From Recession to Recovery: The Economic Crisis, the Policy Response, and the Challenges We Face Going Forward

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Chair Maloney, Vice Chairman Schumer, Ranking Members Brady and Brownback, and members of the Committee, it is an honor to be with you today. There is no question that the past year has been one of enormous challenges for the American economy. The recession that began in December 2007 has been the worst we have faced since the Great Depression. The suffering it has brought to American workers and their families has been terrible. The toll that it has taken on American businesses has been great across the spectrum—affecting firms both large and small; those in services as well as manufacturing; and firms in every state and community.

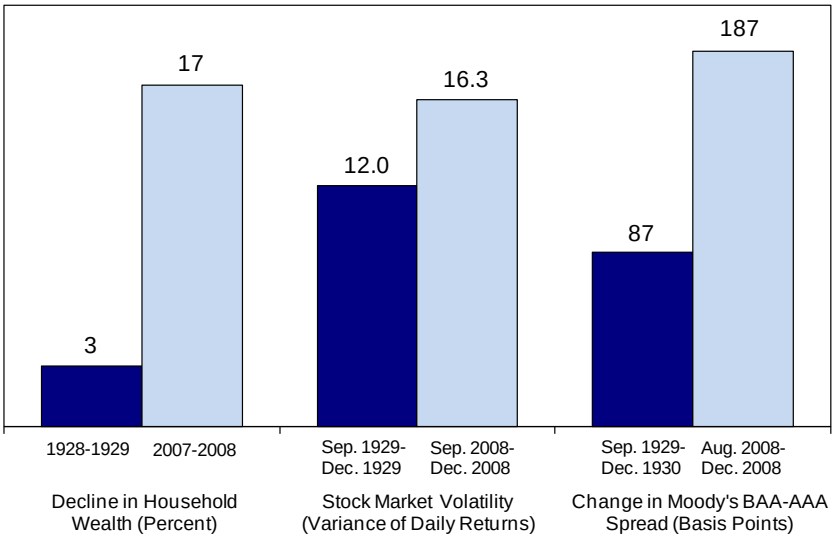
In my testimony this morning, I want to discuss the economic crisis and the efficacy of the policy response. I also want to talk about the outlook for the U.S. economy and describe what I see as the key risks to the forecast. Finally, I want to discuss some of the policy challenges that we are likely to face going forward.

I. Shocks to the Economy

The economy the Administration inherited when President Obama took office was, to put it bluntly, in terrible shape. One way of describing the severity of the crisis we faced that I find striking is to observe that the shocks that hit the U.S. economy last fall were, by almost any measure, larger than those that precipitated the Great Depression. Figure 1 compares some key

indicators of the shocks in the two periods.

Figure 1
Shock Indicators: Great Depression vs. Current Recession



Sources: See text.

A key causal factor in both downturns was a decline in household wealth that lowered consumer spending. In 1929, however, the crash of the stock market in October mainly reversed a large run-up in stock prices that had taken place between June and August, and house prices declined only slightly. As a result, household wealth fell by just 3 percent between December 1928 and December 1929. In 2008, in contrast, stock prices fell 24 percent in September and October alone, and house prices fell 9 percent over the year. All told, household wealth fell 17 percent between December 2007 and December 2008, more than five times the decline in 1929. [1]

Another factor creating uncertainty and restraining spending in both periods was volatility in financial markets. But asset price volatility, which was very high in late 1929, was even greater in the fall and winter of 2008. The variance of daily stock returns measured using the S&P index was more than one-third larger in the current episode than in the final four months

of 1929.[2]

If falling and volatile asset prices were important in both 1929 and 2008, the defining feature in both cases was a full-fledged financial panic. In the Great Depression, it was not until late 1930 that the economy suffered the first wave of banking panics, highlighted by the failure of the official-sounding Bank of the United States in December. In 2008, the U.S. financial system similarly survived the initial declines in house and stock prices. But the outright failure of Lehman Brothers (and other financial takeovers and rescues that same week) proved too much for the system. The financial system truly froze and liabilities once assumed to be completely safe, such as money market mutual funds, threatened to trade at a discount.

One frequently cited indicator of the depth of the panic in September 2008 is the skyrocketing of credit spreads. One spread for which we have data back to the 1920s is that between Moody's AAA and BAA grade bonds. In the fall of 1929, this spread barely changed. By December of 1930, after the banking panic in late 1930, it had risen to 87 basis points above its level before the stock market crash. In contrast, this spread rose 187 basis points between August and December 2008.[3]

The result of these shocks was a rapidly contracting economy. Real GDP fell at a 5.4 percent annual rate in the fourth quarter of 2008 and at a 6.4 percent rate in the first quarter of 2009. Employment, which had been falling by less 150,000 jobs per month before September, fell by an average of 622,000 jobs per month from October through March.

II. Policy Response

What kept the economy from heading into a second Great Depression in 2008 and 2009 was the strong and timely policy response. The Federal Reserve began cutting interest rates in

late 2007, and by December 2008 it had brought its target for the federal funds rate to essentially zero. As credit market after credit market froze or evaporated, the Federal Reserve created many new programs to fill the gap and maintain the flow of credit.

