

Staff Papers

How Bad Was It? The Costs and Consequences of the 2007–09 Financial Crisis

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How Bad Was It? The Costs and Consequences of the 2007–09 Financial Crisis

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Abstract

The 2007–09 financial crisis was associated with a huge loss of economic output and financial wealth, psychological consequences and skill atrophy from extended unemployment, an increase in government intervention, and other significant costs. Assuming the financial crisis is to blame for these associated ills, an estimate of its cost is needed to weigh against the cost of policies intended to prevent similar episodes. We conservatively estimate that 40 to 90 percent of one year's output (\$6 trillion to \$14 trillion, the equivalent of \$50,000 to \$120,000 for every U.S. household) was foregone due to the 2007–09 recession. We also provide several alternative measures of lost consumption, national trauma, and other negative consequences of the worst recession since the 1930s. This more comprehensive evaluation of factors suggests that what the U.S. gave up as a result of the crisis is likely greater than the value of one year's output.

JEL codes: E65, G01

Keywords: Financial crisis, Great Recession, output loss

The “Second Great Contraction” in the U.S. was the result of a confluence of factors: bad loans made by banks, ratings agencies falling down on the job, lax regulatory policies, misguided government incentives that encouraged banks to be reckless in their lending, and even monetary policy that kept interest rates too low for too long.¹

The Second Great Contraction, the worst economic downturn since the 1930s, was unusual because it stemmed from an easing of credit standards and an abundance of financing that had fueled the prior expansion. This fuel also helped create imbalances—an overextension of mortgage financing and capital market financial intermediation. A housing collapse and credit shocks, culminating in a financial crisis, hit the economy as these financial practices generated new losses. Home construction plunged, the stock market crashed, commodity prices tumbled, job losses mounted, credit standards tightened, and short-term funding markets seized up.

Despite extensive reviews of the causes and consequences of the 2007–09 financial crisis, we find few estimates of *what it cost*—the value of what society gave up. Such a figure would help assess the relative expense of policy proposals designed to avoid future episodes. Although any estimate of the toll exacted by the recession is bound to be incomplete—for example, there may well be future costs not yet recognized—this paper offers an analytical starting point.

It is not difficult to understand why such accounting exercises are rare: They require comparing a world in which no financial crisis occurred to what actually happened and what is likely to transpire. This paper attempts to measure what was lost or foregone as a consequence of the crisis, recognizing that not all costs have a dollar value associated with them. We define the cost in terms of how much worse off society is as a result of the financial crisis. We include consequences that were not directly caused by the crisis but would not have occurred in its absence. Many of these consequences are intangible or difficult to measure. The cost is at least equal to the economic output that *would have* been produced but *was not*—40 to 90 percent of one year’s output. But in light of the less-tangible consequences, the total cost likely exceeds the value of one year’s output.

Cost Categories: Output, Wealth, Effects of National Trauma, and Extraordinary Government Intervention

The first section estimates the gap between a counterfactual—what gross domestic product (GDP) would have been had the financial crisis never occurred—and realized GDP. Our estimated cost of the crisis is 40 to 90 percent of 2007 output (\$6 trillion to \$14 trillion in 2012 dollars), depending on assumptions about the trend rate of growth that would have held if not for the financial crisis and the possibility of a mild, oil-related downturn even absent the crisis.²

Our calculation is a conservative estimate of the aggregate cost of the crisis that covers 2008 to 2023, the year output is assumed to have fully returned to trend. If output grows at the tepid 2 to 3 percent rate expected by professional forecasters over the next decade, the loss range rises to 65 to 165 percent of one year’s output. Further, the spillover to the global economy is likely on the same scale as or even greater than the lost U.S. output.

The second section also considers pecuniary reductions in living standards by examining the change in wealth instead of output. The change in household net worth, an often-reported metric, is dramatic but does not directly reveal by how much society is worse off. The appropriate concept would be what economists refer to as total wealth—including human capital, the discounted flow of future wage income—which is not directly observable but should help determine the national level of consumption. The path of consumption since 2007 suggests household expectations of total wealth have been revised down significantly. It implies that the cost of the crisis would be more than double the 40 to 90 percent estimate based on output loss alone. However, the drop in consumption could have been driven by unusual credit conditions leading up to and following the crisis in addition to expectations of future income.

The third section considers the consequences of the crisis that are not quantifiable in dollar terms. Surveys of well-being indicate that there are costs of joblessness beyond lost income that fall upon the unemployed and the employed alike. The psychological consequences of the crisis are hugely negative, even if they are not easily measured.

The fourth section discusses the path government policy followed after the financial crisis. Unprecedented fiscal and monetary action may have prevented a full-blown depression, but such intervention was not

¹The appellation “Second Great Contraction” was coined by Reinhart and Rogoff (2009). The most recent economic contraction applies not only to output and employment, as in a normal recession, but to debt and credit, and the deleveraging that typically takes many years to play out following a financial crisis. Regarding interest rates remaining “too low for too long,” see Fisher (2006), in which the comment “poor data led to a policy action that amplified speculative activity in the housing and other markets” proved to be a significant foreshadowing of the years to come.

²Real GDP for 2007 was \$15.2 trillion in 2012 dollars.

without significant costs. Society must deal with the consequences of a swollen federal debt, an expanded Federal Reserve balance sheet, and increased regulations and government intervention for years to come. Although we take a more comprehensive approach to extraordinary government spending as a “cost” of the crisis, this consideration of the broader impact of such public sector capital allocation is not directly comparable with our other cost calculations.

Table 1 summarizes the costs and consequences delineated in this paper. Note that the first columns are not separate costs of the crisis but two approaches to measuring foregone income. Also note that the last column is not necessarily a realized cost but an estimate of the extraordinary government intervention in response to the crisis. Therefore, the columns represent different and potentially overlapping aspects of the costs of the crisis and are not necessarily additive.

Table 1: Different Dimensions of the Costs of the Crisis

	Cost of lost income			
	According to the path of output	According to total wealth, implied by the path of consumption	Cost of national trauma and lost opportunity	Extraordinary government support
Trillions of 2012 dollars	6–14	15–30	Up to 14	12–13
Percent of 2007 output	40–90	100–190	Up to 90	80–85

NOTE: These columns represent different aspects of the costs of the crisis and are not necessarily additive.

1. THE COST OF LOST OUTPUT

Existing Research Shows Wide Range of Cost Estimates

Previous research estimating the cost of the crisis has generally measured the goods and services that were *not produced* due to the crisis.³ This calculation is the gap between real GDP, or total U.S. economic output, and some measure of its trend. In a sense, this is the low-hanging fruit of the cost estimates of the financial crisis. GDP is the broadest, most followed measure of economic activity, but it does not necessarily capture all the negative consequences of the crisis.

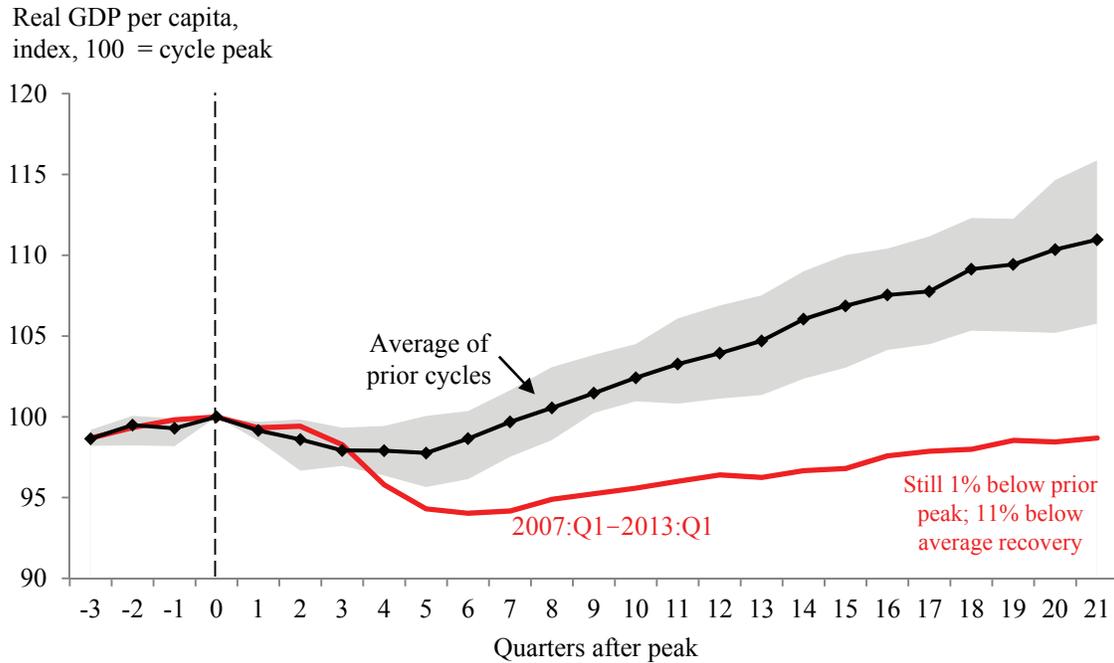
Better Markets Inc. (2011) estimated the cost of the crisis at \$12.8 trillion, counting the output that was lost and the output that would have been lost if not for extraordinary fiscal and monetary interventions. However, we do not consider avoided output loss a cost of the crisis because this “loss” was not actually realized. Given how we define the costs of the crisis, the benefits of the extraordinary policy response are already factored into the output loss calculation.

A large literature supports the hypothesis that recoveries from financial crises are slower than from typical recessions, which this recovery has not contradicted (*Figure 1*). The Government Accountability Office (GAO 2013) reviewed the literature on the cost of previous financial crises and determined that the costs associated with the most recent recession should likely fall within the range of a few trillion dollars to more than \$10 trillion. Although the costs of past crises guide our estimates, we are primarily concerned with the cost of this specific crisis. We believe that the five years of data since the beginning of the recession and a forecast of the return to trend provide enough information to form a more accurate estimate than an average of past crises that have diverse, situation-specific factors at play.

