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Implications of the Financial Crisis for Potential Growth:
Past, Present, and Future

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Abstract

The scale of the recent collapse in asset values and the magnitude of the recession suggest that activities connected to the increase in values over the 2002-07 period—notably, expansion of the financial markets, homebuilding, and real estate—were overstated. If this is true, aggregate U.S. economic growth would have been overstated, implying that previous rates of potential gross domestic product (GDP) growth may also have been overstated and that the trajectory of potential GDP may be slower going forward. Slowing growth in the finance, homebuilding, and real estate sectors could hold back aggregate growth. A detailed examination of these sectors' direct contributions to GDP, however, suggests that overstatements of past growth would likely not have made a large difference in recorded GDP growth. Slower growth in these sectors would have, at most, a moderate direct effect on aggregate economic activity. The recent experience's longer term effects on GDP would seem to stem largely from factors other than the retrenchment in these sectors.

Key words: potential growth, financial sector

<u>Introduction</u>

In a sense, the financial turmoil that has gripped the world's markets for the past two years reflects the realization that large amounts of capital were invested in assets whose returns were substantially less than anticipated.[1] A substantive portion of recent investment was in assets (such as U.S. and Spanish housing, or office space for investment banks) whose productivity has been found to have diminished, and large numbers of workers (in industries such as construction and finance) have been found to be in situations where their wages exceed the value of their marginal products. The resulting losses of values and incomes contributed to the sharp contraction of demand, and surely have deepened (if not created) the industrial world's recession. In light of these events, prior estimates of the physical returns on these assets and the marginal product of these workers could arguably have been overstated.

Looking beyond the current turmoil, does the recognition that resources may have been "misallocated" in recent years imply that the growth of output was overstated? Will potential and actual output growth in the future be directly impeded by any contraction in finance? One simple calculation might illustrate the potential magnitude of these concerns. Between 2000 and 2006 financial corporate profits in the U.S. more than doubled, rising from $196 billion (2.0% of nominal GDP) to $462 billion (3.5% of nominal GDP). [2] This profits surge occurred in a period in which the U.S. accounts report that the real value-added of the financial sector value rose, on average, around 2 ¼ percentage points more than that of overall real GDP.

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[1] For the purposes of this paper it is irrelevant whether those low returns reflected draws from the tail of the a priori distribution, or draws closer to the central tendency of a distribution with different moments than that assumed at the time of the investment.

[2] These are pre-tax earnings; reported gains are adjusted to remove nonoperating profits, most importantly, in the case of financial firms, capital gain and losses made in the course of trading. The July 31 revision of the National Income and Product Accounts did report a marked downward adjustment (of around 20 percent) to the estimate of aggregate domestic financial corporation earnings for 2007, but earlier years were much less noticeably affected.

A natural presumption would be that the growth in the real output of the sector and the surge in earnings were linked; that the increase in profits largely reflected the increased contribution of the sector to overall GDP growth.   However, the scale of the collapse in values in securities markets over the past few years could suggest that the growth of financial output was overstated in the earlier period. Even in calmer times, the output of financial industries is one of the most difficult to measure, with significant problems connected to both the determination of nominal output and the estimation of price indexes (Bosworth and Triplett, 2004), and those difficulties were arguably heightened when financial innovations were accelerating, perhaps working to exaggerate the expansion of the sector's output. Mismeasurement could further suggest that the increase in the financial profit share largely reflected a diversion of productive resources rather than a return to increased productivity. A reduction in estimates of the past growth of financial output may help to raise concerns about the growth of U.S. economic capacity. A reduction of past measured real growth, with no change in employment and inflation, could suggest a reduction of past potential.

In addition to the rapid growth in finance was an expansion in real estate output; as a recent study notes, on an industry basis growth in the combined FIRE-finance, insurance and real estate-sector accounted for about one-fourth of the expansion in the U.S. GDP in this period (Barrera, Estevao, and Keim, 2009).   Home purchases and single-family homebuilding (which are counted primarily as output of the construction, rather than of the real-estate industry) reached record highs in the middle of this decade, and the subsequent collapse in these activities led and accentuated the recession. While the estimation of real construction output (especially single-family housing) generally raises fewer concerns than those that arise for financial sector output, a plausible argument can be made that the growth of the housing stock in the U.S. could have been overstated, and thus also the ongoing growth of shelter services (a significant component of U.S. GDP).

A reduction of potential growth in the past has implications for the future. Since potential growth is likely inertial, a downgrading of past potential growth suggests that we might reduce our estimates of potential growth for the near future. In turn, this suggests that monetary and fiscal policymakers might reduce their real growth objectives, in order to avoid increased inflation: Inflation increases usually lag accelerated output, so one may erroneously think that output gaps and inflationary pressures are not narrowing if potential is overstated.   Such overestimates appear to have been large in the 1970s (Orphanides and van Norden, 2002), and may have played a role in the increase in U.S. inflation in that decade.

An examination of the U.S. data suggests that concerns about past overstatements of growth arising purely from mismeasurement of financial and housing activity are likely modest.[3]   A significant portion of the revenue of the financial sector comes from the provision of intermediate services to other sectors of the economy.   Changed estimates of the real volume of these intermediate services do not affect estimates of aggregate output, though such changes would affect the industrial composition of output and growth.   The portion of financial revenue that stems directly from the provision of services to final users primarily consists of transaction services provided to households. Unusually large recent overstatements of these appear to be unlikely.   Reduced estimates of the real rate of return on housing capital earned in recent years would result in a mild markdown in aggregate growth; however, this would not be in the nonfarm business sector, usually viewed as the key area to examine for analysis and projections of inflation and employment. Looking forward, it is conceivable that some of the output lost in the course of the recession may persist in the form of a modestly lower path for potential (or alternately, a reduced rate of growth of potential for a spell) due to reduced output from finance and

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[3] Of course, the July 31, 2009 revisions did reduced 2008 growth noticeably, but this reduction reflected the routine incorporation of new source data, rather than any rethinking of the construction of the accounts.

real estate, but such losses appear to be modest compared to estimates some have made of the possible loss to U.S. potential, which presumably take into account all factors that may impede growth.

The next section discusses some of the key concepts of the national accounting treatments of finance and the returns from housing and how they relate to measured aggregate activity. This is followed by an analysis of how altered estimates of growth of real financial output and the real output of housing feed into aggregate growth and thus affect potential growth estimates, both in the past and looking forward.

Finance and Housing in the National Accounts

Finance

The financial sector in the United States (consisting of finance and insurance) employed approximately 6 million people in 2007, or about 4 ½% of the workforce. Aggregate value-added of this industry in that year amounted to $1.265 trillion, about 8% of nominal GDP. This GDP share had been steadily increasing an average of roughly one-tenth percentage point a year since the late 1940s (Chart 1) through a 2006 peak, before leveling off in 2007 and falling fairly sharply in 2008.

Broadly speaking, the financial sector earns its income in two ways. First, it processes payments (income items such as brokerage fees may be thought of in this fashion, as would be, of course, the fees collected for managing loan payments, etc.). Second, it plays a major role in the allocation of capital, for instance by advising investors or borrowers, or taking positions on its own account. In general, the second category has been the area of most rapid growth and higher income: M&A activity, mortgage securitization, proprietary trading, derivatives originations, etc. have been more lucrative activities than coin and currency processing (though clearly, some portions of payments activities, such as "prime" brokerage, are high-earning). In general, these latter areas are the ones that have expanded the most

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rapidly, and enhancing our understanding the connections between them and the macro economy is of great recent concern (Kohn, 2008).