Congress's approval of the not-always-popular Troubled Asset Relief Program (TARP) was another crucial step. Creating a program that could be used to shore up the capital position of banks and take troubled assets off banks' balance sheets has proven both necessary and valuable. Similarly, Congress's willingness to release the second tranche of the funds last January gave the new administration the tools it needed to further contain the damage and start repairing the financial system. The stress test, conducted early last spring to give a read on the health of the nineteen largest banks, was only possible because the Treasury could credibly commit to filling any identified capital needs with public capital if necessary. As it turned out, the scrubbing of the books of our major financial institutions, and the public release of that information, calmed fears and led to a much needed and very valuable wave of private capital-raising.

Another important part of the policy response were the steps taken to stabilize housing markets and help distressed homeowners. The infusion of funds into the government sponsored enterprises (GSEs) and the Federal Reserve's purchases of agency debt have kept mortgage rates low and mortgage credit flowing even as other credit markets have been disrupted. And, the Administration's program to support mortgage modifications for responsible homeowners threatened with foreclosure is already helping to keep hundreds of thousands of homeowners in their homes.[4]

A key piece of the policy response to the economic crisis was the American Recovery and Reinvestment Act of 2009 (ARRA). The ARRA provides $787 billion of fiscal stimulus to

counteract the shortfall in aggregate demand, making it the boldest countercyclical fiscal action in American history. The fiscal stimulus was designed to be spread relatively evenly over 2009 and 2010, with only about $100 billion of the stimulus occurring in 2011 and later.[5] The fiscal package was formulated to provide a range of types of stimulus. Roughly one-third of the total stimulus is tax cuts for individuals and businesses; another third is fiscal relief to state governments and aid to people directly hurt by the recession; and the final third is direct government investment spending in infrastructure, alternative energy, health information technology, and other areas.

Table 1 reports estimates of the fiscal stimulus that has occurred through the end of the 2009 fiscal year, broken down by functional category.

Table 1
Fiscal Stimulus by Functional Category

	Billions of dollars through the end of:		
Category	March	June	September
Individual Tax Cuts	2.3	16.0	31.8
AMT relief	0.0	7.6	13.4
Payments to seniors	0.0	13.3	13.7
Business Tax Incentives	0.1	14.4	25.4
State fiscal relief	8.5	28.2	43.8
Aid to Directly Impacted Individuals	0.8	14.4	40.4
Government Investment Outlays	0.0	5.9	26.1
Total[a]	**11.8**	**99.8**	**194.5**

Sources: Recovery.gov; CEA calulations; updated simulations from the Department of the Treasury (Office of Tax Analysis) based on the Mid-Session Review.

Note: a. Items may not add to total due to rounding.

This table shows that $194.5 billion of the total has gone out as tax cuts or outlays, almost exactly what the Congressional Budget Office (CBO) estimated at passage. In addition, another $146 billion of spending has been obligated, meaning that funds are available as expenses are

incurred and projects completed.[6] The numbers through September show that the largest areas of stimulus so far have been tax cuts, state fiscal relief, and aid to directly impacted individuals through programs such as unemployment insurance and nutritional assistance. In 2010, direct government investment outlays are anticipated to become more significant.

In a report issued on September 10, the Council of Economic Advisers (CEA) provided estimates of the impact of the ARRA on GDP and employment. Table 2 reports our estimates of the impact of the ARRA on real GDP growth in the second and third quarters of 2009, along with estimates from a number of government and private forecasters.

Table 2
Estimates of the Effects of the ARRA on GDP Growth

	2009:Q2	2009:Q3
	Percentage Points, Annual Rate	
CEA: Projection Approach	+2.3	+2.7
CEA: Model Approach	+3.1	+3.6
CBO: Low	+1.9[a]	+1.9[a]
CBO: High	+5.1[a]	+5.1[a]
Goldman Sachs	+2.2	+3.3
IHS/Global Insight	+2.3	+2.3
James Glassman, J.P.Morgan Chase	+3.0	+4.0
Macroeconomic Advisers	+2.1	+1.9
Mark Zandi, Moody's Economy.com	+2.8	+3.6
NABE Survey	+0.5	+0.8[b]

Source: CEA, "The Economic Impact of the American Recovery and Reinvestment Act of 2009: First Quarterly Report," September 10, 2009.

Notes: a. Data reflect the average effect on growth, 2009:Q2 - 2009:Q4.

b. Approximate. NABE reports that about 1/3 of respondents expect the Recovery Act to add less than 0.5 percentage points to growth in the second half of 2009, and slightly over half expect it to add between 0.5 and 1.5 points; the remainder presumably expect it to add more than 1.5 points.

These estimates suggest that the ARRA added two to three percentage points to real GDP growth in the second quarter and three to four percentage points to growth in the third quarter. This

implies that much of the moderation of the decline in GDP growth in the second quarter and the anticipated rise in the third quarter is directly attributable to the ARRA.

Table 3 shows the CEA's estimates of the effect of the ARRA on employment, relative to what would have occurred without the Act, in the second and third quarters of 2009, along with those of a number of other forecasters.

Table 3
Estimates of the Effects of the ARRA on Employment

	2009:Q2	2009:Q3
CEA: Projection Approach	+507,000[a]	+1,040,000[b]
CEA: Model Approach	+434,000	+1,159,000
CBO: Low	+300,000	+600,000
CBO: High	+767,000	+1,533,000
IHS/Global Insight	+250,000	+690,000
Macroeconomic Advisers	+250,000	+620,000
Moody's Economy.com	+502,000	+1,073,000

Source: CEA, "The Economic Impact of the American Recovery and Reinvestment Act of 2009: First Quarterly Report," September 10, 2009.