Boyd and Heitz (2012) find \$7.3 trillion to be the lowest conceivable crisis cost estimate using similar methodology to this study. We employ slightly different assumptions about the counterfactual path of GDP and its forecast past 2012 and put less emphasis on arriving at a lower bound, remaining careful not to overstate the costs.

³Ideally, one would use losses of current and discounted future consumption as the welfare cost associated with a downturn because that is presumed to be the ultimate objective of economic activity (Lucas 1987). But in practice, this is difficult to measure. Studies on the cost of financial crises have typically used output loss as an approximation (Hoggarth, Reis, and Saporta 2002).

Figure 1: Rebound in Output Much Weaker than in Previous Cycles



Estimating Output Loss: At Least 40 Percent of One Year’s GDP

An assumption of what GDP would have been had the financial crisis never occurred—the counterfactual—is needed to calculate lost output. Ultimately, there is no way to know for sure what path output would have followed or even if the financial crisis caused the drop in output. The standard assumption is that trend growth would have continued. From 1984 to 2007, the period referred to as “The Great Moderation” due to its relative stability, the average growth rate per capita was 2.1 percent. Thus, the first counterfactual for what growth would have been in the absence of the financial crisis is real GDP per capita growth of 2.1 percent after fourth quarter 2007.

But a constant rate of growth per capita may ignore demographic shifts that matter for output growth. For 2007 to 2023, the Census Bureau projects that the U.S. resident population will increase 0.8 percent per year, while the working-age (15-64) resident population will increase only 0.4 percent per year. Projections of the working-age population ten years in the future should be fairly accurate, provided there is no large shift in immigration patterns. If these projections prove correct, there will be slower labor force growth than in the past and, thus, slower trend per capita growth.⁴ To account for this possibility, our second measure of trend after 2007 is a constant growth rate of output per working-age adult of 2 percent. Through 2012, the implied paths of real GDP based on constant per capita and per working-age adult growth are fairly close to each other, but they diverge dramatically by 2023 as the over-64 population is projected to grow much faster than the rest of the population (*Figure 2*).

The Congressional Budget Office (CBO) estimate of potential output—the level consistent with trend productivity and normal resource utilization—may provide a more reliable path of output in the absence of the financial crisis because it is determined by more information than just average growth rates. The CBO’s production function approach could reflect shifts in the economy that a constant growth rate would not anticipate. For example, growth until the 1990s was boosted by an increasing women’s labor force participation rate. The CBO projects potential labor force participation by gender and age, so any predictable slower growth due to changing trends in female labor force participation should be reflected in the CBO’s measure of potential GDP (CBO 2001).

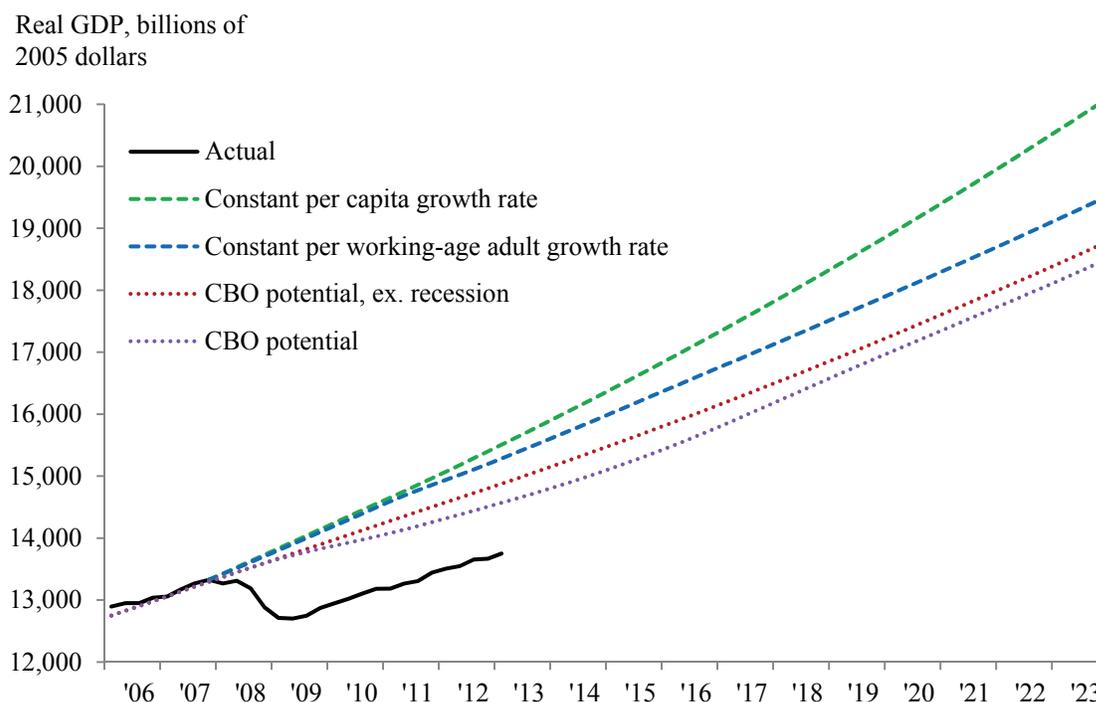
But the additional information that goes into a potential output estimate could also be a problem for a true counterfactual. The CBO (2013) states that the most recent financial crisis and recession lowered potential GDP by 1.5 percent by 2023. This makes it an inappropriate counterfactual for a world in which there was no crisis. The inputs into the CBO’s production function are published, and they show a distinct

⁴However, slower population growth could boost productivity by allowing for more investment in education (Lucas 2004).

break in 2008. These inputs are assumed to have increased at their prerecession rate to calculate potential output uninfluenced by the recession, but they keep the information about a suspected slowing in trend growth even with no recession. This can be seen in Figure 2, as the red dotted line shows steady positive growth right after the recession but is still growing slower than the trends based solely on extrapolating historical data. CBO potential output excluding the recession's effect is the third measure of trend.

Figure 2 plots the three estimates of trend output used for this exercise as well as the official CBO potential output.⁵ The different assumptions have large implications for the cost of the crisis. The constant per capita growth series is 4.2 percent above the prerecession CBO potential in first quarter 2013 and 11.9 percent higher by 2023. The constant output per working-age adult series grows at the same rate as the per capita series early on but slows to the same rate as CBO potential by 2020 as workforce growth is projected to decelerate. It is 2.7 percent above the prerecession CBO potential in first quarter 2013 and 4.9 percent above by the end of 2023.

Figure 2: Output Loss Is Sensitive to Different Assumptions About Trend



SOURCES: Bureau of Economic Analysis; Census Bureau; Congressional Budget Office; authors' calculations.

According to the CBO, actual output was close to potential at the beginning of the recession. If the log values of real GDP per capita and real GDP per working-age adult are fitted to a linear trend, using almost any sample ending in 2007, actual output is below trend at the end of 2007. Then to continue conservatively estimating output loss, the other two measures of trend are assumed to start at the actual level of output in fourth quarter 2007 and grow at their long-term rates after that. Some analysts argue that the boom leading up to the crisis pushed output above a sustainable level and, therefore, trend should start below actual output in 2007. But real GDP did not show excessive rates of growth in the 2000s. It was gross domestic purchases (or domestic demand) that ran appreciably above potential output, manifested in relatively cheap imports (Koenig and Atkinson 2011).⁶

It is conceivable that the financial crisis isn't solely responsible for the downturn in 2008. The real price of crude oil hit historic highs in 2008, increasing at year-over-year rates generally associated with recessions in the past. If this oil-price shock would have triggered a recession even without a financial crisis, trend growth is not the appropriate counterfactual. Hamilton (2009) concludes that if it were not for the oil shock,

⁵The recession-lowered CBO potential is not used in estimating output loss but is included in Figure 2 for comparison with the prerecession potential.

⁶Steindel (2009) also finds that past overstatements of real activity in the financial and housing sectors would not have large implications for potential output growth. So an unsustainable housing and finance boom and an output gap of zero in 2007 are not incompatible.

the period fourth quarter 2007 to third quarter 2008 would not have been characterized as recessionary. To account for the influence of the oil shock, the output gap (real GDP as a percent above potential) and the unemployment gap (the unemployment rate minus its natural rate) are estimated as a third-order vector autoregression (VAR). An oil-supply-shock variable from Koenig and Phillips (2005), which filters out real oil-price changes driven by domestic demand, is included as an exogenous variable. The estimation is over the sample 1986–2007, and the dynamic forecast begins in 2008. The realized oil shocks are fed into the forecast until it reaches its peak in third quarter 2008 and then are assumed to equal the sample average. It suggests a small recession similar to the one in 2001 would have occurred if there were an identical oil shock but no financial crisis, with unemployment rising to 6.5 percent. In this case, only the output loss beyond that from the oil shock should be counted as a cost of the crisis.

The cause of the oil shock, however, may be inseparable from the roots of the financial crisis. The global imbalances narrative of the crisis—in which an influx of overseas demand for U.S. financial assets fueled the unsustainable creation of structured credit products and pushed real interest rates lower—could imply an interconnectedness between the crisis and the sharp oil-price increases in 2007–08 (Caballero, Farhi, and Gourinchas 2008). When the real estate market eventually crashed, the excess demand for hard assets that fed the real estate bubble initially remained. The combination of tight commodity markets, low interest rates, and investor interest in rapidly reallocating away from real estate helped fuel the commodity price spike. If this were the case, it would not be logical to consider a scenario that includes the oil shock but not the financial crisis. We present estimates of the output loss under both assumptions.

The counterfactual of what output would have been and actual output provide the loss so far, a conservative estimate of the total cost because the future is uncertain. But the recovery to this point has been consistently, disappointingly tepid. Even for the purposes of a conservative estimate, output fully recovering in 2013 is extremely unlikely. Growth of 9.4 percent would be required just to reach the lowest counterfactual. Therefore, it appears the crisis will continue to cause lost output that should be counted as a cost of the crisis. Most forecaster surveys point to only slightly faster-than-trend growth over many years—output would not recover the ground it lost for a very long time. But output growth at such distant horizons is unpredictable. Using the consensus of forecasters would significantly increase the cost of the crisis, based on this uncertain information.

