housing and the economy.

4. Conclusions

The Great Depression, the typical post-war recession, and the current 'Great Recession' followed similar sequences: housing increased rapidly during the expansion but fell before the general contraction began. In many recessions, durable goods expenditures began to fall at the same time as or soon after housing fell. Firms' fixed investments have fallen in thirteen of the past fourteen downturns, yet a downturn in investment has served as a leading indicator in only two of the past fourteen downturns. Even in one of these two, 1990-91, housing peaked eleven quarters before investment. The other exception, in 2001, was associated with a massive capital inflow into the mortgage market and extremely weak underwriting standards that sustained the housing boom through the recession.



Shaded areas indicate the depression and the last 13 U.S. recessions.
Sources: See footnote 4.

Figure 14: Expenditure on housing, on investment, and on housing plus durables as percentages of GDP over the past 90 years.

Beyond its poor performance as a leading indicator, investment has often been a lagging indicator. In five of eleven post-war recessions, investment rose for at least one quarter after the recession began. In 1953, 1960, and 1981 investment peaked one quarter after the recession began. In 1974, investment peaked three quarters after the recession began. Even in

2008, investment peaked two quarters after the recession began: by that time, housing had fallen for nine consecutive quarters.

Housing has led eleven of the last fourteen recessions whereas investment has only led the declines in 1990 and 2001. Magnitudes of movements in housing reinforce its role in what is universally referred to as the "business cycle." During post-war recessions the average percentage decline in housing – at 32.5 percent – was 2 ¾ times as large as the 11.8 percent average decline in investment. When we aggregate households' interest rate sensitive expenditure on housing and durables, their declines (in dollar amounts) have been 38.3 percent larger than investment declines, and their timing strongly indicate that the investment cycle is a delayed response to downturns in interest rate sensitive elements of household expenditures.

Monetary policy has left a clear imprint on developments in the real economy. In the immediate aftermath of most recessions, housing expands more rapidly than any other component of GDP, and inflation falls. Through the first part of the expansion, housing increases and inflation remains low. In the latter part of expansions, housing ceases to respond to loose monetary policy, but inflation starts to develop. In response to developing inflation, the Fed tightens monetary policy in order to rein in inflation, housing begins a sharper decline, and the economy enters a recession. In most cases, declines in consumer durable goods expenditures begin to fall soon after the decline in housing, yet the decline in investment comes several quarters later, coincident with the start of the recession. Tightened monetary policy, and the general contraction that follows, eases inflationary pressures. As inflation subsides, the Fed returns to a looser monetary policy. At that point, housing begins a rapid resurgence, and the economy emerges from recession. As a recovery gains momentum, businesses respond to growing demand by increasing their capacity with investments in structures and equipment. This general pattern has played out in most post-war recessions, with only minor variations in the sequence of events. A genuine understanding of economic fluctuations must recognize these basic facts of household expenditure cycles and investment cycles.

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