Notes: a. Datapoint reflects an estimate for June.
b. Datapoint reflects an estimate for August.

The estimates indicate that as of August, the ARRA had raised employment relative to the baseline by between 600,000 and 1.5 million jobs.

At the end of October, the Recovery Board will release estimates of the number of jobs created or saved reported by recipients of certain ARRA funds. Importantly, only about one-third of ARRA spending is covered by the direct reporting data. The tax cuts, unemployment insurance, payments to seniors, and much of the state fiscal relief are not amenable to direct reporting. And, the reporting data only cover the direct impact of the spending. Any multiplier effects resulting from the increased spending of workers hired or retained because of ARRA

funds are not covered by the reports. As a result, the directly reported job creation and retention estimates will only be a fraction of the total employment impact. Even so, we anticipate that these reports will confirm that the Recovery Act has had a significant impact on employment in its first eight months of existence.

In addition to the current policy response, the U.S. economy has benefited from some important policy developments and institutional changes since the 1930s. One development is the rise of automatic stabilizers. Since the Great Depression, the government budget has become substantially more cyclically sensitive. We have a larger tax system and a social safety net that leads automatically to higher government spending in a recession. The result is a budget deficit that naturally swells in a severe downturn. This process helps to counteract the decline in aggregate demand, and has been working strongly in the current episode.

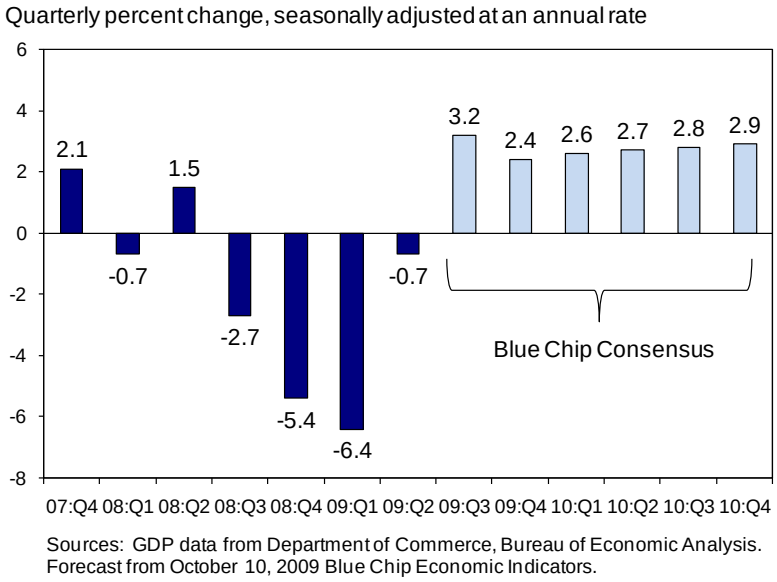
Another past policy development that has served us extremely well in the current crisis has been the existence of deposit insurance. Despite all the uproar in financial markets last fall, one striking fact is that ordinary Americans never lost faith in the security of their bank deposits. It is a credit to the quiet efficiency and stellar reputation of the Federal Deposit Insurance Corporation (FDIC) that over a hundred banks have failed since last fall with barely a ripple felt by depositors.[7] This well-functioning system short-circuited a channel through which the sfinancial crisis could have mushroomed. The FDIC's ability and willingness to insure the issuance of debt by larger banks was also a key factor containing the crisis.

III. Economic Outlook

Forecasts. Because of the unprecedented policy response, the economic outlook has improved markedly in recent months. Figure 2 shows the growth rate of real gross domestic

product (GDP) since the end of 2007, together with the Blue Chip consensus forecast for 2009Q3 through the end of 2010.

Figure 2
Real GDP Growth



Sources: GDP data from Department of Commerce, Bureau of Economic Analysis.
Forecast from October 10, 2009 Blue Chip Economic Indicators.

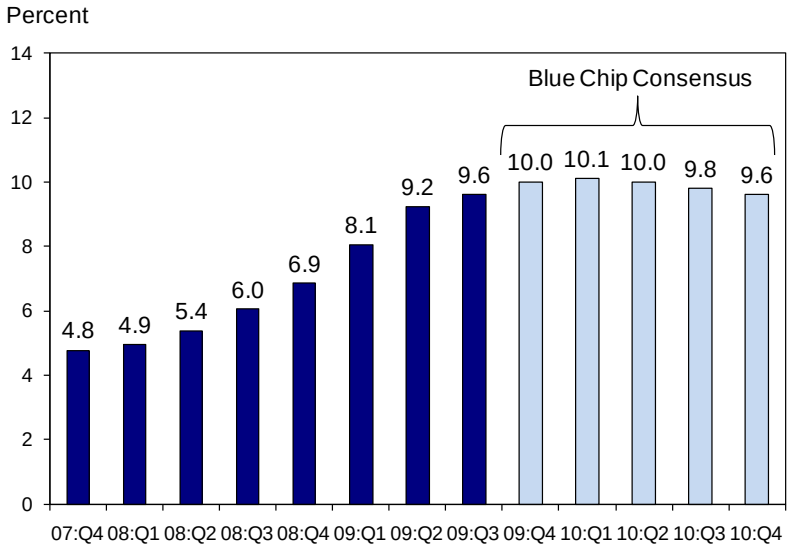
The path of actual GDP growth emphasizes just how severe the current recession has been. Real GDP fell 3.8 percent between the second quarter of 2008 and the second quarter of 2009. The fall at a 6.4 percent annual rate in the first quarter of this year was the third worst quarterly decline since 1947, and the worst since 1980Q2. Equally notable is the improvement in GDP performance in the second quarter. Though still declining, the moderation in the rate of decline represented the largest improvement in real GDP growth since 2000.