The same model from the oil-shock counterfactual is used to forecast output after 2012. This has the benefit of forcing the gap between the counterfactual and forecast to eventually close. Using each of the three measures of trend, the relationship is reestimated through 2012 and forecasted until output returns to trend, around 2021.⁷ It is not necessarily the most likely path of GDP, but it serves as a reasonable middle ground between the extremely unlikely immediate return to trend and perpetual output loss implied by forecasters. Because the output gap is a dependent variable in the forecast and a constant is not included in the regression, the gap is forced to eventually close, an optimistic assumption if potential was indeed lowered by the recession.

Figure 3 shows the estimated output losses based upon the three different measures of trend, the corresponding forecasts, and resulting estimates of output loss. The constant per capita growth rate case exhibits greater than 4 percent annual growth until it nears trend, which would come as an extreme, but welcome, surprise (*Figure 3A*). Using constant per working-age adult growth as trend, growth in 2013 and 2014 is near 4 percent but then slows with the decline in working-age population growth (*Figure 3B*). The forecast using precrisis CBO potential output is similar, but growth slows further because there is less ground to make up (*Figure 3C*). All three forecasts return to trend near 2020.

Output Loss Calculation: Between \$6 Trillion and \$14 Trillion

The final step to calculate the output loss from the financial crisis is to discount the costs to the present value in 2007, to account for the fact that consumption in the present is preferred to consumption in the future. We use the discount rate of 3.5 percent as prescribed in Moore et al. (2004), which corresponds to costs that do not span multiple generations and have no crowding-out effects.⁸ Table 2 displays the resulting estimates of lost output. **The cost is estimated to be between 40 and 90 percent of 2007 output (\$6 trillion to \$14 trillion), depending on assumptions about the strength of trend growth and the possibility of an oil-shock recession in the absence of the financial crisis.**

⁷Prior to 2008, CBO potential real GDP is used for all three measures of trend based on the assumption that the more sophisticated measure is better at estimating ex-post potential than a linear trend, which may not be true for projections several years into the future that are much more uncertain.

⁸The choice of discount rate has a meaningful, but not crucial, impact on the estimates. If there is no discounting at all, the range increases to 47 to 112 percent of 2007 output. If the discount rate is doubled to 7 percent, the range of estimates falls to 33 to 74 percent.

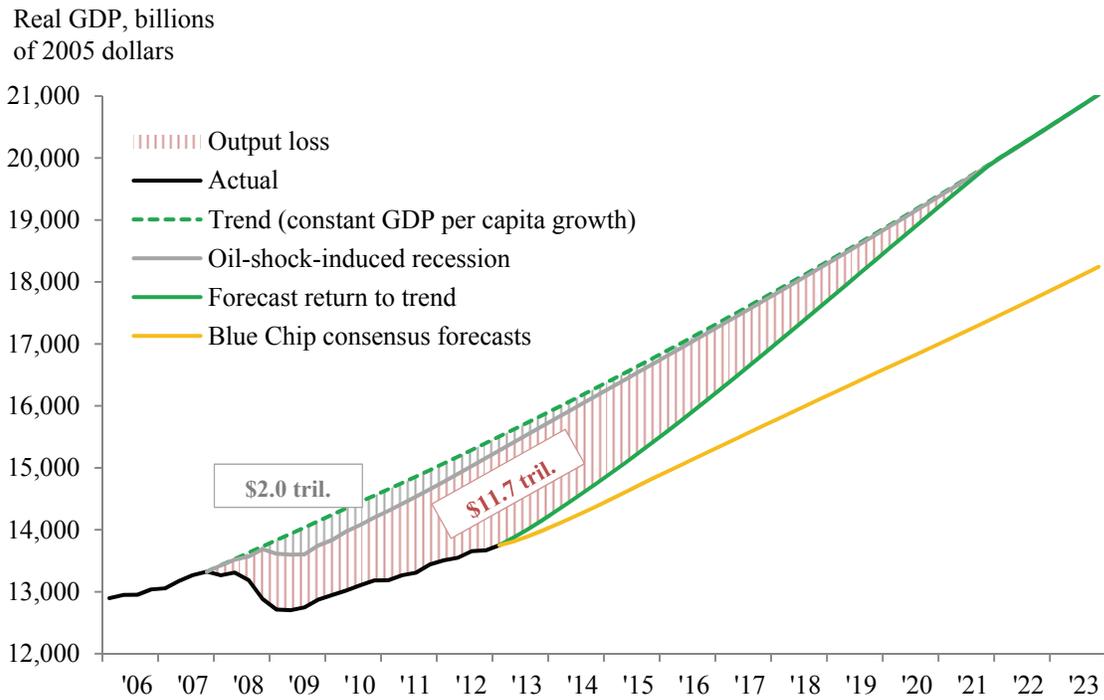
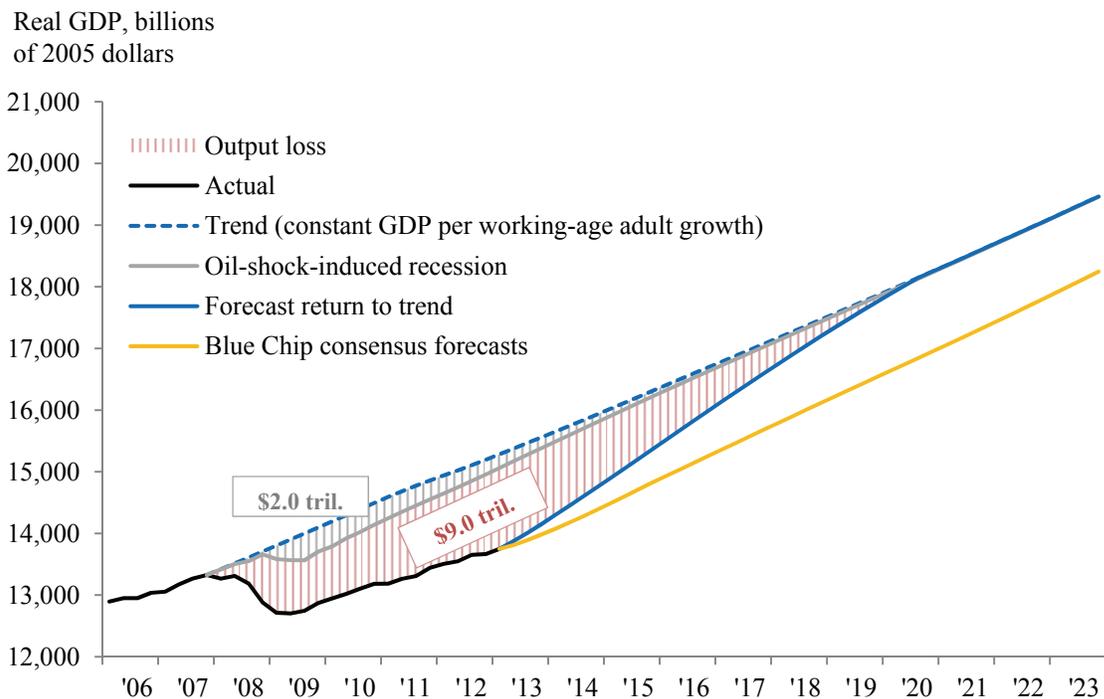
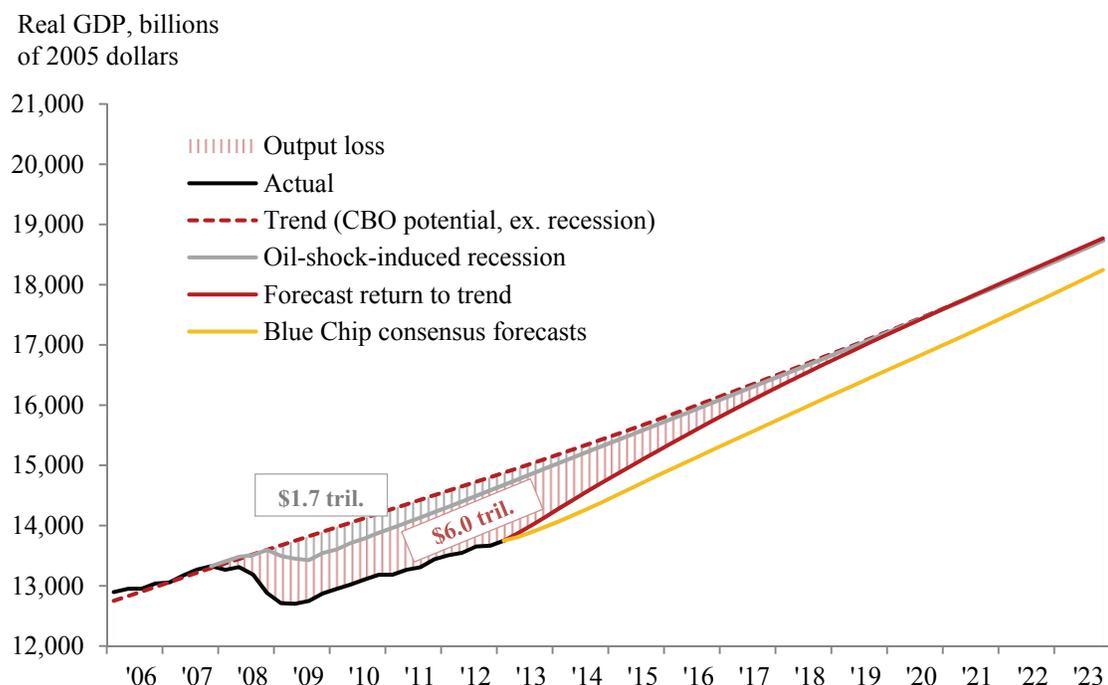
Figure 3A: Gradual Return to Trend Seen Even with an Optimistic Forecast**Figure 3B: Return to Trend Output per Working-Age Adult Requires Less-Extreme Growth Rates**

Figure 3C: CBO Potential Output Predicts Slower Trend Growth



SOURCES: Bureau of Economic Analysis; Congressional Budget Office; Blue Chip Economic Indicators; authors' calculations.