The distinctions between these two sources of financial sector income are important to keep in mind in looking at the sector's direct contribution to aggregate output.[4] To avoid the double counting of activities and align measures of national incomes and outputs, national output is computed by adding up measures of sales and goods and services to "final" users. **Aggregate national output is not directly affected by the reallocation of existing capital, if the transaction does not include the delivery of a service to a final user.** To make this more specific, **financial transactions involving domestic businesses do not automatically affect national output.** This is a critical point to keep in mind in assessing the impact of the financial sector on aggregate activity. Financial services provided to households and foreigners do directly contribute to national output and income. The income earned by the financial sector from transactions with nonfinancial businesses reduces (in a direct accounting sense—indirect effects will be discussed below) nonfinancial income, but it does not increase national output or income. Importantly, **in national income accounting owner-occupiers of homes are viewed as business operators.**[5] This means that fee income paid by homeowners in the course of mortgage originations and refinancing is an expense item that reduces aggregate rental income. In an accounting sense, much

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[4] As opposed to examining, for instance, the contributions of financial activity to credit formation and asset valuation. Clearly, understanding these linkages is critical for understanding the transmission of financial shocks to the real economy, but they do not necessarily work through changes in the measured output of the financial sector.

[5] Although many explanations may be given for this assignment, which opens up the whole issue of accounting for owners' equivalent rent in cost of living measures, a very simple reason, at least in the U.S., is the large scale migration of existing homes to and from tenant to owner occupancy. Treating all homes as businesses lessens the potential errors and distortions in the national accounts from attempting to keep track of these switches (the errors would arise from missing the changes; the distortions from failing to correct one's analysis of the fundamentals for the changes).   Hobijn and Steindel (2009) discusses the implication of corrections of this type for calibrating longer-term U.S. growth; Triplett (2000) and Steindel (2006) defend the inclusion of owners' equivalent rate in cost of living measures.

of the income of the financial sector is an expense paid for out of nonfinancial corporate profits,

nonfinancial proprietors' (unincorporated business) income, and rental income.

The other component of financial activity is services provided to final users. These consist of

services provided to households (those connected to processing payments or for items such as

investment advice and management, and insurance) and foreigners.[6] A large part of the services

provided to households are "imputed"--households earn below market returns on large portions of the

funds held on deposit at institutions such as commercial banks, and the presumption in national

accounting is that they are presumably earning and consuming implicit services in return for the sacrifice

of income. Borrowers are also assumed to be receiving imputed services, when they pay above-market

rates for their funding. The receipt of such imputed services by nonfinancial businesses reduces the

output of the nonfinancial business sector by the amount that financial output is increased, and overall

GDP is unaffected. The consumption of imputed services by depositors is a component of GDP (Fixler,

Reinsdorf, and Smith, 2003).

The precise computation of these imputed services is an unsettled matter (Triplett and

Bosworth, 2004). In the U.S. accounts, the assumption is that the entire explicit interest margin of

depository institutions is paid out as imputed interest. The "reference rate," measured as the yield on

the industry's U.S. Treasury debt portfolio, determines the split between imputed interest paid to

depositors and that paid to borrowers. The difference between the actual interest paid to depositors

and the amount they would have earned if their deposits had accrued at the reference rate is defined to

be imputed interest paid to depositors. The difference between interest paid by borrowers and the

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[6] Presumably in principle other sectors may contribute to these final sales, just as consumer spending is supplied
by many industries, including manufacturing, transportation, utilities, retailing, etc., but these specialized financial
services are surely produced almost solely by the labor employed by, and capital owned by, the finance industry.

amount they would have paid if they borrowed at the reference rate provides the estimate of imputed

interest paid to borrowers.

Clearly, the computation of these imputed interest flows is rather arbitrary. One particular issue

is the use of Treasury rates to set the reference rate to calculate imputed interest paid to borrowers.

Obviously, few if any private borrowers can obtain financing at the Treasury rate. Arguably, at the

margin, borrowers can be seen as deciding between liquidating funds earning the reference rate and

paying higher market rates. Thus the spread between borrowing rates and the reference rate can be

said to reflect the implicit costs of services provided by banks to borrowers (Fixler, Reinsdorf, and Smith,

2003). Others have argued that higher rates, reflecting the inherent risk in lending to private parties, be

used to set the reference rate to compute imputed interest paid to borrowers (Wang, Basu, and Fernald,

2004; Basu, Inklaar, and Wang, 2008). If such a procedure were adopted the dollar value of imputed

interest paid to business borrowers by the financial sector would be reduced, as would recorded

financial output. A contrasting view arises from the observation that the payment of imputed interest is

assumed to cease when a loan is sold by a depository to a nondepository—for instance, when a loan is

purchased for securitization (Ashcraft and Steindel, 2008). Because, from the borrower's viewpoint,

nothing substantive has changed in the servicing of the loan, the disappearance of its imputed interest

flow appears hard to justify. Recognition that imputed interest continues to flow to such borrowers

would have the effect of increasing the dollar value of imputed interest paid to borrowers and would

shift the composition of industry output toward financial firms.[7]

These issues connected to the computation of imputed interest paid to borrowers bear on the

calculation of current-dollar financial output. A whole host of other questions relate to the computation

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[7] Conceivably, imputed interest might be recognized as being paid to investors who accept below-market risk-adjusted returns. Accounting for such interest would increase financial sector output, consumption, and GDP.

of the real output of the sector, given the immense difficulties defining standardized transactions. For

instance, even a very simple transaction, such as the purchase and sale of corporate stock, raises some

complexity in determining the real activity involved. Is the unit of transaction a single sale of a block of

shares, or the sale of one share? It certainly seems as if the sale of 10 shares in one block involves no

more physical services than a sale of 1 share (especially if the nominal values of the transactions were

equal and involved the same ownership stake in a firm); however, the sale of multiple shares may also

involve transactions with multiple buyers. Such conundrums could multiply exponentially when one

attempts to deflate the expenses involved with the creation of securitization structures or those

associated with M&A activity. We are left with the issue that there are serious concerns associated with

the computation of current-dollar financial sector output, and likely even greater ones involving the

calculation of real output. Many would have associated more intensive use of financial services in

recent years with efficiency gains in user industries and across the economy as a whole (Kohn, 2008),

given the subsequent contraction one might argue that either the measures of past usage and the

efficiency gains were overstated, or that lessened use in the future will weigh down growth.

Turning from the conceptual issues to the published numbers, Table 1 shows the breakdown of

financial sector gross revenues in 2007 based on the categories value-added, services to final users, and

intermediate services provided to other industries. Over half the revenues of the financial sector were

intermediate services provided to other industries. The bulk of the final sales from the sector are

transaction services (including interest paid to depositors) provided to households; this aggregate is

comparable in size to its value-added, which is the portion of revenues that is counted on the income

side as the industry's contribution to GDP.[8]

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[8] An industry or a sector's services to final users need not equal its value-added, though the two aggregates are equal for the economy as a whole. Some industries—for instance, management of companies and enterprises—

Housing

The sector that has been most closely linked to financial developments in recent years is

housing. In the U.S. accounts, "residential fixed investment" encompasses private expenditures on new

home construction, repairs and alterations to existing homes, and brokerage commissions earned from

the sales of homes. Many sectors—construction, real estate, manufacturing, etc.—are important

suppliers to residential investment. In current dollars, this category of spending rose from 3.4% of GDP

in 1991, to a near-record high of 6.2% in 2005, before contracting drastically to 3.4% in 2008 (Chart 2).

Due to its rapid growth, real residential investment contributed, on average, .4 percentage point to the

annualized growth rate of real GDP from 2002:Q1 to 2005:Q3. The subsequent plunge in residential

investment has meant that it exerted a drag on annualized real GDP growth averaging nearly .9

percentage point from 2006:Q1 to 2009:Q1. As is the case for all capital goods sectors, the calculation

of real residential outlays is a bit problematic; in the U.S. accounts data on the number of housing units

built and sold, along with some of their characteristics (size, etc.) are essential parameters.