The Blue Chip forecast shows that GDP growth is anticipated to be positive in the third quarter, and each subsequent quarter through the end of 2010. The CEA's analysis of the component data released to date, including the monthly data on personal consumption expenditures, core capital goods shipments, and industrial production, is roughly consistent with the Blue Chip estimate for the third quarter. There is a substantial range of uncertainty around

any forecast. However, if GDP growth for the third quarter is indeed positive, as anticipated, this would be strong evidence that economic recovery is underway.

Figure 3 shows the actual quarterly behavior of the unemployment rate beginning at the business cycle peak in 2007Q4. It continues with the Blue Chip forecast through the fourth quarter of 2010.

Figure 3
Unemployment Rate



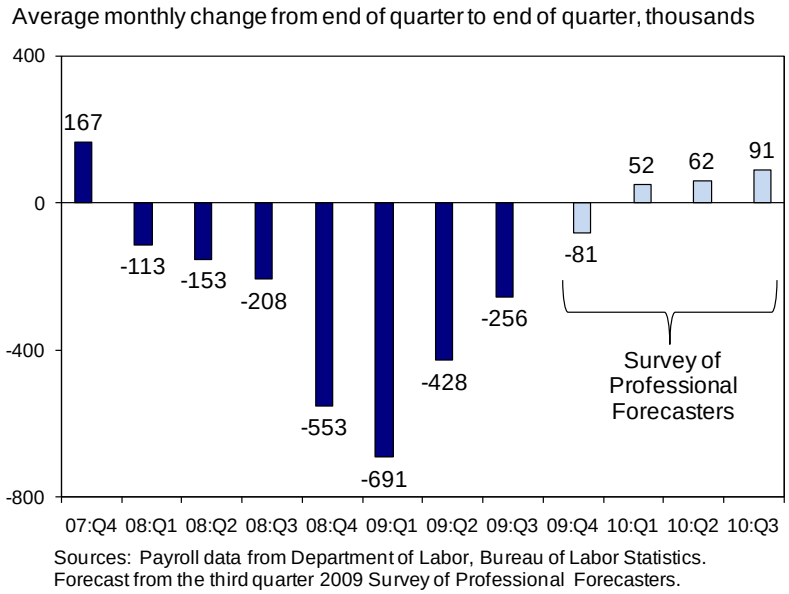
Sources: Unemployment data from Department of Labor, Bureau of Labor Statistics. Forecast from October 10, 2009 Blue Chip Economic Indicators.

Consistent with the recent cyclical pattern, the unemployment rate is predicted to continue rising for two quarters following the resumption of GDP growth. Whether this happens and how high the unemployment rate eventually rises will obviously depend on the strength of the GDP rebound. Leaving aside timing issues, the unemployment rate typically falls when GDP growth exceeds its normal rate of roughly two and a half percent per year and rises when GDP growth falls short of this pace. With predicted growth right around two and a half percent for most of the next year and a half, movements in the unemployment rate either up or down are likely to be

small. As a result, unemployment is likely to remain at its severely elevated level.

Figure 4 shows the quarterly average of the monthly change in payroll employment.

Figure 4
Payroll Employment Growth



Sources: Payroll data from Department of Labor, Bureau of Labor Statistics.
Forecast from the third quarter 2009 Survey of Professional Forecasters.

The enormous declines over the last four quarters are graphic evidence of how horrible this recession has been for American workers. Since the recession began in December 2007, payroll employment has fallen by 7.2 million. Given that employment growth of nearly 100,000 per month is necessary to keep up with normal labor force growth, employment is currently about nine million below its normal trend level.

Because a Blue Chip forecast does not exist for employment, we continue the graph with consensus forecasts from the Survey of Professional Forecasters. These forecasts suggest payroll employment loss will slow substantially in the fourth quarter of this year and payroll employment growth will then turn positive in the first quarter of next year. Importantly, employment growth is expected to be quite low (below 100,000 per month) through the end of

the forecast in the third quarter of 2010. This is consistent with forecasts of modest GDP growth and continued high unemployment. Thus, while job losses will likely end early next year, robust job gains may still be several quarters away.

Risks to the Forecast. All forecasts are subject to substantial margins of error, and the errors are often particularly large at times like the present, when the economy is near an inflection point. For this reason, it is important to consider the possible risks to the forecasts.

First, there are reasons to think that GDP growth could be either weaker or stronger than the consensus forecast. On the weaker side, one concern is the leveling out of fiscal stimulus. Fiscal stimulus has its greatest impact on growth around the quarters when it is increasing most strongly. When spending and tax cuts reach their maximum and level off, the contribution to growth returns to roughly zero. This does not mean that stimulus is no longer having an effect. Rather, it means that the effect is to keep GDP above the level it would be at in the absence of stimulus, not to raise growth further. Most analysts predict that the fiscal stimulus will have its greatest impact on growth in the second and third quarters of 2009.[8] By mid-2010, fiscal stimulus will likely be contributing little to growth.