Table 2. Output Losses from the Financial Crisis

	Percent of 2007 output		
	Constant GDP per capita growth	Constant GDP per working-age adult growth	CBO potential GDP, excluding recession
No oil shock	90.1	71.6	50.6
Oil shock	77.1	58.8	39.3
	Trillions of 2012 dollars		
	Constant GDP per capita growth	Constant GDP per working-age adult growth	CBO potential, excluding recession
No oil shock	13.7	10.9	7.7
Oil shock	11.7	9.0	6.0

The estimates in Table 2 are broadly consistent with other studies. The GAO (2013), which reviewed the literature on output losses from past financial crises, expects a range from a few trillion dollars to more than \$10 trillion. Boyd and Heitz (2012) conclude that approximately 45 percent of one year’s output was the lowest conceivable estimate of output loss, close to our lowest estimate of 40 percent.

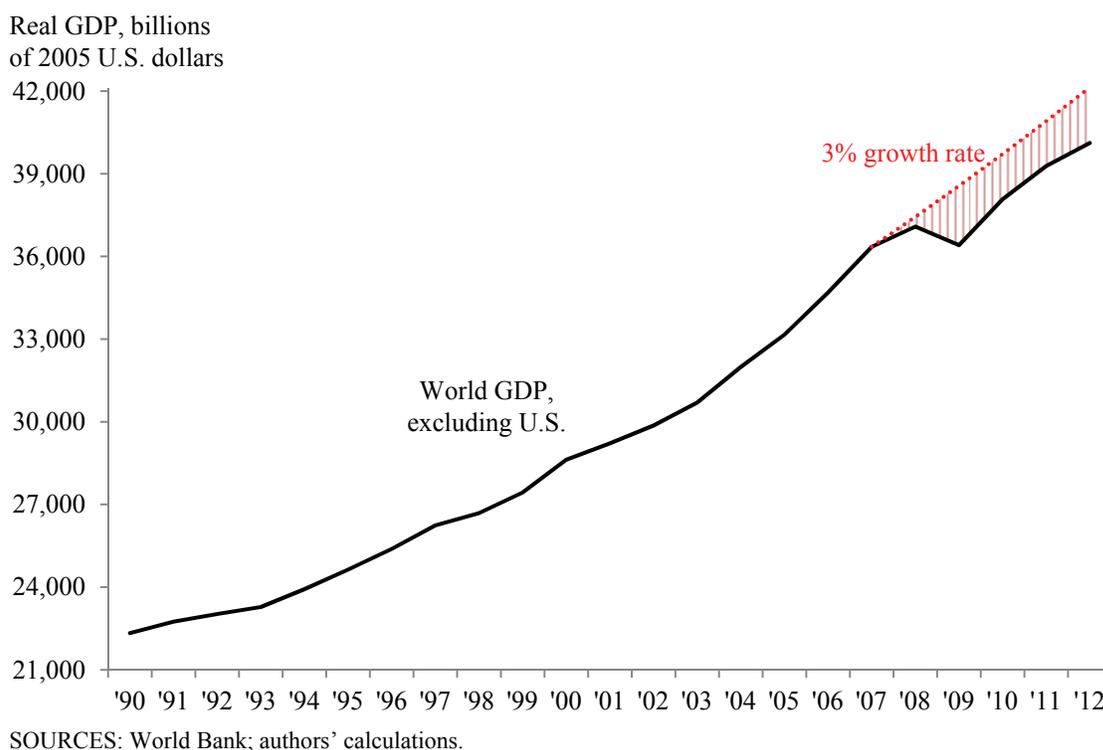
Underlying all of these estimates are assumptions that the financial crisis didn’t lower the U.S. trend and that the economy will return to trend in the foreseeable future—neither of which is certain. There is no consensus in the literature as to whether the level of potential output downshifted permanently. Possible drivers of a downshift include labor skill deterioration during extended periods of unemployment, a lower capital stock, and an increase in risk aversion that lowers productivity (Bernanke 2012). The difference between the precrisis and lower level of output would then extend indefinitely, greatly increasing the discounted cost of the crisis. Furceri and Mourougane (2009) find that past financial crises lowered potential by 1.5 to 2.4 percent and the magnitude of this shift increased with the severity of the crisis.

Papell and Prodan (2011), alternatively, find that while the output gaps associated with financial crises are large, output eventually returns to potential—unaffected by the crisis—an average of nine years after the beginning of the crisis. However, five years after the beginning of the 2007–09 crisis, U.S. output has made up none of the ground it lost on its trend. It would take an average of 4.3 percent growth per year to reach the lowest trend level by the end of 2016, which appears unlikely judging from the rate of recovery to this point. Our forecast again provides a reasonable middle ground between near-term rapid growth and uncertain indefinite output losses, with output returning to trend approximately 14 years after the beginning of the crisis.

As shown in the orange line in Figure 3, the Blue Chip survey of professional forecasters is much more pessimistic about output growth. Using the Blue Chip long-range projections instead of the forecasting model and counting lost output only through 2023, the output loss estimate is 65 to 165 percent of 2007 output (\$9.9 trillion to \$25.2 trillion). However, the Blue Chip forecasts suggest an upper bound on output loss because output growth at such distant horizons is mainly driven by forces that are not predictable. The forecasters most likely perceive a lower potential output level, but it is not obvious if they believe it was lowered primarily by the crisis. Therefore, the Blue Chip forecasts do not provide an economically meaningful estimate of output loss but do suggest it is possible that the range in Table 2 could understate the cost if tepid growth drags on for much longer.

A final point about lost output: The financial crisis triggered (or is at least associated with) a worldwide downturn. A similar exercise for world GDP excluding the U.S., making no attempt to forecast and only counting through 2012, results in an \$8.1 trillion output loss (*Figure 4*).⁹ This number is not intended to be included as a cost of the crisis because it is even less certain than the U.S. estimate. It is not clear that the financial crisis is to blame for all of the slowdown on the world stage. **It does suggest that if the financial crisis is to blame, the international output loss is likely on a similar scale as the domestic loss.**

Figure 4: Financial Crisis Impact Not Limited to Domestic Output



⁹World GDP estimates are from the World Bank. Three percent growth is the average from 1990 to 2007. The same discount factor for the U.S., 3.5 percent, is used for the world.

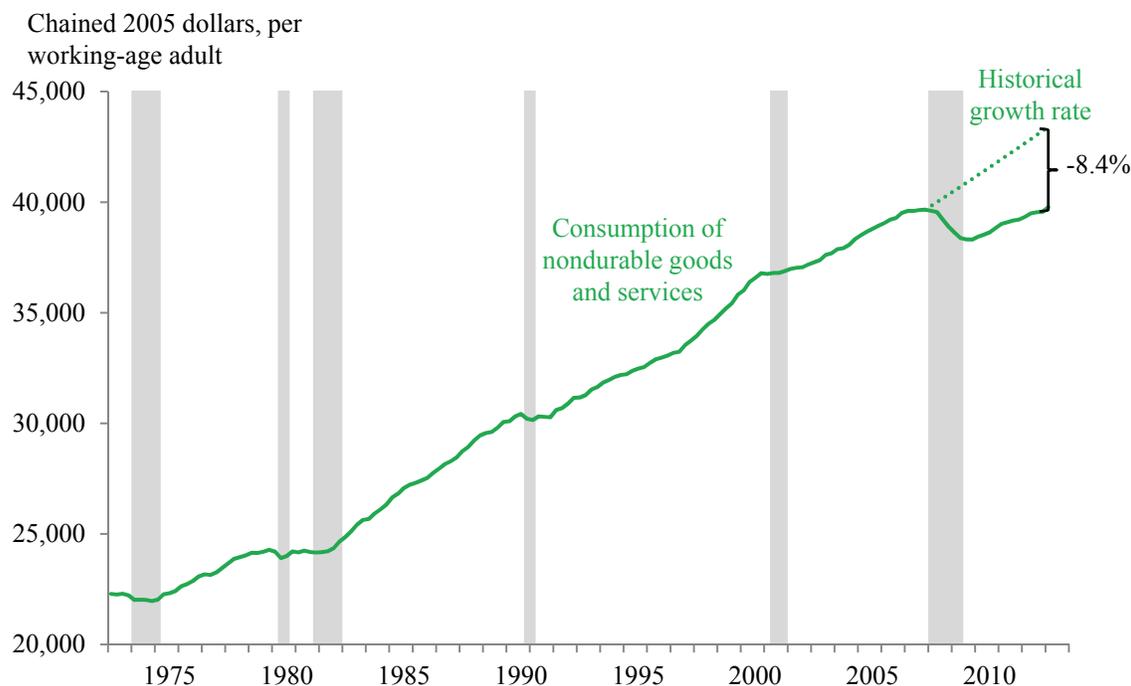
2. THE COST OF REDUCED WEALTH

The crisis wiped out an enormous amount of financial wealth. Household net worth in the U.S. fell \$16 trillion, or 24 percent, from third quarter 2007 to first quarter 2009. This steep reduction in accumulated savings shook household confidence. However, a more appropriate measure of how much harm was done to households is the loss of total wealth, which includes human capital.

The permanent income hypothesis proposed by Friedman (1957) states that the decision of how much to consume in a given period is not based on income in that period but on the average present value of expected income over one’s remaining lifetime. Hall (1978) demonstrates that consumption should thus follow a “random walk with drift,” and any movements in consumption above or below its average growth rate reflect a revision to households’ expected permanent income.

