Back from the Brink

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The anniversary of the collapse of Lehman Brothers has spurred countless speeches, newspaper articles, and conferences, such as this one. I think many have rightly felt a need to reflect on the national economic nightmare that began last September. I am certainly no exception. But, I find myself looking at the past year from two very different perspectives. One is as a policymaker focused on current economic challenges and charged with helping to shape the policy response. The other is as an economic historian with a special interest in the Great Depression.

In my talk today, I hope to blend those two perspectives. I want to reflect on what we have been through—particularly how it compares with the experience of the 1930s. I want to discuss how the shocks we have faced have been similar in the two episodes, but the policy responses have been vastly different. As a result, the economy this time did not go over the edge as it did in the 1930s. At the same time, and perhaps most importantly, I want to discuss where we go from here and the challenges that lie ahead. Eighty years later, are there still lessons to be learned from the Great Depression?

The Initial Shocks

I feel strongly that the shocks that hit the U.S. economy last fall were at least as large as those in 1929. In both cases, the economy had been in a gentle decline before the crisis—the

recession that became the Great Depression began in August 1929; the current recession had been going on for nine months before the Lehman Brothers collapse. And in both cases, a financial crisis greatly accelerated and strengthened the decline.

A key precipitating shock in both episodes was a decline in household wealth. The Great Crash of the stock market reduced stock prices by 33 percent from September to December 1929.[1] However, the Crash followed a run-up in stock prices of 27 percent from June to August; over the whole year the market declined by a more modest 14 percent. Since house prices declined only slightly, the fall in household wealth was just 3 percent between December 1928 and December 1929.[2] In 2008, the collapse in wealth was far more dramatic. Stock prices fell 24 percent in September and October alone, and house prices fell 9 percent over the year.[3] All told, household wealth fell 17 percent between December 2007 and December 2008, more than five times the decline in 1929.[4]

Economic theory suggests that such declines in wealth can have important contractionary effects on consumption and investment. Volatility in asset prices can also have important impacts. In a paper I wrote many years ago, I argued that stock price volatility caused income uncertainty in 1929 and was an important factor in depressing consumer spending in the first year of the Depression.[5] In an even older paper, Ben Bernanke showed that uncertainty could depress investment.[6] And, more recent research suggests an important role for uncertainty in macroeconomic fluctuations.[7]

Asset price volatility, which was very high in late 1929, was even greater in the fall and winter of 2008. We can measure the volatility of stock prices using the variance of daily returns. Using the S&P index, this measure was more than one-third larger in the current episode than in the final four months of 1929.[8]

If a decline in asset prices was the precipitating factor in both 1929 and 2008, the defining feature in both cases was a full-fledged financial panic. In 1929, the financial system actually weathered the stock market crash fairly well, in part because of a timely injection of liquidity by the Federal Reserve.[9] It was not until late 1930 that the economy suffered what Friedman and Schwartz describe as the first wave of banking panics, highlighted by the failure of the official-sounding Bank of the United States in December.[10]

In 2008, the U.S. financial system had similarly survived the initial declines in house and stock prices, again in considerable part because of a vigilant Federal Reserve. But the outright failure of Lehman Brothers proved too much for the system. As has been described by many others, the breakdown in funding relationships in the week following Lehman's collapse was almost unfathomable. 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.[11]

Whether the collapses of the Bank of the United States in 1930 and of Lehman Brothers in 2008 were bad luck, the almost inevitable consequence of declining asset values and a weakening economy, the result of poor behavior, or a policy failure is still a matter of hot debate. All four points of view surely have a claim to at least an element of truth. Whatever one's perspective, what is unquestionably true is that once the panic began, it was a severe shock to the U.S. financial system.