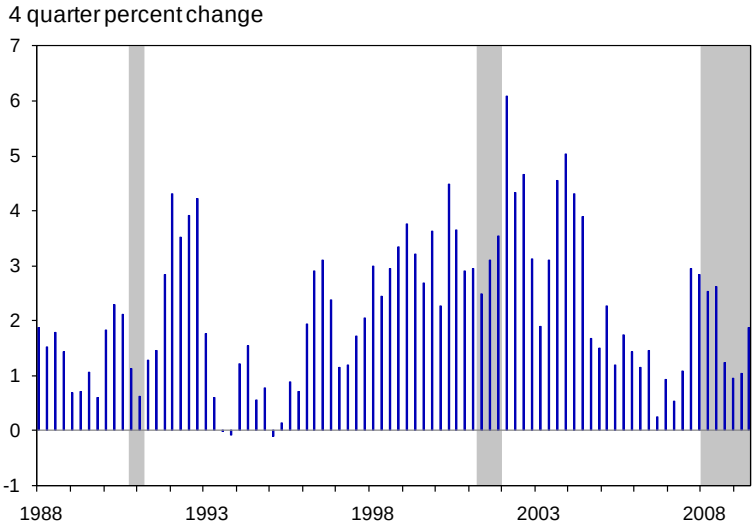
Related to this, continued tightness in credit markets is a concern. According to the Federal Reserve Board's Senior Loan Officer Opinion Survey, last released in August 2009, lending standards had ceased to tighten as rapidly as they had last fall and winter, but they had not yet begun to loosen.[9] Quantity measures of lending and issues of corporate debt remain low and small-business owners in particular report significant credit tightness.[10] On the other hand, credit spreads are down dramatically from the fall of 2008, suggesting some easing of conditions.[11] Tight credit market conditions are a factor that could hamper recovery of private sector demand and tamp down future GDP growth.

On the positive side, surveys of consumer and business confidence have risen substantially in recent months, and the stock market has increased as well. For example, both the Michigan survey and the Conference Board measure of consumer sentiment show dramatic improvement from earlier in the year.[12] Likewise, the Conference Board CEO Confidence Survey and the Business Roundtable CEO Economic Outlook Survey show that business leaders have become more optimistic in both the second and third quarters of 2009.[13] The S&P 500 has increased 62 percent from its low point in March, and 22 percent since the end of 2008.[14] If such measures continue to rise strongly, private demand could rise more rapidly than anticipated, which would raise GDP growth.

Risks to the GDP forecast would translate into risks to the employment and unemployment forecasts. If GDP growth falls substantially short of 2½ percent per year, the unemployment rate would likely continue to rise and employment to decline. If GDP rises strongly, labor market indicators could improve more quickly.

In addition, one has to consider separate risks to the employment forecast. Figure 5 shows the percentage change in labor productivity from four quarters before for the period 1988 to the present, with recession periods shaded in grey.

Figure 5
Productivity Growth



Source: Department of Labor, Bureau of Labor Statistics, Nonfarm Business Sector Productivity.
Note: NBER recessions shaded in grey.

In the recoveries from the last two recessions, productivity has risen rapidly. This, together with slow GDP growth, resulted in unusually weak labor market improvement for several quarters following the business cycle troughs.

In the current recession, productivity has increased substantially. If GDP growth comes in as expected in the third quarter, the rise in productivity would be particularly large. A continuation of this behavior could lead to weaker than expected employment gains and possibly continued job loss. On the other hand, because productivity has risen substantially during the recession, it is possible that firms have pushed the productivity of current workers as far as possible. In this case, GDP gains could translate particularly strongly into employment increases.

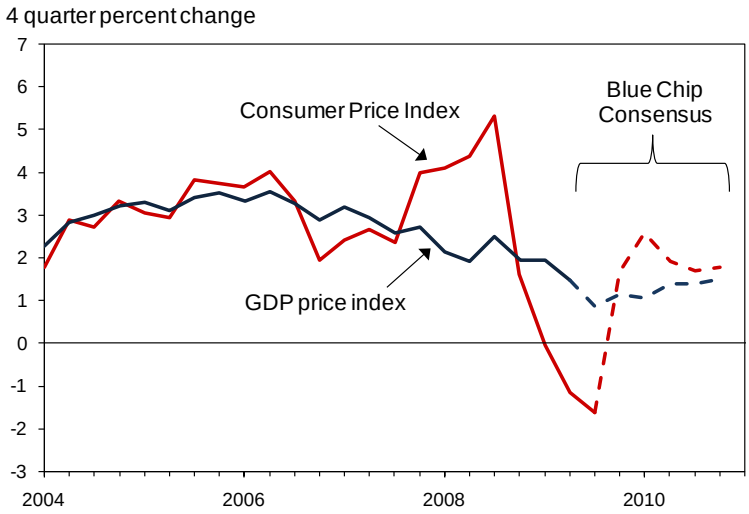
Inflation Concerns. While it is natural to focus most closely on real economic variables such as GDP and employment, much recent discussion has focused on the possibility of inflation.

Some have expressed concern that the unprecedented monetary actions taken by the Federal Reserve and the similarly unprecedented fiscal actions taken by Congress and the Administration have created conditions likely to result in inflation.