Durable goods, which continue to be consumed beyond the initial period in which they were purchased and therefore share characteristics with investment, are excluded from consumption to try to isolate the change in permanent income. Over 1974–2007, consumption of nondurables and services per working-age adult grew at an average annual rate of 1.7 percent. From year-end 2007 to year-end 2009, it fell 3.4 percent. Consumption has grown at an average annual rate of only 1.2 percent since—it is 8.4 percent below where it would have been if it had kept growing at its historical average (*Figure 5*). According to the permanent income hypothesis, this \$5,000 reduction per working-age adult, scaled up to also account for consumption of durable goods, represents a large downward revision of households’ expectations of their lifetime income and can be used as a measure of the cost of the crisis that does not rely on forecasts or estimates of trend output growth.

Figure 5: Fall in Consumption May Capture Large Downward Revision to Future Income Expectations



NOTE: Gray bars indicate recession.

SOURCES: Bureau of Economic Analysis; Census Bureau; authors’ calculations.

Permanent income is defined as

$$y_p = \frac{r}{1+r} PV,$$

where *PV* is the present value of the flow of future income, and *r* is the long-term equilibrium interest rate. Then, applying *r* = 3.5 percent (the same as the social discount rate applied in the previous exercise) to the fall in consumption implies that households revised down their expectations of discounted future income by \$30.2 trillion (\$149,000 per working-age adult), or 190.5 percent of 2007 output, an enormous amount. The estimate is sensitive to the long-term equilibrium interest rate. Doubling *r* to 7 percent halves the loss to \$15.6 trillion, or 98.5 percent of 2007 output. This rough, conservative estimate from the permanent income approach is near the upper end of the range of estimates from Table 2—the two methodologies give estimates

that are similar. If, however, the financial crisis and the subsequent recession lowered long-term equilibrium interest rates for a substantial period, the discounted future income loss would be correspondingly greater.

While the permanent income approach provides estimates broadly consistent with the output-loss approach, the permanent income approach suggests a more drastic cost of the financial crisis. Even though the permanent income approach does not require a forecast or counterfactual, it could reflect special circumstances of this financial crisis. It is possible that damage to the financial system cut off access to credit for some consumers. If they were unable to smooth over the temporary drop in income, the drop in consumption would not entirely represent a downward shift in expectations. As credit markets healed, consumption would shift back up toward the original path. It would appear as if permanent income had returned to the original path when consumption had actually been a distorted indicator, and the cost of the crisis would be smaller than consumption implies.

It is also possible that the run-up to the crisis helped push consumption of nondurables and services unsustainably high, and so the subsequent drop should not be blamed entirely on the financial crisis. Consumption of nondurables and services was boosted by mortgage equity withdrawals made possible by the run-up in house prices. Duca and Kumar (2011) found that mortgage equity withdrawals were more likely to be made by financially illiterate households, indicating that the borrowing may have been suboptimal from the perspective of some households because they were not aware of the risks they took. If that's the case, the true cost of the crisis would need to account for the boom as well as the bust and would be smaller than the huge amount implied by the simple exercise above. Part of the fall in consumption would be a return to the sustainable level that would have held in the absence of the boom and bust.

Households likely did revise down their expectations of lifetime income, but complications surrounding how the financial crisis affected borrowing make it difficult to interpret from the path of consumption. The path of output is a safer estimate of the cost of the crisis, although consumer behavior suggests other factors plague households' overall well-being as society continues to face dim future growth and earning prospects.

3. THE UNQUANTIFIABLE COSTS OF NATIONAL TRAUMA

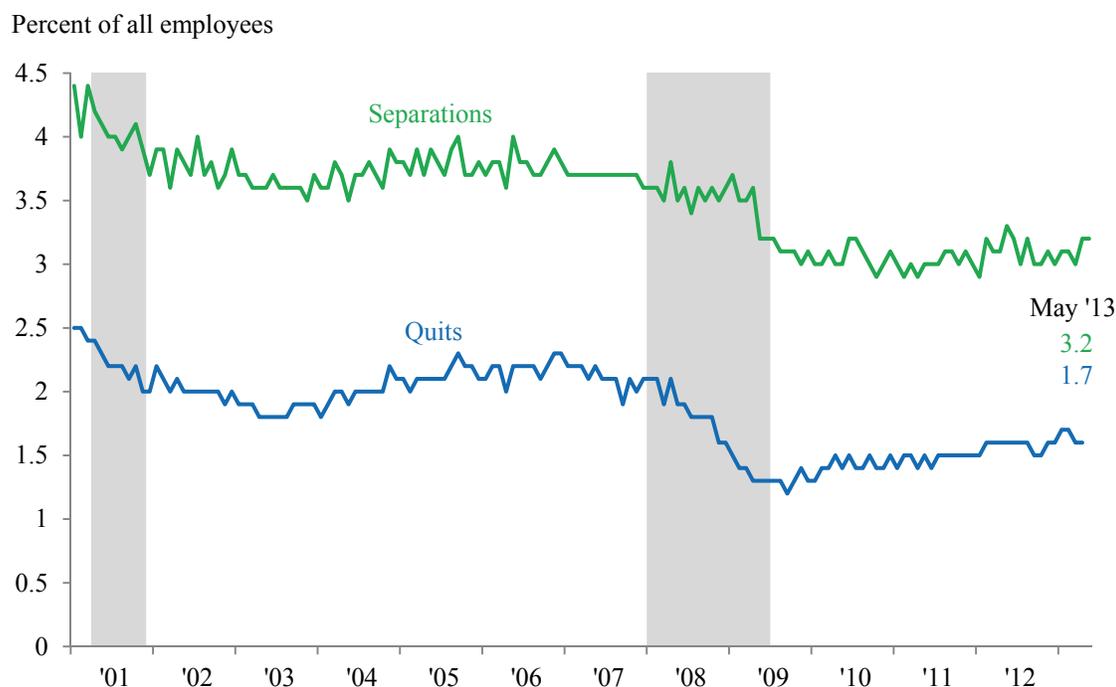
Job Loss

Even if we were to know for certain the output lost or, equivalently, the income lost, it would not completely encompass the crisis's negative consequences on households. Goods and services represent only one input that determines society's overall well-being. While the recession was an economic phenomenon, it has many dimensions beyond those effects captured by the sizable drop in output. Nonfarm payrolls fell by more than 8.7 million, or 6.3 percent, over the course of the recession. This forced many workers to face extended bouts of unemployment or to leave the labor force altogether. By the recession's end in June 2009, the ranks of the underemployed—those who are available and searching, discouraged and not looking, or finding only part-time work—had risen 94 percent to 12 million. Lack of employment prospects and an uneven rebound in labor market conditions creates psychological burdens beyond those arising from foregone income.¹⁰

Branches of economics that survey broader measures of life satisfaction apart from income have confirmed the intuition of the nonpecuniary costs of being unemployed (Bernanke 2010). Stress, shame, and feelings of loss of control also negatively affect the unemployed. Higher unemployment has spillover effects to the rest of society. While lost output implies additional unemployment to a certain extent, the amount of foregone production would not include the psychological strains that society must bear. Poor labor market conditions affect not just the underemployed and unemployed, but also the employed. A higher unemployment rate decreases job security and diminishes belief that another job could be found if a layoff occurred. The percentage of employees who quit—voluntarily left a job—plummeted during the recession, reflecting anxiety about job prospects (*Figure 6*). In fact, total separations (voluntary and involuntary) also fell because the drop in employees quitting was much larger than the increase in employees involuntarily losing their jobs. While the psychological cost of a weakened economy may be small for an employed worker relative to the burden experienced by the unemployed, the aggregate societal effects can be significant due to the sheer number of employed civilians.¹¹

¹⁰While the unemployment rate had decreased to 7.6 by June 2013 from its recessionary peak of 10 percent, other measures of the health of the labor market have shown less improvement. For example, the share of the unemployed who find employment in the following month fell from 26 to 17 percent over the recession and has recovered to around 19 percent.

¹¹The Bureau of Labor Statistics reported 144.1 million employed and 11.8 million unemployed people as of June 2013. In addition, unemployment insurance benefits are supplemented by expenditures out of general federal tax revenues, thereby imposing indirect costs on the employed and underemployed. Similarly, the cost of the Supplemental Nutrition Assistance Program is paid out of general tax revenues as well and is borne by those whose income is high enough to pay federal income tax.

Figure 6: Voluntary Departures Plummet in the Recession

NOTE: Gray bars indicate recession.

SOURCE: Bureau of Labor Statistics.

These kinds of surveys are hard to interpret because of difficulties quantifying personal well-being. One strategy is to use the effect from the loss of a specified amount of income as a measurable comparison. Helliwell and Huang (2011) analyzed a U.S. survey and found that a 1-percentage-point increase in the unemployment rate reduces the well-being of the unemployed as a group five times more than the direct effect from the lost income. The impact on the employed as a group, which is much larger than the unemployed, was found to be ten times that from the loss of income on the unemployed, bringing the total population effect to fifteen times the income loss due to unemployment.

In 2008–12, unemployment related to the weak economy prevented roughly \$900 billion in earnings.¹² According to the findings in Helliwell and Huang, society would have given up fifteen times this—\$14 trillion (in 2012 dollars, 90 percent of 2007 output)—to avoid the negative consequences to well-being from unemployment rising above its natural rate through year-end 2012.

As usual, caution comes with such a large number. The various survey-based studies that estimate the cost of unemployment on well-being have arrived at different results depending on what questions were asked to measure well-being, in what country or countries the survey was taken, and the segment of the population that was surveyed. For example, Clark (2003) found no statistically significant spillover to society from a high unemployment rate in the U.K.

Some studies have argued that surveys of well-being are not measuring the correct concept. Most surveys inquire about the respondents' "life satisfaction." Answering this requires a person's cognitive judgment about what constitutes happiness and likely a comparison to people around them and to other points in their own life. This comes with baggage not associated with economists' concept of utility. Knabe et al. (2010) instead aggregate up "experience utility" from how German survey respondents spend their time and how they feel during various situations. They find that while the unemployed are sadder than the employed during a given activity, the unemployed are able to spend more time on activities that are more pleasant than work, which offsets the negative effect from unemployment. They find the net effect of unemployment on time-weighted well-being to be negligible.