Housing also plays a major role in the real estate portion of the broader FIRE sector. Most

importantly, the housing stock is assumed to emit a stream of shelter services, reflected in the

expenditure side of the accounts as explicit rents paid (for tenant occupied housing) and implicit rents

paid (for owner-occupied units). Charged against these rents on the income side are depreciation,

property taxes, and net interest paid (netting out imputed interest received), as well as mortgage

financing fees; the residual profit-like income series is called "rental income of persons." Essentially, the

provide little or no direct services to final users, but have substantial value-added, while others, including a
number of manufacturing and transportation industries, provide substantially more services to final users than
they earn as value-added. By construction, imputed interest paid to depositors is directly related to financial value
added. As to other transaction services, while industries such as utilities and real estate provide input to their
creation, it seems reasonable to suppose that the bulk of the value added stems directly from the labor and capital
employed in finance. The financial sector's value added is somewhat larger than its final sales, likely reflecting
income generated from intermediate services provided to nonfinancial businesses.

direct effect of mortgage financing activities is to shift the composition of the income side of the shelter

service flow (unless the financial transaction involves the sale of a home; in which case the brokerage

component of residential investment increases). In real terms, growth in shelter services consumed by

household owner-occupiers slowed from a pace as high as 4% in the middle of this decade to be barely

positive in the most recent readings, as the growth of the real housing stock cooled off with the slump in

construction (Chart 3). Shelter services are a nontrivial part of GDP. Owner-occupied shelter services

have recently amounted to roughly 8 percent of nominal GDP, so the reduction in their real rate of

growth has played a substantive role in the overall slowing in the growth of real GDP.

Was Economic Growth Overstated in Recent Years?

The value-added of the financial sector grew rapidly for much of the past decade. In nominal

terms the average increase was 6.25% in the period 1998-2007. This compares to an average growth

rate of 5.2% for overall GDP (which is, of course, the sum of nominal final demand and inventory

accumulation across the economy as a whole). In real terms, finance and insurance value-added (which

can be alternatively labeled as industry GDP) rose an average 4.8% in these years, compared to 2.85%

for overall GDP.

If we look at real revenues, rather than value added, the gap between the financial sector and

the rest of the economy has been wider: real gross output of the financial sector increased an average

of 5.9% over the years 1998-2007, compared to an average gain of 3.1% for all industries. The more

rapid growth of real gross output compared to value added suggests that a rising share of the real

revenues of the financial sector was used as intermediate product by other industries, as opposed to

satisfying final demands.

An argument can be made that the existing numbers overstate the real growth of financial sector activity. The recent financial crisis conceivably reflects a misallocation in capital; some portion of that misallocation could well reflect errors by the financial sector itself. In other words, the real services provided by the financial sector were perhaps not as valuable as they are now counted in the accounts. To draw a simple analogy from another portion of the national accounts, computer output measurement takes into account characteristics of the products produced, such as processing speeds. If it is found that the speed of the products turned out in a year was less than was initially assumed, it is likely that the real output of the industry will be revised down.

On the housing front, it might be argued that real residential investment was also overstated significantly, in that many of the units built (and sold) in recent years will not provide the shelter services assumed at the time of construction. Some units built may never be occupied in the forms for which they were intended at time of construction; for instance units built as high-end single family residences may wind up as poorly-maintained tenant units and depreciate more rapidly than assumed. At the least, the addition of economically useful units to the U.S. housing stock in recent years may be smaller than currently calculated and thus the supply of, and consumption of, real shelter services may turn out to be smaller than we currently measure.

In both finance and housing, then, counterfactuals can be made assuming that prices have been understated—alternatively, not as much real product was obtained as is currently recorded.[9] If one advances such arguments, how much (plausibly) lower would overall growth in recent years turn out to be, and what is the implication for the future?

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[9] In housing, the counterfactual can conceivably be made in terms of depreciation rather than real investment: the depreciation rate on the recent additions to the stock may be higher than is currently assumed. However, if the physical and human resources devoted to a home resulted in a structure whose useful life is less than was planned, less of a home was arguably produced than was planned.

Recomputing Real Output

The counterfactual involves examining the implications for past real output of alternate estimates of the growth of real financial and real housing activity. The assumption will be that nominal spending has been correctly estimated, meaning that we are implicitly assuming alternate assumptions for prices.

We first examine counterfactuals for financial activity (Table 2). Financial activity is multi-faceted, and any number of assumptions can be made about which aspect may have been overstated. The overwhelming majority of final sales consists of imputed interest provided to depositors and explicit fees paid by households for transactions. As noted above, the pricing of such activities (and, in the case of imputed interest, the measurement of nominal transactions) is always a bit problematic. The case for an increased understatements of price gains in the recent past appears strained, given that technological advances (such as the increased availability of electronic payment and transactions technologies to households) could, if anything, work in the opposite direction, given the well-known difficulty price statistics have in correcting for such quality improvements. [10]

A more substantive argument might be made that the elements of financial real revenues that are not final sales have been overstated. These consist of services provided as intermediate inputs to nonfinancial businesses. One may contend that slippages in quality and standards could mean that it is unlikely that the real volume of these services expanded by such a wide margin relative to revenues in the economy as a whole. One way to consider the implications of this argument is to assume that the difference between real gross output in finance and the economy as whole averaged 2% (the same as

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[10] Ultimately what matters in the implications of bias in the growth of a price index is not so much the absolute amount of such bias but its variation over time. A constant bias means that observed variations in real growth rates are valid. Steindel (1999) discusses this in examining the possible implications of price biases for movements in productivity growth.

the difference in real value-added, much of which is likely mirrored in the movements in household

usage of financial services[11]) in 1998-2007, rather than the reported 2.8%. In current dollars, the share

of gross revenue by the financial industry was little-changed at around 7 1/2% in those years. Reducing

the differential between real growth of industry revenues and that of the economy as whole to average

the same 2.0% as the corresponding differential for real value-added would mean real revenues in

finance increasing an average of roughly 5.0% a year in this period. The reduction in the growth of real

financial revenues would be associated with a reduction in economy-wide revenues from an average of

3.1% a year to around 3.0% a year.

Even if the growth of real intermediate services provided by the financial sector was overstated,

by itself, the correction of any such error would have no effect on aggregate GDP. Rather, changes in

the growth rate of real intermediate services provided by the financial sector would imply changes in

the industry composition of growth: the growth of real value added in finance would be reduced, and

the growth of the value added of nonfinancial industries would be boosted, with commensurate

changes in the distribution of labor productivity.   Estimates of multifactor productivity would also be

shifted, with reductions to finance and increases elsewhere (for these industries the same gross output

would be produced, but with fewer financial intermediate inputs).[12]

Turning to value-added, how much would real output growth in the finance and insurance

sector been overestimated to have resulted in an overestimate of real GDP growth by as much as ¼

percentage point? A key point is that financial sector value-added accounts for about 8% of nominal

GDP. Hence, the result is that the growth in real value-added in finance would need to be revised down

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[11] Of course, the value-added of the financial sector is not identical to final sales of its products. However, the average growth rate of real household consumption of insurance services, brokerage charges and other financial fees, and imputed interest, was 4.6% from 1998 to 2007, very near that of finance and insurance value-added. In current dollars, these services equaled about two-thirds of the sector's value added in this period and averaged about 5% of GDP.
[12] Schreyer (2001) discusses the general framework for measuring multifactor productivity.

a stiff 3 1/8 percentage points per year to reduce real GDP growth by ¼ percentage point per year

(assuming that such a reduction would not be associated with more rapid growth elsewhere). This

change would shrink the average rate of value-added growth in finance to a modest 1.7% a year in 1998-

2007. Given that forces plausibly associated with increased usage of finance-intensive services were

ongoing in this period (such as substantial increases in securities trading volumes), this seems a fairly

extreme assumption.