Such concerns are unwarranted in the near and medium term. Historically for the United States, the main determinant of movements in inflation is the relationship between output and the economy's productive capacity, with additional influences from oil price movements and other supply disturbances.[15] When output and employment are high relative to the economy's comfortable capacity, inflation rises, as it did in the late 1960s and late 1970s. When output and employment are low relative to capacity, inflation falls, as it usually does during and after recessions.[16] Economic theory and evidence suggests that there is a relationship between monetary expansion or budget deficits and inflation, but that it operates via the demand for goods: rapid money growth and large budget deficits lead to inflation when they fuel a growth in demand beyond the economy's normal capacity.

The behavior of inflation so far over the recession and forecasts of its likely behavior going forward fit with this view. Figure 6 shows inflation measured using both the consumer price index, which is highly influenced by the behavior of food and energy prices, and the GDP price index, which is less influenced by these volatile components. The figure shows that both measures of inflation have fallen over the course of the recession.

Figure 6
Inflation Rate



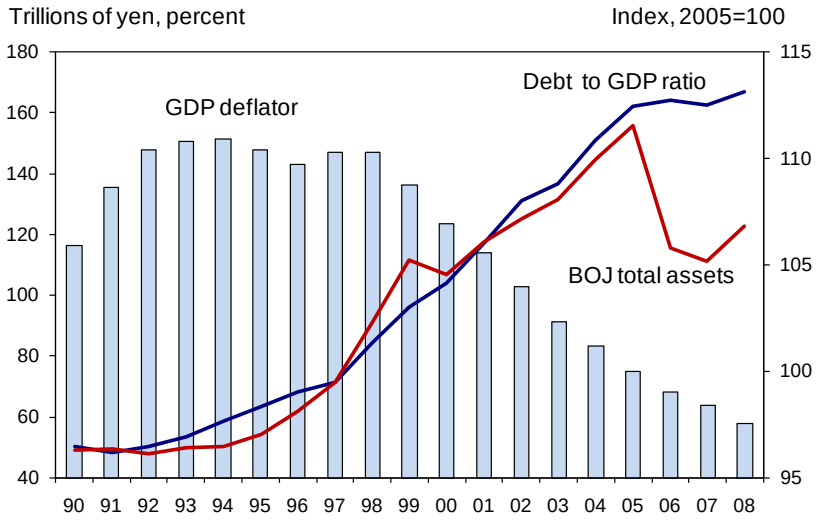
Sources: Actual GDP inflation comes from the Bureau of Economic Analysis. Actual CPI inflation comes fom the Bureau of Labor Statistics. Forecasts are from October 10, 2009 Blue Chip Economic Indicators.
Notes: Solid lines represent actual inflation, whereas dashed lines represent Blue Chip forecasts. The GDP inflation forecast begins in 2009Q3, and the CPI inflation forecast begins in 2009Q4. The Blue Chip 4 quarter percent changes are imputed from the reported quarterly growth forecasts.

Measures of expected inflation, whether from professional forecasters (such as the one shown in the chart), surveys of consumers, or inferences based on interest rates on inflation-protected securities, all show that expectations of inflation remain subdued.[17] Indeed, it appears that the major reason that actual and expected inflation have not fallen further is that the Federal Reserve's record of inflation control over the past quarter century has kept inflation expectations well anchored.

Even stronger evidence that a large expansion of central bank reserves and budget deficits in a weak economy do not lead to inflation comes from Japan. Starting in 2001, the Bank of Japan undertook a massive expansion of bank reserves in an economy where short-term interest rates had effectively reached zero, much as the Federal Reserve has done over the past year. In addition, the continued stagnation of the economy and demographic changes, coupled

with occasional (though limited) efforts at fiscal stimulus, led to large budget deficits. As Figure 7 shows, in the face of this expansion, the price level in Japan has fallen steadily—that is, there has been not inflation, but deflation.

Figure 7
Inflation, Debt and Monetary Policy in Japan



Source: Bank of Japan.
Notes: GDP deflator measured as an index on the right axis. Debt to GDP ratio is a percent on the left axis. Bank of Japan total assets measured in trillions of yen on the left axis.

This reinforces the message that the relevant inflation worry in a weak economy is inflation that is too low, not too high.

IV. Challenges We Face Going Forward

Likely economic conditions present policymakers with many challenges going forward. First, the switch from decline to growth may lead to calls for the end to rescue operations. As I have described, the economic trauma of the past year has been extreme and has led to unprecedented and sometimes unpopular government actions. As the immediate crisis fades,

there may be a tendency to wish to return to more normal policy positions.

Such a premature end to stimulus would be misguided. The forecasts I have described are largely predicated on continued fiscal ease and the Federal Reserve's announced policy that "economic conditions are likely to warrant exceptionally low levels of the federal funds rate for an extended period."[18] Excessive moves toward fiscal policy tightening could lead to a return to output decline and a reacceleration of job losses. The current policies that have generated a dramatic turnaround of the economy need to be seen through to their completion.

A second challenge that we face is clearly the budget deficit. The final numbers just released show that the fiscal 2009 deficit reached $1.4 trillion, or about 10 percent of GDP.[19] The Mid-Session review released in August predicted a similarly large deficit in 2010, and substantial structural deficits even once the recession is over and the economy is fully recovered.[20] Such long-term deficits are unacceptable and need to be dealt with. Over the long run, sustained deficits crowd out private investment and reduce long-run growth.

Given the current precarious state of the economy, substantial near-term spending cuts or tax increases to reduce the deficit would threaten the recovery. However, the current efforts for health insurance reform present a critical opportunity to improve the long-run fiscal situation dramatically. Health reform that is at least revenue neutral in the short run, and that genuinely slows that growth rate of costs in the long run, is a crucial precondition for reducing the long-run deficit.