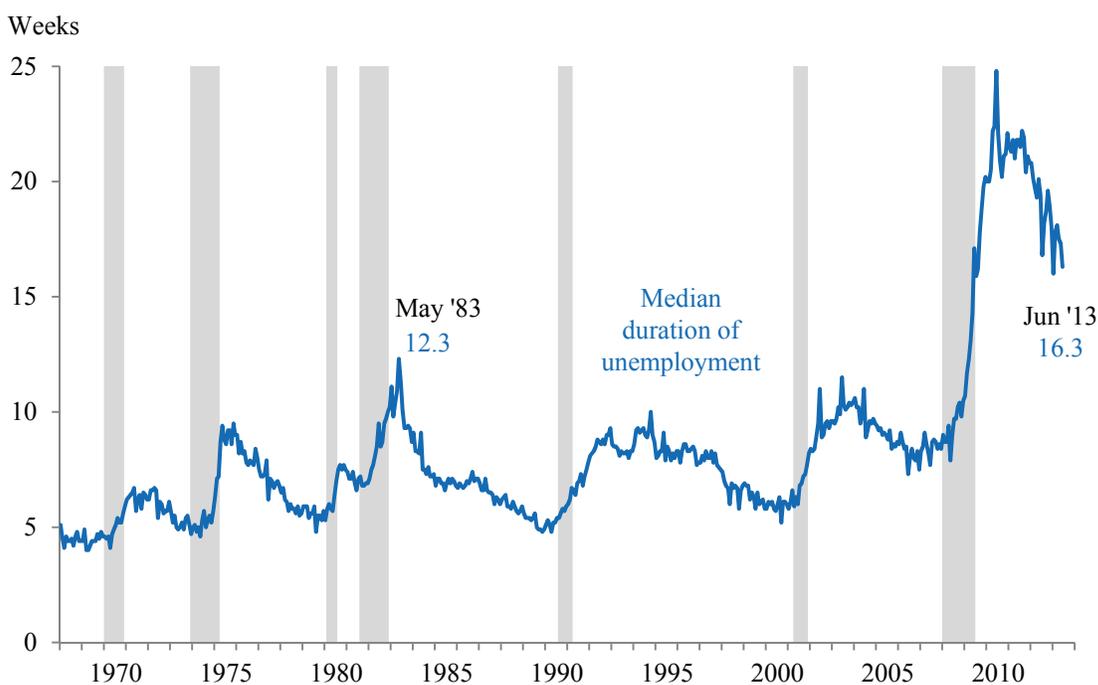
These results may not hold in the U.S., and intuition suggests that unemployment is not a pleasant experience. However, they highlight the issues with directly asking people about their well-being and drawing

¹²The number of unemployed due to the economic weakness is estimated as the unemployment rate minus the CBO natural rate of unemployment, times the labor force. It is assumed that the unemployed had the same payment distribution as those who maintained employment and otherwise would have continued to earn average compensation, calculated from the Personal Income and Outlays release. Personal income from unemployment insurance benefits above the year-end 2007 level is subtracted from the income loss estimate. The income losses are discounted to 2007 using a 3.5 percent rate.

macroeconomic conclusions from the results. One behavioral researcher in this area has noted that a lack of “earned success” has displaced the satisfaction of millions of Americans who have fallen on hard times.¹³

Surveys also suggest that the intangible consequences of joblessness are not just psychological because unemployment is also associated with worse physical health. The psychological and physical impact of unemployment worsens with the length of unemployment as stress accumulates and savings are depleted (McKee-Ryan et al. 2005). The median duration of unemployment was 16.3 weeks as of June 2013, remaining elevated above even previous recession highs (*Figure 7*). This implies that the total nonpecuniary costs were great not only due to the number of unemployed, but also because the burden on the average unemployed worker was greater than in previous recessions. Long-term unemployment is troubling from an economic perspective as well. It is possible that extended bouts of unemployment could cause workers to lose familiarity with technical aspects of their occupation. There is also some evidence that employers view extended unemployment as a stigma, making those workers less likely to be hired even if the extended unemployment is due only to weak economic conditions (CBO 2012). Both of these effects would reduce workers’ lifetime earnings and the U.S. economy’s potential output. **We do not add the large nonpecuniary costs of unemployment to the total cost of the crisis because of the uncertainty of measurement. However, the burden of unemployment should further reinforce the possibility that the output loss estimate of 40 to 90 percent of one year’s output drastically understates the true cost of the crisis.**

Figure 7: Median Duration of Unemployment Still Above Prerecession High



NOTE: Gray bars indicate recession.
SOURCE: Bureau of Labor Statistics.

Reduced Opportunity

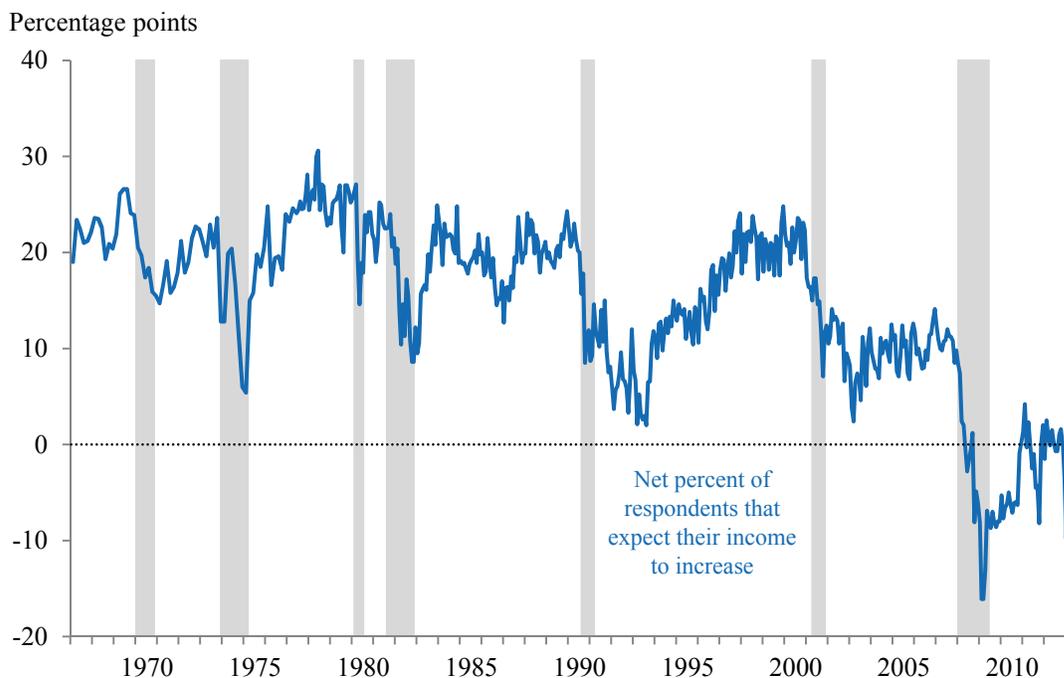
The millions left unemployed during the recession, in addition to job losses and hardship, encountered an overall malaise and perception of reduced opportunity associated with severe job cuts. The lower rate of household formation following the financial crisis is indicative of a perceived reduction in opportunity. The average number of households formed in 2007–10 slowed to 500,000 annually from an annual average pace of 1.5 million in the previous decade (Dunne 2012). Although household formation picked up in 2011, the increase was insufficient to offset the formation decline during the recession. This shortfall is not explained by the aging of baby boomers, a demographic often eliciting concern among researchers. Instead, the increase in working-age children living with their parents for financial reasons was most responsible for the household-formation decline. Young people have been unable or less willing to set out on their own,

¹³See the Brooks (2012) narrative about the merits of a free-enterprise system founded on entrepreneurship, personal responsibility, and upward social mobility.

reflecting reduced opportunity. Few extended families have been exempt from these aspects of the financial crisis.

The notion that the future will be better than the present is a crucial source of motivation that the crisis took away from many. Reduced opportunity was reflected in the downward revision to households' permanent income, the decline in the labor force participation rate, and the slower rate of household formation. Individuals do not change these behaviors due to temporary economic shifts. Rather, they act when they reassess their medium- and long-term prospects and do not like what they see. For the first time since the Conference Board began surveying consumers in 1967, more respondents expect their income to decrease over the next six months than increase—an unfortunate trend that has persisted now for more than four years (*Figure 8*).

Figure 8: Crisis Dramatically Lowers Income Expectations



NOTE: Gray bars indicate recession.

SOURCE: The Conference Board.

Damaged Public Trust

Similarly to reduced opportunity, the financial crisis resulted in a significant loss of trust in government institutions and the capitalist economic system. Many households' confidence in the financial system was shaken when roughly one-fourth of their accumulated household wealth evaporated in a matter of months. Further, the officials they entrusted to govern and to impartially regulate the financial services industry offered massive support and preference to a handful of the largest institutions. Deemed “too big to fail” (TBTF), these financial intermediaries lacked discipline and accountability leading up to the crisis and proved to be largely immune from the downside of the excessive risks they took. TBTF financial institutions aggressively pursued profits and growth strategies that benefited management and, to a degree, owner-shareholders and creditors. Subsequent losses when the boom turned bust were disproportionately borne by taxpayers. Privatized gains, socialized losses—this was the TBTF banking model that played out at the height of the crisis (Fisher and Rosenblum 2013).

With market confidence shaken and the financial system on the verge of collapse, only the public sector backstop could stem a systemic run (Luttrell, Rosenblum, and Theis 2012). However, saving the system in itself—especially with extraordinary government assistance provided to a handful of giant financial institutions—reinforced a perception that public support exists primarily for large, interconnected, complex financial entities. This special treatment violates a basic tenet of American capitalism: All people and institutions have the freedom to succeed and also to fail based on the merits of their actions. The U.S. fell from second to eighteenth from 2000 to 2012 in the Fraser Institute's Index of Economic Freedom global ranking (Gwartney et al. 2012). Less-secure property rights, bigger government, increased regulation of businesses, and favoritism accorded to special interest groups contributed to the lower ranking.