One frequently cited indicator of the depth of the panic in September 2008 is the skyrocketing of credit spreads. The TED spread, which is a measure of the risk in the banking system, rose by nearly 400 basis points and interest rates on U.S. government debt rates fell dramatically as world investors sought safety.[12] One spread for which we have data back to the 1920s is that between Moody's AAA and BAA grade bonds. That spread rose 156 basis points

between August and November 2008. It peaked at 338 basis points in December. In the fall of 1929, this spread increased by less than ten basis points, consistent with the stock market crash having only modest impact on perceptions of risk. After the September 1930 banking panic, it rose to 219 basis points in December of 1930, but this is still far less than we experienced in 2008.[13]

This discussion suggests that the shocks affecting the U.S. financial system in the fall of 2008, whether measured by their impact on wealth, volatility, or risk spreads, were at least as great, and probably greater, than those at the start of the Great Depression. Consistent with this, the U.S. economy went into freefall shortly following Lehman's collapse. From where we sit now, it is hard to believe that last fall there was still debate about whether Wall Street and Main Street were connected. The experience of the past year is dramatic proof that credit market disturbances affect production and employment. Following Lehman's collapse, job loss accelerated from less than 200,000 in August to almost 600,000 in November.[14] Real GDP, which rose in the second quarter of 2008, fell at an annual rate of 2.7 percent in the third quarter and 5.4 percent in the fourth quarter.[15] And, these declines showed every sign of continuing: employment fell 741,000 in January and real GDP decline at the even faster annual rate of 6.4 percent in the first quarter of 2009.

The Policy Response

This comparison between the initial months of the 1929 and 2008 crises makes real the frequent claim that the U.S. economy following the collapse of Lehman Brothers did come to the edge of a cliff. That we did not go over is a tribute to vast differences in economic policy. In 1930 and after, the initial shocks were compounded by even more shocking policy mistakes. In

2008 and 2009, in contrast, policy has counteracted rather than exacerbated the effects of the initial shocks.

Though the Federal Reserve had responded appropriately to the 1929 stock market crash by increasing liquidity, that was the full extent of the early policy response. Nothing substantive was done over the next twelve months as output plummeted and unemployment rose dramatically. When the first banking panic hit, the Federal Reserve was largely passive, failing to act as a lender of last resort, much less to engage in truly expansionary monetary policy, Over 1931, the Fed stood on the sidelines through two further waves of panics and a decline in the money supply of more than 10 percent. In October of 1931, it raised the discount rate by 200 basis points to defend the gold standard.[16] In 1932, the Federal government passed the largest peacetime tax increase up to that point, raising revenues at a given level of income by nearly 2 percent of GDP.[17]

The consequence of these and other policy errors was a contraction of aggregate demand unmatched before or since. This contraction resulted in a collapse of output and employment that was similarly unprecedented. Only after three and a half years of depression and after the unemployment rate had reached 25 percent was genuinely expansionary policy instituted.[18]

The policy response in the current episode, in contrast, has been swift and bold. The Federal Reserve's creative and aggressive actions last fall to maintain lending will go down as a high point in central bank history. 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 TARP legislation was another bold move. Creating a fund 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. I firmly believe that the

capital infusions last fall, many of which are now being paid back with interest, were a key part of the thin green line between stability and continued crisis.

Congress's willingness to release the second tranche of TARP funds at President-elect Obama's request last January was a vote of confidence in the President and his designated Secretary of the Treasury. It 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 we 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. In many ways, the impact of the stress test on confidence and stock prices mimicked the effects of President Roosevelt's Bank Holiday in 1933. In both cases, lessening uncertainty calmed financial markets and set the stage for recovery.

The American Recovery and Reinvestment Act of 2009 was the Obama administration's signature rescue measure. Providing $787 billion of tax cuts and spending increases, it is the boldest countercyclical fiscal expansion in American history. To put its size in perspective, the ARRA provides fiscal stimulus of roughly 2 percent of GDP in 2009 and 2½ of GDP in 2010.[19] During the New Deal, the largest swing in the budget deficit was a rise of 1½ percent of GDP in 1936, which was followed by a counteracting swing in the opposite direction in the very next year that was even larger.[20]

In a report to Congress issued two weeks ago, the Council of Economic Advisers reported that approximately $63 billion of tax cuts and $89 billion of government spending had occurred as of the end of August.[21] In addition, another $128 billion of government spending

had been obligated, meaning that funds were available as expenses were incurred and projects completed. Using two very different estimation methods, the CEA found that the fiscal stimulus has raised real GDP growth by roughly 2 to 3 percentage points in both the second and third quarters. We estimated that as of August, it had raised employment relative to what otherwise would have occurred by approximately one million. We also showed that our estimates were very much in line with those of a broad range of private forecasters and the Congressional Budget Office. There is a widespread consensus (except perhaps on the op-ed page of the *Wall Street Journal*) that this aspect of the policy response has been highly effective at alleviating the real decline and counteracting the effects of the financial crisis.