A third policy challenge that we face is the likelihood that labor market conditions will remain painfully weak through 2010. As I have described, current forecasts do not predict substantial employment gains in 2010, and unemployment is unlikely to end 2010 much below its current levels. The suffering and potential permanent damage that such a sustained period of

high unemployment will bring is likely to spur calls for further action to stimulate employment growth and cushion the effects of unemployment.

As policymakers consider the options, rigorous evaluation of alternatives must be conducted. Particularly in the context of large budget deficits, the efficacy of different options must be considered. Whether expiring programs are continued or new programs are instituted should be decided on the basis of their efficacy in putting people back to work and improving the future strength of the economy.

V. Conclusion

As I have described, the last year has been one of extreme challenge and aggressive policy response. That many analysts believe the low point of the recession has been reached is perhaps the most concise evidence that the policies are working.[21] A recession that showed no signs of ending last January appears to be firmly entering the recovery phase.

Unfortunately, despite this dramatic turnaround, the U.S. economy still faces many challenges. We enter the fourth quarter of 2009 with the unemployment rate nearing 10 percent and likely to remain severely elevated. The Congress and the Administration will need to continue their excellent record of policy coordination to not just start the process of recovery, but to finally finish it.

ENDNOTES

[1] Stock price data for 1929 are the S&P 90, a daily index with 50 industrial stocks, 20 railroad stocks, and 20 utilities, and the data for 2008 are the S&P 500. The data are from Global Financial Data, https://www.globalfinancialdata.com/, series SPXD. House price data are from the Federal Housing Finance Administration seasonally-adjusted purchase-only house price index, http://www.fhfa.gov/webfiles/14980/MonthlyHPI92209.pdf. Data on household wealth in the 1920s are from Wojciech Kopczuk and Emmanuel Saez, "Top Wealth Shares in the United States, 1916–2000," *National Tax Journal* 57 (June 2004): 445-487. Estimates of nominal end-of-year household net worth were provided by the authors via email. Data on modern household wealth are from Board of Governors of the Federal Reserve System, Flow of Funds Accounts of the United States, Table B.100, http://www.federalreserve.gov/datadownload. The Flow of Funds estimate includes wealth of both households and nonprofit organizations. The Kopczuk and Saez estimate of household net worth overlaps with the Flow of Funds for the years 1952-2002. Over this period the correlation between the two series of annual percent change in net worth is 0.99.

[2] Data for 1929 are the S&P 90; data for 2008 are the S&P 500. Variances are calculated over the daily percent return for September through December of each year. The variance was 16.3 for September through December 2008; 12.0 September through December 1929. For all of 1930 variance was 2.4, and 3.3 for September through December 1930.

[3] Board of Governors of the Federal Reserve System, Selected Interest Rates, http://www.federalreserve.gov/datadownload. AAA rates through December 6, 2001 are an average of AAA utility bonds and AAA industrial bonds. AAA rates from December 7, 2001 on are an average of AAA industrial bonds only.

[4] According to the Treasury Department, over 500,000 homeowners have entered into trial modifications under the Administration's program. See U.S. Department of the Treasury, Making Home Affordable Program, Servicer Performance Report Through September 2009, http://www.treas.gov/press/releases/docs/MHA%20Public%20100809%20Final.pdf.

[5] Detailed estimates of the components of the American Recovery and Reinvestment Act of 2009 are from the Congressional Budget Office, "Cost Estimate for the Conference Agreement for H.R. 1," February 13, 2009, available at http://www.cbo.gov/ftpdocs/99xx/doc9989/hr1conference.pdf. CBO provides estimates by fiscal year. The assumption that the stimulus in 2010Q4 will equal the average quarterly stimulus in fiscal 2010 implies that the total stimulus beginning in 2011 is $103 billion.

[6] This figure is from www.recovery.gov, and represents the difference between ARRA obligations and outlays through September 30, 2009.

[7] The list of failed banks is available on the FDIC website, at http://www.fdic.gov/bank/individual/failed/banklist.html.

[8] See, for example, Goldman Sachs, "US Daily: Fiscal Stimulus: A Little Less in Q2, A Little More Later (Phillips)," August 4, 2009; Macroeconomic Advisers, "The US Economic Outlook: Is the Upturn Imminent? How Strong?" presentation by Chris Vavares, June 11, 2009, exact quarterly figures from email communication; Moody's economy.com, described in Mark Zandi, "U.S. Fiscal Stimulus Revisited," DismalScientist, June 22, 2009, exact quarterly numbers from email communication.

[9] The Federal Reserve Board's Senior Loan Officer Opinion Survey is available at http://www.federalreserve.gov/boarddocs/snloansurvey/200908/.

[10] According to the Federal Reserve Board (FRB), Table 1.46, in August, $59 billion of bonds were issued by U.S. corporations, up from the recent low of $25 billion in October 2008, but down from the first half of 2009 and substantially below the $200 billion 2005-2007 average. See http://www.federalreserve.gov/econresdata/releases/corpsecure/current.htm. The value of commercial paper issued in the third quarter of 2009 was below any other quarter since 2004, as reported in the FRB Commercial Paper release, http://www.federalreserve.gov/releases/cp/volumestats.htm. Commercial and industrial loans by domestically-chartered banks have decreased steadily since their peak in October 2008, according to the FRB release H.8, http://www.federalreserve.gov/releases/h8/current/default.htm. The National Federation of Independent Business (NFIB) reported that the net percent of firms reporting that credit was harder to get was 14 percent in both August and September 2009, up from an average of 9 percent in 2008 and 6 percent in 2007. Data are from NFIB Small Business Economic Trends survey, http://www.nfib.com/tabid/350/Default.aspx, and downloaded from Haver Analytics on October 21, 2009.