Government-assisted bailouts of reckless financial institutions are generally viewed as economically and politically offensive, a perversion of the principles of capitalism (Rosenblum 2012). Society views economic policy as favoring the big and well-connected, possibly making individuals less likely to engage in risk-taking entrepreneurship, further slowing the recovery and crippling public trust. The 2008–09 bailouts promoted debilitating moral hazard issues that undermined personal responsibility and accountability for a handful of banking mandarins. The nation has witnessed a wide range of ideological expressions of this development: from Tea Party affiliations to Occupy Wall Street forums.

4. THE UNINTENDED CONSEQUENCES OF GOVERNMENT INTERVENTION

Policy Response

The Treasury Department, Federal Deposit Insurance Corp., and Federal Reserve took unprecedented actions to stem a panic that hit financial markets, creating spillover to the real economy. These actions helped break an adverse feedback loop of financial system dysfunction and sought to address the subsequent recession. Further, monetary easing in many economies around the world helped lower interest rate and liquidity constraints in an attempt to encourage economic activity and bolster asset prices. However, these actions also carry potentially negative unintended consequences that could offset many intended benefits. The degree to which the costs of the policies' unintended consequences should be attributed to the crisis isn't obvious. We take the approach that aggressive countercyclical public policies would not have been implemented if not for the crisis and thus consider their unintended consequences to be largely attributable to the crisis.

Accounting for the Impact of Unprecedented Stimulus

The Special Inspector General for the Troubled Asset Relief Program (SIGTARP 2009) estimated that the high-water mark for potential exposure from the financial rescue could reach \$23.7 trillion, a figure that included the maximum amounts authorized for program expenditure by numerous federal agencies from the onset of the crisis through June 2009. However, there are many ways to approach the measurement of government support in a time of crisis. Direct government support for the U.S. financial sector took the form of capital injections, Treasury lending, asset purchases, government guarantees, and unusual central bank support and liquidity provision. The International Monetary Fund (IMF 2009) estimated direct support above and beyond the previously existing public safety net at 82 percent of 2007 U.S. GDP, or \$12.6 trillion.¹⁴

The estimate would be much smaller if subsequent repayments, recovery rates on asset purchases, and other such factors were netted out of a gross number to arrive at a realized net direct fiscal cost. But for purposes of this paper, a broad measure of government intervention that encapsulates the magnitude of government largesse in response to the crisis is more useful than a narrow gauge of net direct fiscal cost. An estimated \$12.6 trillion in extraordinary government assistance was allocated to struggling businesses and households. We argue that taxpayer dollars would not have been deployed, or been at risk of deployment, in this manner had the country averted the financial crisis. Although this more comprehensive approach—viewing extraordinary government spending as a *cost* of the crisis—is different from how other costs are examined in this paper, we prefer to consider the broader impact of such public sector capital allocation.¹⁵

Looking more closely at one component of government intervention, TARP is still winding down more than four and a half years after its creation under the Emergency Economic Stabilization Act of 2008. Treasury has worked to reengage private capital to replace this federal financial system backstop. Through 2012, taxpayers had recovered more than \$389 billion—or 93 percent—of the \$418 billion in TARP funds disbursed, due in large part to eased financial conditions as the crisis abated and accommodative monetary policy. Treasury points out that financial stability programs launched during the crisis are expected to potentially turn a “profit” for taxpayers as TARP housing programs, Treasury investment holdings, bank recapitalizations, and the conservatorship costs for government-sponsored enterprises Fannie Mae and

¹⁴This measure captures additional support above and beyond the precrisis Federal Deposit Insurance Corp. deposit insurance limits and the traditional monetary policy operations and lender-of-last-resort functions of the Federal Reserve. The IMF staff estimate of 81 percent of 2008 GDP was converted to reflect the 2007 equivalent.

¹⁵Direct government intervention during banking crises is not simply a U.S. phenomenon. See Laeven and Valencia (2012) for another perspective and a detailed review of various systemic banking crises throughout the world and their respective direct fiscal costs, output losses, and resulting public debt increases. The \$12.6 trillion “cost” estimate includes government guarantees that were not tapped to their full extent; thus, this measure is meant to provide a magnitude of the extent of government intervention rather than a parallel measure easily comparable to the output losses calculated in this paper. However, this estimation is not necessarily a comprehensive upper-bound calculation. For example, it does not include the effects of decreased tax revenue as a result of reduced economic activity that further exacerbated the health of the nation's budget and debt picture.

Freddie Mac are offset by projections of larger-than-normal remittances from the Federal Reserve (Treasury Department 2013). These figures incorporate \$179 billion of Federal Reserve earnings (largely income from its portfolio of securities holdings in excess of its operating costs) to be remitted to the Treasury through fiscal year 2015. This sum could evaporate if the Fed is forced to take capital losses by selling its portfolio of long-term securities to rein in inflationary pressures, or if actual and/or expected inflation drive up long-term interest rates.¹⁶

Moreover, arguing that the government money will be repaid ignores the contention that the funds could have been deployed more effectively for infrastructure and for education, both benefiting society through longer-term increases in the nation's capital stock (productive capacity). This is not to say it would have been better if the government had not intervened. But if a crisis had not occurred, this allocation of taxpayer dollars would not have been made. Observing just one of the better-understood components of recent government assistance reveals the accounting complexity in any hard estimate of realized net costs of government intervention. Thus, it is helpful to analyze the behavioral impact beyond fiscal expenditures.

For example, approximately one-sixth of government outlays represent "means-tested programs" and tax credits that provide cash payments or assistance obtaining health care, food, housing, and education to people with relatively low income. These kinds of outlays grew during and following the crisis. In particular, enrollment in the Supplemental Nutrition Assistance Program (SNAP), the modern-day federal food-stamp assistance program, soared 70 percent to a record 47.8 million persons from 2008 to January 2013. Approximately 15 percent of Americans are on SNAP, roughly one out of seven residents. Although the CBO predicts unemployment will fall to 5.5 percent by year-end 2017, SNAP enrollment is projected to drop to only 43.5 million. Increased poverty and the plight of millions, in addition to higher federal spending on means-tested support programs, are a legacy of the downturn and still-sluggish postcrisis economic growth phase.

The increased SNAP benefits are emblematic of the higher benefits paid out and reduced tax revenues attributable to the weakened economy. Thus, despite what may be considered relatively few direct intervention costs, associated and accumulating federal budget deficits represent a significant burden for current and future taxpayers. In January 2008, the CBO forecast that the federal debt held by the public would be \$6.7 trillion in 2012 (CBO 2008).¹⁷ The realized federal debt was 69 percent (\$4.6 trillion) higher. The larger-than-projected shortfalls were driven by the cyclical drop in revenues and rise of income security spending (or "automatic stabilizers") as well as increased outlays and tax cuts aimed at stimulating the economy. If the crisis hadn't occurred, government debt would have been trillions lower, certainly not a trivial cost. Future generations will repay the obligation through higher taxes and/or higher inflation. The higher taxes will, of course, entail inefficiencies. If the debt were domestically held, the repayment would be to U.S. residents. However, approximately half of the privately held debt is held by foreigners, and therefore a considerable portion of the higher interest payments will not be used to purchase U.S. output.

The increased federal debt has an additional implicit cost: reduced capacity to respond to future crises. Greenlaw et al. (2013) find that countries with government debt above 80 percent of GDP and persistent current-account deficits are vulnerable to tipping-point dynamics. The tipping point occurs when a higher debt load causes investors to see government debt as more risky, either through default or higher inflation, and require compensation with higher interest rates. This, in turn, increases the difficulty of the government to meet its obligations, further pressuring rates. In 2012, the U.S. gross national debt was near 105 percent of GDP, but the U.S. could still borrow at very low interest rates. The exact tipping-point threshold is uncertain, varying by country and circumstance. Currently, the market shows no sign of losing trust in the U.S. government.

While annual budget deficits are projected to shrink slightly over the next few years, they are projected to increase later in the next decade for reasons largely separate from the financial crisis. The pressures of an aging baby-boomer demographic, rising health care costs, higher federal subsidies for health insurance, and growing interest payments on the overall federal debt are expected to contribute to historically high debt relative to the size of the economy for at least the next decade.

This analysis assumes the U.S. does not experience another recession soon. From 1983 to 2007 (the Great Moderation), recessions occurred about once every 10 years. This era of relative price stability and economic growth was tranquil compared with the end of World War II through 1982, when recessions

¹⁶Greenlaw et al. (2013) estimate the range of capital gains/losses by the Federal Reserve relative to the precrisis trend to be a positive \$43 billion to a negative \$282 billion over 2007–20, depending on the path of asset holdings and short-term interest rates.

¹⁷This was under the alternative fiscal scenario in which various Bush-era tax cuts were extended beyond their 2010 termination date. Most of the tax cuts were, indeed, extended through 2011.