The second counterfactual applies to housing (Table 3). There are two aspects of activity that

are of concern: 1. the valuation of the actual construction of homes, which include the associated

services (most notably real estate brokerage) connected to home sales. 2. The valuation of the shelter

services provided by the housing stock, which relates to estimates of the increase in the real value of

that stock. The counterfactual will assume that annual price inflation in the relevant portions of final

demand was underestimated by 3 percentage points a year from 1998 to 2005 (the period of most rapid

expansion in housing). The specific GDP component is investment in owner-occupied 1- to 4- family

nonfarm homes. The essence of the counterfactual is an assumption that homes were built and

purchased which did not and will not provide the vector of shelter services the price indexes assumed.

Nominal spending in this category averaged about 4.2% of GDP in 1998-2005, with a peak level

of 5.3% in 2005. Reducing the real growth of this sector by 3 percentage points a year would have the

effect of reducing aggregate real GDP growth by roughly 0.1 percentage point annually. However,

increasing the rate of price increase in these categories by 3 percentage points annually would boost

their annual price gains to the neighborhood of 10 percent or more in 2004-2005. In other words, the

GDP measures were already reporting very high growth in these prices.[13]

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[13] Construction price indexes are heavily dependent on the costs of inputs, not the economic value of the structure
that is built.

If the real value of gross spending on new residential fixed structures rose at a 3 percentage point a year slower rate over 1998 to 2005 than is current reported, the growth rate of the real owner-occupied housing stock would have been about 2 percentage points lower than is currently reported over that period (and with the lower level of real net investment this reduced growth would persist, even if one does not adjust the price numbers for more recent years). In turn, the slower growth of the housing stock would reduce the growth of owner-occupied rent by a comparable amount.   The net effect on overall real GDP growth of this change would be minimal—around 0.1 percent per year.

The upshot of this analysis is that contentions that overstatements of financial and real estate activity greatly exaggerated U.S. growth during this decade are hard to support. To be sure, the real value of financial services used by other businesses may, arguably, have been overstated by an unusually large amount. However, errors in that calculation do not affect estimates of the size or growth of the U.S. economy, but rather feed into misstatements of the industrial composition of growth. Indeed if estimates of the real value of intermediate services provided by the financial sector were slashed, the finding would be that a larger portion of U.S. output growth would be attributed to technical progress in other industries. In that sense one might argue that the *contribution* of finance to U.S. growth could have been overstated.   As noted, the contention that growth in components of final demand that are finance-centric have been overstated to any larger extent in the recent past than in earlier days is hard to substantiate. As to real estate, there may, perhaps, be a case that much of the investment in housing was in residences whose ultimate shelter value will be much smaller than anticipated at the time of construction. Nonetheless, if one cuts estimates of the real value of that investment and the ongoing shelter value of the completed structures by what appears to be a very large amount, the resulting downward revision in real GDP growth would be modest—roughly .2% a year, taking into account both the smaller volume of construction and the lessened stream of shelter

services. The portion of that trim that relates to physical investment would feed through as a reduction in the growth of labor productivity in nonfarm business (the shelter services provided by owner-occupied housing is not a part of nonfarm business output, though it is a component of GDP).

Note that these calculations do not bear on the issue of the "sustainability" of U.S. growth during the last decade. The "sustainability" argument appears to start with the observation that much of the growth in real spending in the U.S. was in homebuilding, and at some point the shift of resources to home construction (and the related shift of income to finance associated with housing transactions) was bound to slow. Building on the growth in housing, the rapid expansion in financial sector activity and the surge in home prices helped to drive the substantial increase in U.S. wealth from 2002 to 2007 In turn, the gains in household wealth were likely significant forces supporting growth in consumer spending and overall GDP.   The sustainability argument appears to further maintain that households were spending on the basis of wealth that was bound to diminish when the rapidly growing sectors cooled off. In principle, one can then make estimates of the secondary, induced, growth effect of the increase in financial and real estate output through linkages to wealth gains. Perhaps if these sectors had not grown as rapidly, the aggregate increase in wealth may have been smaller, possibly working to constrain the growth of consumer spending (and GDP) to a more "sustainable" pace and limiting the subsequent contraction. It is hard to know, in the absence of any definitive view on how market valuations would have been affected by slower growth in homebuilding and finance, what weight should be given to this line of argument. If these sectors had grown less, would the gain in aggregate wealth have been 10% less over these five years? 5% less? 25% less? If any of these were so, how much lower would have been consumer spending? If these sectors and consumer spending had grown less, would other sectors have grown more?

Implications for the Future

The calculations above suggest that the surge in finance and real estate was not connected to any yawning overstatement of U.S. growth in the past decade. The boom and bust in finance and real estate will likely continue to be measured as broadly similar to what the accounts now report. A more fundamental issue may be the future implications of ongoing contractions in these sectors. The last few years have seen major downward adjustments in both, measured by such indexes as construction employment, housing starts and sales, and financial sector income, and the contribution of gains in the broadly defined FIRE sector to overall GDP growth tumbled from 0.8 percentage point in 2005-2006 to zero in 2008 (Chart 4). Clearly, much of this adjustment can be related to reduced demand for the products of these industries, some portion of which can surely be considered payback for earlier over-expansion (homebuilding is the most obvious example, but financial activities related to home sales and real estate development are obviously comparable). Looking beyond the current underemployment of resources in construction and finance, how do we think possible downward adjustments in their growth trends will affect the overall U.S. economy? A recent IMF study, for instance, posits that the direct contribution of the FIRE sector to real GDP growth will be in the range of zero to 0.4 percentage point through 2014, compared to a historic average of 0.6 percentage point, and with spillover effects, will reduce potential growth by roughly one-third to one percent per year for the next five years (Barrera, Estevao, and Keim, 2009). These results appear broadly in line with the Reinhart and Rogoff (2009) findings that financial crises often have major long-term negative effects on real output. The higher end of the range would clearly suggest a considerable downgrade of potential growth for a substantial time and would result in U.S. GDP remaining noticeably short of its earlier growth path throughout most, if not all, of the next decade.

A direct way to gauge some of these downside risks is to look at the potential output shifts that could be associated with shifts of labor and productivity slowdowns in these sectors. In particular,

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finance and insurance has seen quite rapid growth in real output per worker (for the purpose of this

section we assume that the published numbers for the past are correct).   From 1998 through 2007 real

value added per person engaged in production in finance and insurance rose at an average 3.4% pace,

compared to a 1.8% rate for all GDP (Chart 5 shows how value-added per worker in finance and

insurance performed relative to the economy as a whole). If, at one extreme, that excess were to be

reduced by 2013 (in other words, the gap between real output per worker in finance and the rest of the

economy was restored to its 2000 figure in 2013), without any compensating shifts elsewhere, the

growth of real value-added per worker in finance and insurance would average about 2 ½% per year less

than the economy-wide average. Given the small employment share of this sector (as noted, about 4

½%), though, this shortfall would have only a minimal impact on holding down the trend growth of real

value added per worker (about 0.1% a year). [14] Of course, if such an adjustment proceeded more rapidly

there could be larger effects in a shorter time period. However, given the longer term tendency of real

output per worker to grow more rapidly in finance and insurance than elsewhere the assumption of a

complete reversal of the recent widening seems a bit extreme. Also extreme is the presumption that

high-productivity workers in finance will not migrate to higher-wage jobs outside of a diminished

finance sector with slower productivity and (presumably) earnings growth than in the past.