[11] For example, the spread between the Moody's BAA bonds and the Treasury 30-year nominal bonds fell 251 basis points between April and September of this year. Interest rate data are from FRB table H.15, http://www.federalreserve.gov/releases/h15/current/h15.htm.

[12] The University of Michigan index of consumer sentiment was an average of 68.4 in the third quarter of the year, up for an average of 58.2 in the first quarter of 2009. See University of Michigan/Reuters, Surveys of Consumers, http://www.sca.isr.umich.edu/main.php. The 2009 press release can be found on the Reuters website: https://customers.reuters.com/community/university/default.aspx. The data were downloaded from Haver Analytics on October 19, 2009. The Conference Board consumer confidence index rose from an average of 29.9 in the first quarter to an average of 51.7 in the third quarter. See the Conference Board, Consumer Confidence Survey, http://www.conference-board.org/economics/consumerConfidence.cfm. The data were downloaded from Haver Analytics on October 19, 2009.

[13] The Conference Board Measure of CEO Confidence rose from a low of 24 in the fourth quarter of 2008 to 55 in the second quarter of 2009 and 63 in the third quarter. See the Conference Board, "CEO Confidence Improves in the Third Quarter," http://www.conference-board.org/attach/CEOCQ32009.pdf. The Business Roundtable Economic Outlook Survey Diffusion Index rose from -5.0 in the first quarter of 2009 to 18.5 in the second quarter and 44.9 in the third. See Business Roundtable, "Business Roundtable Releases Third Quarter 2009 CEO Economic Outlook Survey," http://www.businessroundtable.org/sites/default/files/Business%20Roundtable%20Releases%20Third%20Quarter%202009%20CEO%20Economic%20Outlook%20Survey.pdf.

[14] Daily measures of the Standard & Poor's 500 stock price index were downloaded from Haver Analytics on October 20, 2009, which collects the series from the *New York Times*. The stock price index reached its lowest point of 677 on March 9, 2009. The index rebounded to 1098 on October 19, 2009, 62% higher than the low in March, and 22% higher than the December 31, 2008 index of 903.

[15] For discussions of the determinants of inflation, see, for example, James H. Stock and Mark W. Watson, "Phillips Curve Inflation Forecasts," National Bureau of Economic Research Working Paper No. 14322, September 2008; Robert J. Gordon, "The History of the Phillips Curve: Consensus and Bifurcation," unpublished paper, Northwestern University, March 2009; Laurence M. Ball and N.

Gregory Mankiw, "Relative-Price Changes as Aggregate Supply Shocks," *Quarterly Journal of Economics* 110 (February 1995), 161-193; Douglas Laxton, David Rose, and Demosthenes Tambakis, "The U.S. Phillips Curve: The Case for Asymmetry," *Journal of Economic Dynamics and Control* 23 (September 1999), 1459-1485.

[16] For the behavior of inflation, see, for example, http://research.stlouisfed.org/fred2/graph/?chart_type=line&s[1][id]=CPIAUCSL&s[1][transformation]=pc1.

[17] The forecasting firm Macroeconomic Advisers predicts an average core CPI inflation rate of 1 percent (at an annual rate) from 2009Q3 to 2011Q4 as of September 21, 2009. Differences between yields on Treasury Inflation-Protected Securities (TIPS) and yields on nominal Treasury notes imply measures of breakeven inflation rates that are the rate of inflation that would give an investor the same return at maturity on a nominal security and on a TIPS. These breakeven inflation rates reflect investors' inflation expectations as well as liquidity premia and inflation risk premia. Averaged over the month of August, the implied breakeven inflation rate over 5 years from 5-year TIPS was 1.3 percent, and the implied breakeven inflation rate over 10 years from 10-year TIPS was 1.8 percent. The TIPS and nominal rates were reported by the Board of Governors of the Federal Reserve System and the calculations were done by Haver Analytics. The Federal Reserve Bank of Philadelphia, *The Livingston Survey* (June 2009), reports expected CPI inflation of 1.7 percent for 2009-2010. Their long-term (10-year) CPI expectation is 2.36 percent. See http://www.phil.frb.org/research-and-data/real-time-center/livingston-survey/.

[18] See Federal Reserve Press Release for September 23, 2009, http://www.federalreserve.gov/newsevents/press/monetary/20090923a.htm.

[19] U.S. Department of the Treasury, Joint Statement of Tim Geithner, Secretary of the Treasury, and Peter Orszag, Director of the Office of Management and Budget, on Budget Results for Fiscal Year 2009, http://www.ustreas.gov/press/releases/tg322.htm.

[20] U.S. Office of Management and Budget, "Mid-Session Review, Budget of the U.S. Government: Fiscal Year 2010," Table 1, http://www.whitehouse.gov/omb/assets/fy2010_msr/10msr.pdf.

[21] Blue Chip Economic Indicators, September 10, 2009, p. 14. In response to special question number 1, "Is the U.S. recession over?," 81.8% of respondents answered yes.