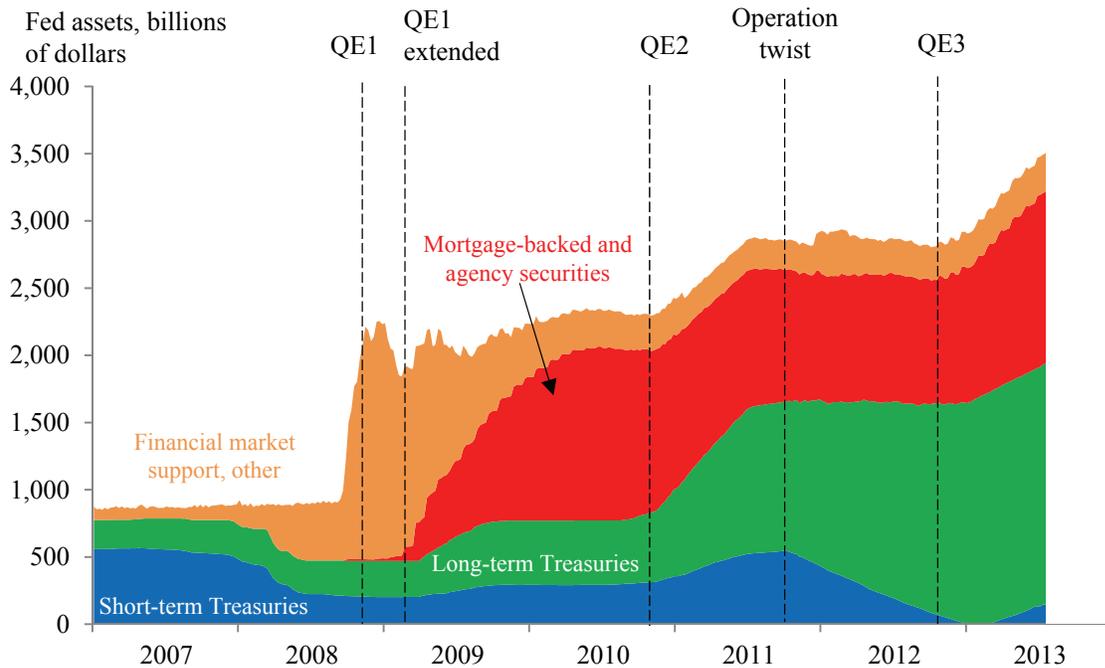
occurred roughly every four and a half years and inflation tended to be more volatile, or from 1857 until World War II, when recessions were as frequent as expansions. It is hard to predict which era will more closely characterize the next several decades. If the U.S. enters another economic contraction while debt levels remain high, the federal government might face a no-win situation—either continue deficit reduction despite a contracting economy, or accumulate even greater debt and risk increasing what could become unmanageable interest costs. **The fact that the nation is vulnerable to this reduced ability to respond to future downturns is an implicit, but significant, cost of the financial crisis.**

Monetary Policy as a Complement to Fiscal Policy

Just as accommodative monetary policy eased previous episodes of fiscal consolidation, it could offset current drags from fiscal policy. However, the capacity of monetary policy to be accommodative in the future might similarly be reduced. The ongoing tepid recovery suggests that the zero lower bound on nominal short-term interest rates constrains monetary policy, whether it is driven by the inefficacy of unconventional policies or reluctance to employ them. Near-zero interest rates attributable to the financial crisis may hinder conventional monetary policy in future downturns, causing them to be more severe.

The Federal Reserve’s balance sheet has more than tripled since 2007, and the composition of its portfolio may serve as a constraint on future policy actions. The Federal Open Market Committee (FOMC) reduced its holdings of short-term Treasury securities, which previously made up the bulk of its assets, and has greatly expanded its holdings of longer-term Treasury, agency and mortgage-backed securities (*Figure 9*). The longer-duration holdings increase the likelihood of capital losses should the FOMC decide to sell securities to head off inflationary pressures. The longer-duration, less-liquid securities have greater sensitivity to interest rate changes (when rates go up, the value of the bonds decreases) as well as less marketability, limiting how easily they can be sold without disrupting markets.

Figure 9: Fed Expands Holdings and Shifts to Longer-Term, Less-Liquid Assets



NOTE: Large-scale asset purchase programs, popularly known as quantitative easing (QE), began by the FOMC in late 2008 in response to a weakening economy and short-term interest rates near the zero bound. The Federal Reserve purchased long-term Treasuries and mortgage-backed and agency securities, increasing its holdings of longer-term and less-liquid securities. In the maturity-extension program, or “operation twist,” the Federal Reserve sold short-term securities while purchasing long-term securities.

SOURCES: Federal Reserve Board of Governors; authors’ calculations.

Inflation has remained near 2 percent over the past 15 years due primarily to the anchoring of long-term inflation expectations (Koenig and Atkinson 2012), but that is no guarantee that inflation expectations will remain anchored in the future. Federal Reserve balance-sheet operations that extend the maturity and reduce the liquidity of its holdings increase the risk that the public will doubt the Fed's commitment to low inflation, and long-term inflation expectations could rise. If credibility is lost, the anchoring of expectations, which was hard-gained in the 1980s and '90s, may be equally difficult to earn back. **Monetary policy stuck at the zero bound and stretching into the unknown territory of extended asset purchases is yet another implicit cost of the crisis** (White 2012).

An unsustainable fiscal scenario would further complicate exiting the era of the Fed's expanded balance sheet and has implications for long-term inflation expectations. As the federal debt becomes increasingly difficult to manage, pressure grows on the central bank to monetize it as an alternative to a bond default that would damage confidence and curtail economic growth. If market participants anticipate such an outcome, inflation could become unanchored prior to the actual monetization, even if the central bank remained fully committed to an inflation target and behaved accordingly. Greenlaw et al. (2013) suggest that this could pose a problem for the eventual unwinding of the Federal Reserve's balance sheet. The Fed remits all of its "profits," which have been substantial in recent years, to the Treasury. Once the recovery gains the momentum it has so far lacked, interest rates should rise. If the Fed sells long-term securities it purchased when rates were low, it would take capital losses that would cut into remittances to the Treasury. It then becomes possible that Fed remittances could fall to zero at some point or, under some scenarios, eventually offset the prior, above-normal remittances. A reluctance to tighten policy during a scenario with simultaneously rising inflation and a worsening federal debt situation could be viewed as willingness to monetize the debt. Such a perception would unanchor inflation expectations.

However, it is most likely that the timing of these events will preclude such a conflict from arising (Powell 2013). A sustained increase in long-term interest rates could just as likely be driven by a significant improvement in economic conditions, which would also improve the fiscal outlook. With lower deficits, the appearance of pressure to monetize could diminish. Also, an aging population and runaway health care costs, drivers behind the CBO's projected escalating debt levels, should not pose a serious threat to the budget for another decade or so. By then, the Federal Reserve's balance sheet is projected to return to normal levels. So while an unsustainable fiscal situation could cause inflation expectations to become unanchored if fiscal policymakers avoid resolving long-term budget problems, it is unlikely that the Fed's long-term asset purchases would be the source of this problem.

Even if the costs of the government response to the crisis did not lower incomes, indirect effects could make society worse off. The same amount of output may be directed to a different, less-preferable set of goods and services. The crisis bolstered perceptions of the financial system's inherent instability, which led to a wave of new regulations, most notably the Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010. Koch (2013) documents the increased number and complexity of regulatory filings since 2008—a regulatory burden that small community banks face despite their relatively limited threat to financial stability. Apart from the probable negative effects on output in the long-term, increased regulations divert resources in the short-term toward government implementation and private sector compliance and away from production considered more worthwhile by society.

The GAO (2013) estimates that through 2013, with only 224 of the 400 Dodd–Frank rules finalized by ten federal agencies, Dodd–Frank implementation will cost approximately \$2 billion and require about 4,000 full-time-equivalent employees. Measuring private sector compliance costs is more difficult because data are limited.

However, the brunt of the financial impact of Dodd–Frank isn't reflected in increased labor costs but in how it impacts bank capital and earnings. Standard & Poor's estimates that Dodd–Frank could reduce pretax earnings for the eight largest U.S. bank holding companies by \$22 billion to \$34 billion annually, mostly from regulatory changes to derivatives, trading, and proprietary investments and increased deposit insurance assessments (Albrecht 2012).

While these numbers may be small relative to the trillions of other costs, any sum committed to less-productive activities diminishes the nation's productive capacity. The new regulations will divert employees and resources toward compliance and away from more productive utilization. Even if output is unchanged, the current economic progression may represent a less-preferable set of goods and services for consumers.

The regulations could be sufficiently stabilizing to justify their cost of implementation and compliance should they prevent future crises as intended. To this point, Dodd–Frank has proven only its capacity to increase the complexity of the financial system and its regulatory apparatus, not its stability (Fisher 2013). Further, the financial reform effort is incomplete, and we have yet to see implementation of many new regulations that will affect financial sector best practices—and thus the flow of credit—for years to come.

5. COSTS OF THE CRISIS HAMPER AN ECONOMIC COMEBACK

The 2007–09 financial crisis cost the U.S. economy at least 40 to 90 percent of one year’s total goods and services. The estimate depends on what growth would otherwise have been and what it will be in the future. A more comprehensive evaluation of other factors suggests the costs and consequences of the crisis are even greater. Thus, the 40 to 90 percent of one year’s output is the bottom-line estimate of the total cost of the crisis.

The output loss in other countries due to the financial crisis could easily match the U.S. output loss. We assume output will return to its prerecession path, but there is some evidence that financial crises lower the level of potential output, further extending the losses. A downshift in consumption due to the crisis could reflect a large downward revision to household expectations of lifetime income, implying a loss of one or two years of output. This may overstate the loss if consumption was pushed unsustainably high in the boom and the fall was partially driven by temporary damage to credit markets. However, even these hefty estimates ignore the intangible costs beyond lost income. A stark legacy of the recession is extended unemployment—a lackluster labor market that is associated with deterioration in mental and physical health, including reduced subjective well-being among both the unemployed and employed.

Subtly, but still significantly, the crisis also started the nation down a path of government intervention aimed at stemming and reversing damage from the crisis and preventing the occurrence of similar episodes. These actions may have been successful and worth the allocation of taxpayer funds, but they came with a related cost that would not have been incurred without the crisis. Perhaps most important—though harder to quantify—the government and affiliates such as the Federal Reserve have likely seen their ability to respond to future downturns impaired.

The narrowest and most easily quantifiable cost of the crisis is large, and the consequences are vast. Given our range of estimates, the tepid economic recovery, and the litany of other adverse effects stemming from the Second Great Contraction, we suggest that the total domestic cost is likely greater than the equivalent of an entire year’s output. Thus, it is crucial to identify the primary causes and implement effective policy to avoid future episodes whose magnitude could exceed even the staggering costs and consequences of the most recent financial crisis.

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