Another potential drag on growth going forward comes from the redeployment of labor and

capital involved with real estate. Because real estate construction and sales are industries that have

historically seen very large and lasting fluctuations in output and employment (and, also, are fairly low

wage and have seen only sluggish growth in real value added per worker), an argument that a prolonged

low period would hamper overall output significantly is difficult to accept. While homebuilding is clearly

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[14] If the slowdown in value-added per worker in finance was associated with lessened use by other industries of intermediate services from finance, there would be some additional downward pressure on the growth of real output, which would be associated with slower growth of multifactor productivity. Fernald and Matoba (2009) note that U.S. multifactor productivity growth has apparently been well-maintained during the recession.

a strongly cyclical sector the long-run association between its level of activity and GDP growth is likely rather loose.   Chart 6 shows that there have been periods when GDP growth appears to have been high relative to housing starts, such as the late 1960s, while early in this decade GDP growth appears to have been low compared to housing starts.   Of course, this is nothing more than a restatement of the obvious: there are independent forces affecting housing and real GDP.   As has been noted, though, if much of the expansion of the housing stock in the last few years was unsustainable, new activity will be low for some time (many parts of the nation will have little need to build new housing, while other parts may see less elaborate construction than in the past). This slower growth of the housing stock will lead to modestly slower growth of real shelter services, but, as noted earlier in the discussion of the potential impact of "correcting" earlier "overstatements" of housing stock growth, the effect on aggregate GDP would be minimal, and the effect on nonfarm productivity would be nonexistent.

A final channel connecting financial changes to the economy involves indirect spillovers. If financial services indirectly affect output in ways not captured through the usual growth accounting mechanisms, then it is possible that an ongoing contraction in the sector could have larger impacts on growth going forward than currently seen. It is very hard to quantify such effects in past data, and it can be argued that recent developments have altered any relationships that may have been previously charted.[15] One possibility, of course, is that a contraction in finance could be associated with a general retreat from risk-taking, which may hamper technological progress, or that a new regulatory regime for the industry may hamper efficient capital allocation, or that the funding of fiscal initiatives to deal with financial distress could involve increases in distortionary taxes.

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[15] As Vice Chairman Kohn remarked, "financial innovation can induce structural changes that can importantly alter the way financial institutions, markets, and the broader economy respond to shocks" (Kohn, 2008).

Combining the effect of slower growth in the stock of housing (and thus of shelter services) with that of some noticeable contraction in financial output (and adding in some spillover effects from such a slowdown) could produce a deterrent effect on U.S. real GDP growth on the order of .3 percentage point per year in the near future: .1 percentage point from slower growth of housing services, .1 percentage point directly from a financial contraction, and perhaps another .1 percentage point from spillovers (essentially, less provision of intermediate services to other industries) arising from a financial contraction. This is roughly comparable to the lower bound of the Barrera, Estevao, and Keim range, though it appears to be something of a worst-case scenario for the direct effects of contractions in these sectors. This would not be a trivial reduction in the growth of near-term potential, but it is dwarfed by the decline in real GDP experiences in the recession and would not seem to be large enough to alter a view that the U.S. economy is currently operating well below its potential.

Conclusion

Examination of the U.S. data does not suggest that overstatement of real activity in finance and real estate likely exaggerated growth in the last decade to any meaningful degree. First, a definitive claim that real growth in these sectors was overstated to an unusually large degree is hard to sustain, when one looks closely at the composition of their activity, particularly their direct contribution to final output. Second, even if some significant overstatements in these areas occurred, the sectors are simply not large enough so that correcting for them would reduce the aggregate data to a marked extent. Looking forward an ongoing retardation of the flow of resources from finance, especially, could work to slow aggregate U.S. growth modestly, but calibrating a substantive effect implies fairly extreme assumptions as to the size and ancillary effects of the industry's slowdown.

One may keep in mind the distinction between economic output and welfare. One can, conceivably, argue that aggregate growth in the last decade may have enhanced aggregate welfare less than comparable past expansions (for instance, one may be concerned that most measures of income inequality expanded). However, such concerns are reasonably distinguishable from issues of the measurement of the scale of activity.

Even if one believes that the composition of U.S. growth in the last expansion contained the seeds of a considerable contraction, the issue of the sustainability of demand can be differentiated from that of the measurement of real output and the evolution of potential. It is useful to distinguish between supply and demand effects when examining the ongoing and future effects of developments in the financial and real estate sectors. The weakness in demand that has propagated from the financial turmoil and the loss of real estate values is anticipated to linger for some time (Federal Open Market Committee, 2009). Quite plausible the growth of the demand for financial services could also be weaker than in the past, as could be the demand for housing. Recent studies contend that potential output growth may suffer as the result of a long and deep recession (Furceri and Mourougane, 2009; OECD, 2009), likely reflecting slow growth in physical capital and the degradation of human capital; and financial factors could well be associated with the onset of long and deep recessions. However, this effect differs from a fundamental loss of potential stemming from a degradation of these industries' abilities to carry out their work of allocating capital to productivity-enhancing activities, and the precise effect of a long and deep recession on potential would presumably depend on its length and depth.[16] We may acknowledge the possibility that changes in the financial industry, in particular, may, in the near

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[16] Basu and Fernald (2009) discuss some general issues connected with the estimation of potential output in the framework of a New Keynesian growth model. Their assessment was that as of late 2008-admittedly before the effects of worst of the financial crisis showed through to real activity—the near-term outlook for potential seemed to be well-sustained, though their model does not explicitly take into account factors said to be associated with the financial crisis (such as wealth losses and their effect on labor supply, less efficient capital allocation, greater uncertainty).

term, hamper the transmission of expansionary monetary policy to real activity, which could bear on the

length of time in which in the economy is operating under its longer-term potential. This effect could in

turn work to hamper the growth of potential. Nonetheless, in principle, policies may be designed to

offset this process.

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Table 1

2007 Gross Output, Value-Added, and Final Sales of Finance and Insurance

	Billions of Dollars	Percent of GDP
Gross Output	2012.2	
Value-Added	1091.4	7.9
Sales to Final Users	824.0	6.0
Consumption	797.1	5.8
Imputed Interest	248.7	1.8
Insurance services[17]	255.4	1.8
Intermediate services sold to other sectors	1188.2	

Data on sales to final users and the consumption aggregate comes from the BEA annual input-output table on industry make/use.

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[17] Essentially life and medical insurance premiums less benefits received.

Table 2

Implications of Alternative Estimates for Finance and Insurance Gross Output and Value-Added, 1998-2007

	Published Average	Alternate
I: Reduced real sales of intermediate product		
Real Gross Output Growth		
Overall Economy	3.1	3.0
Finance and Insurance	5.9	5.0
II: Reduced real value-added		
Real Value-Added		
Overall Economy	2.85	2.6
Finance and Insurance	4.8	1.7
Growth contribution	.36	.1

Table 3

Implications of Alternative Estimates for Residential Construction, 1998-2005

	Published Average	Alternate
Growth Rate of Real Investment in Permanent 1-4 unit residential Structures	6.7	3.7
Contribution to Real GDP Growth	.2	.1
Growth Rate of owner-occupied 1-4 unit housing stock	2.9	1.9
Growth Rate of owner-occupied space rent	3.2	1.2
Contribution to Real GDP Growth	.2	.1

Chart 1: Finance and Insurance Share of GDP
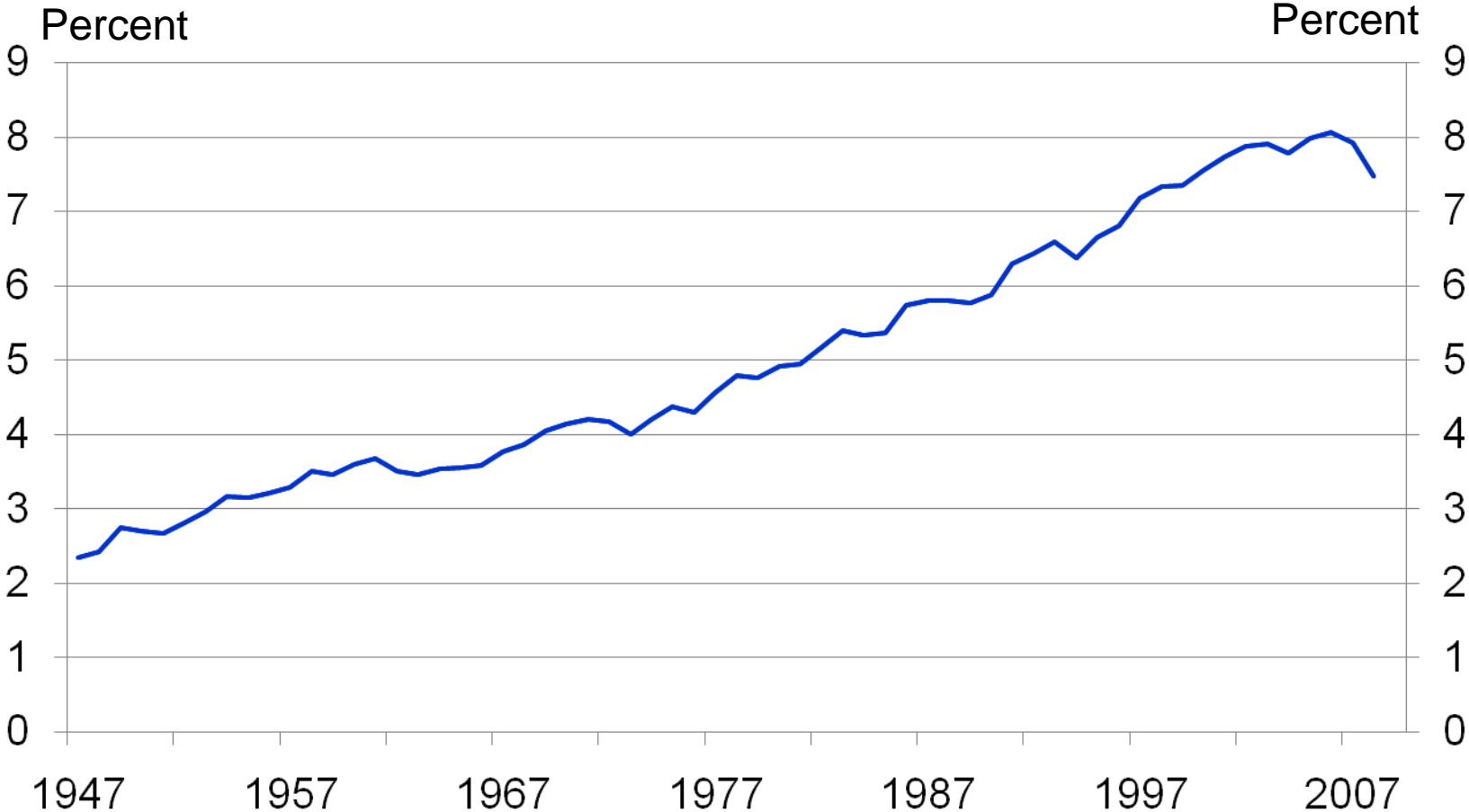
Source: U.S. Bureau of Economic Analysis

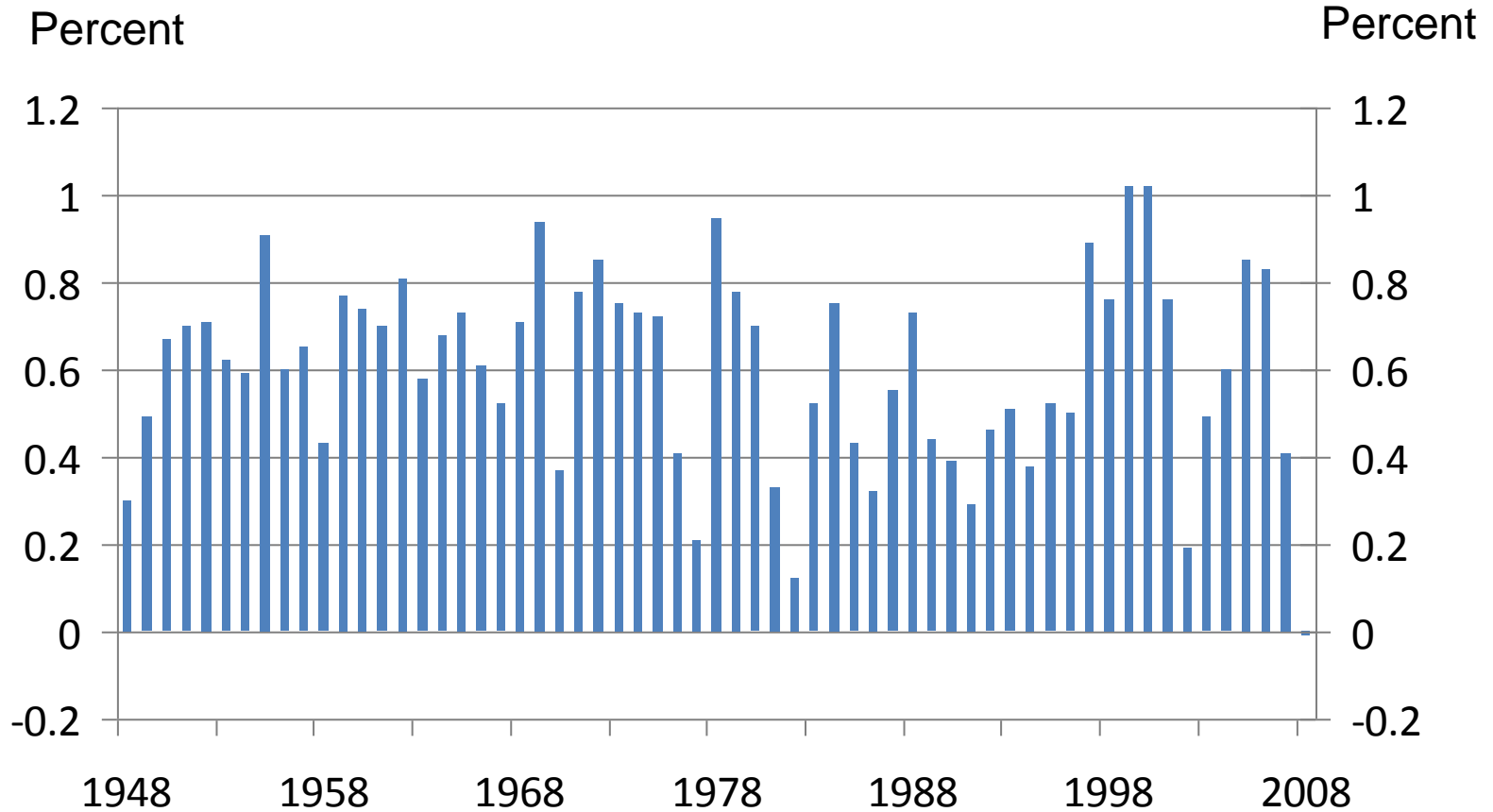# Chart 2: Residential Investment Share of GDP
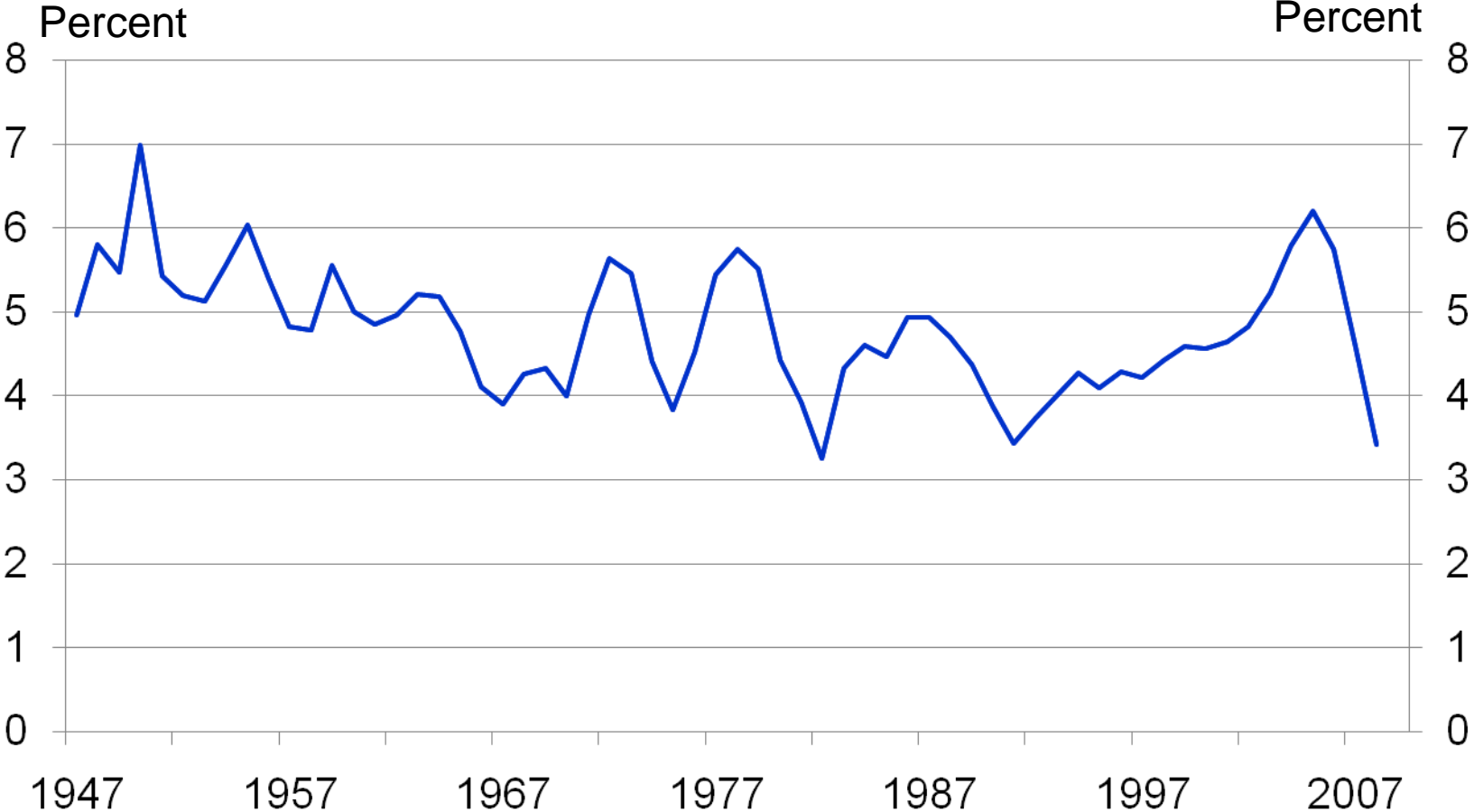
Source: U.S. Bureau of Economic Analysis

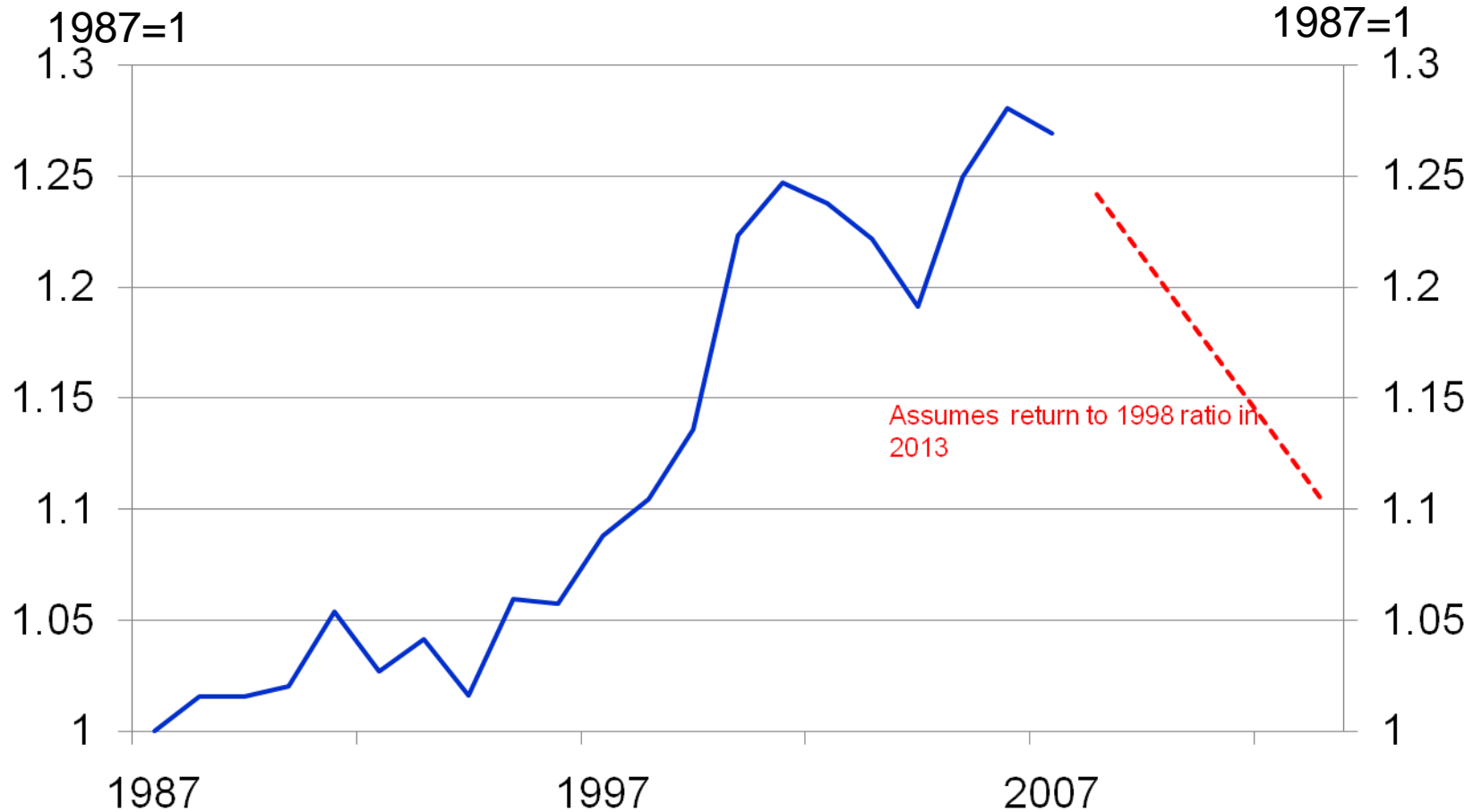Chart 3: Growth in real Owner-occupied Housing Stock and Space Rent
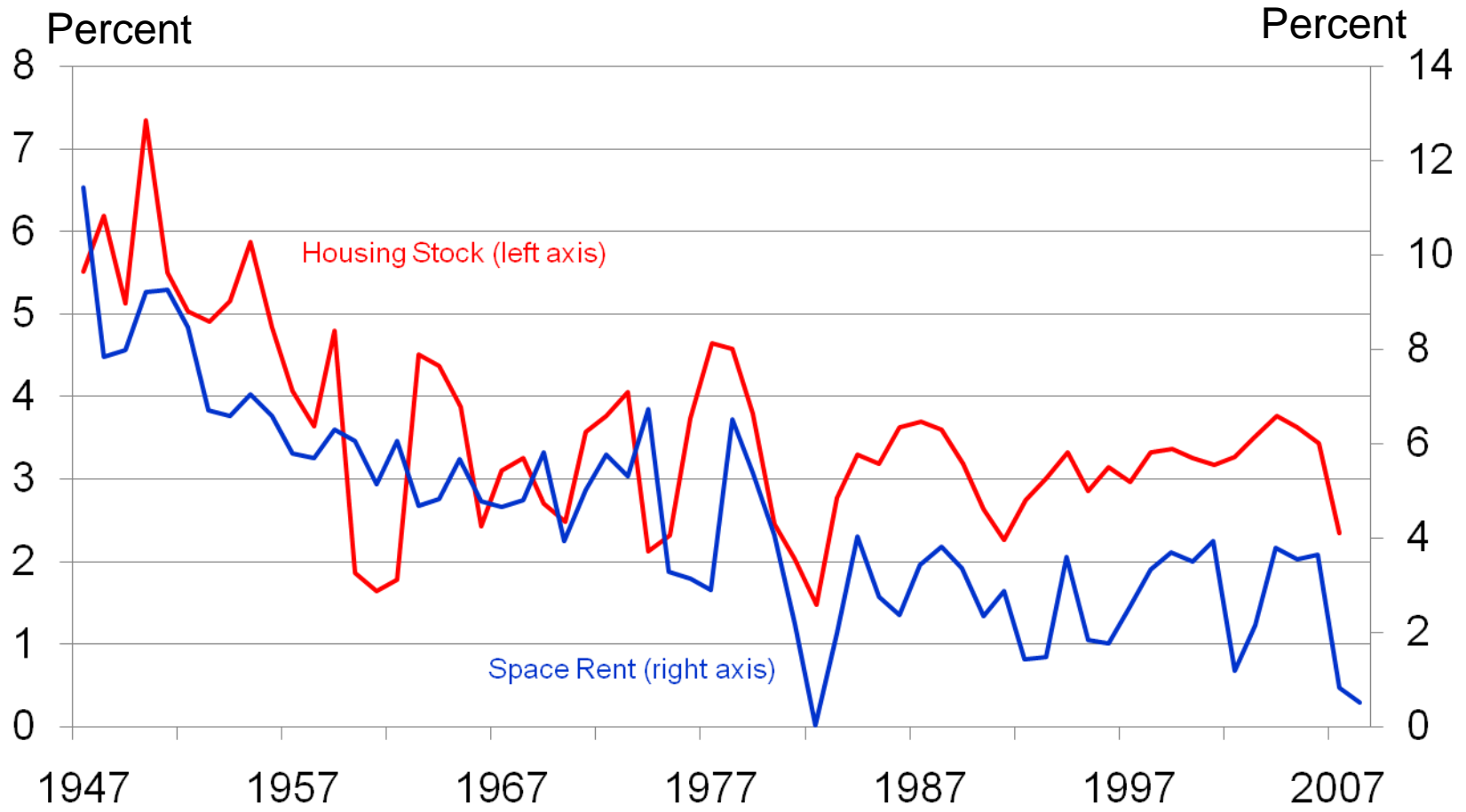
Source: U.S. Bureau of Economic Analysis

Chart 4: FIRE Contribution to Real GDP Growth
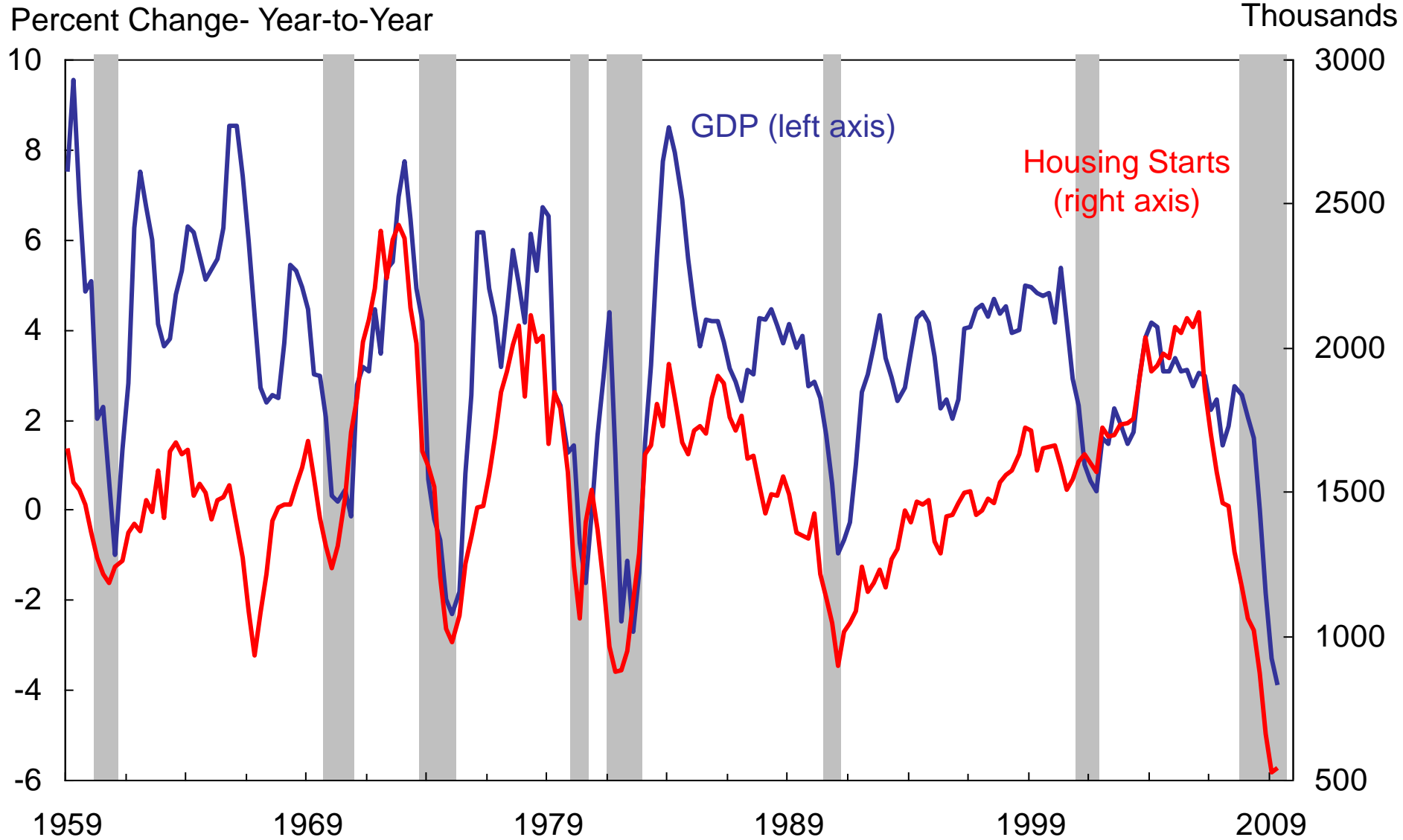
Percent

Percent

Source: U.S. Bureau of Economic Analysis

Chart 5: Ratio of Real Value Added per Worker, Finance and Insurance to Overall GDP

Source: U.S. Bureau of Economic Analysis, author's calculation

Chart 6: Housing Starts and GDP Growth

Percent Change- Year-to-Year

Thousands

GDP (left axis)

Housing Starts (right axis)

Note: Shading represents NBER recessions.