Noticeably missing from my discussion so far has been any mention of the international dimension of the downturn. Though centered in the United States, the financial crisis and the real economic collapse quickly enveloped the rest of the world. In this regard as well, the current crisis mimics that of 1929. But, as with the domestic policy response, the international response in 2009 has been dramatically better than it was in the late 1920s and early 1930s.

One striking feature of the international policy response has been the widespread use of fiscal expansion. The CEA report details the degree to which both advanced and emerging economies have supplemented monetary easing with fiscal stimulus.[22] Our analysis also shows that countries that have used fiscal stimulus more aggressively experienced better second quarter outcomes, relative to forecasts from last fall, than countries following less expansionary policies. This analysis both confirms the notion that fiscal stimulus is effective and highlights the role of policy in stemming the crisis.

Other Stabilizing Forces

Another source of the better outcomes this time can be found in policy and institutional developments between the 1930s and today. One important 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 is helpful in counteracting the decline in aggregate demand and has been working strongly in the current episode.

The problem the Obama administration has faced is that the natural and desirable swelling of the budget deficit in a downturn has come on top of a large and growing structural budget deficit. Policymakers in the past have been far too willing to give away temporary improvements in the budget, rather than pocket them as they should have against temporary deteriorations. And, policymakers of both parties have failed to insist that permanent expenditure increases or tax cuts be paid for. As a result, in the midst of macroeconomic shocks as great as any in our history, the country has been limited in its fiscal response by deficit and funding concerns.

Another policy development that has made this episode different has been the anchoring of inflationary expectations. In late 1929 and early 1930, the financial crisis and drops in output almost immediately gave rise to deflation. The consumer price index fell 4.0 percent between September 1929 and September 1930, increasing the real value of outstanding debts and lowering the value of collateral.[23] And, though a point of some debate, studies by Nelson and Cecchetti suggest that expectations of deflation also developed in 1930, leading to substantial rises in real interest rates.[24] Both of these developments served to further restrict desired

spending and spur continued financial distress.

In the current episode, in contrast, inflationary expectations have been remarkably well anchored. While overall price indexes like the CPI and PPI have fallen, in large part because of oil price declines, core CPI inflation has shown only mild moderation. The change in the core CPI from twelve months before was 2.5 percent in August 2008 and 1.4 percent in August 2009.[25] Even more telling is the fact that inflationary expectations measured by forecasting models, surveys, and the rates on inflation-indexed bonds have remained at roughly 1 to 2 percent.[26]

The source of this stability in inflationary expectations is almost surely the history of the past 25 years of monetary policy. Since Paul Volcker's pioneering crusade to bring down inflation in the early 1980s, the Federal Reserve has proven itself a reliable steward of price stability. Both ordinary citizens and sophisticated bond traders are confident—with good reason—that the Federal Reserve will take actions to keep inflation from either falling much below two percent or rising much above. In the current episode, this confidence has prevented the development of expectations of deflation that would have exacerbated the other shocks affecting the economy. It has also allowed the Federal Reserve to engage in a rapid expansion of its balance sheet with no rise in inflationary expectations.

A third 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 that over a hundred banks have failed since last fall with barely a ripple felt by depositors.[27] This well-functioning system short-circuited a channel through which the financial

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.

The Outlook for Recovery

This cataloging of the shocks we have endured and the policy response and other stabilizing forces is important. The accomplishment of walking the American economy back from the edge of a second Great Depression is real and deserves to be celebrated. But, it deserves to be celebrated only in the same way that victory in one battle in the midst of a necessary war deserves to be celebrated. It is just one step on the road to a far more important accomplishment. And, we can never lose sight of the fact that there have been many casualties along the way.

Though conditions could have been far worse given the shocks we have endured, it is still the case that the economy is in severe distress. The unemployment rate reached 9.7 percent in August, and we anticipate further rises before it finally begins to decline. Real GDP has fallen 4 percent since its peak in the second quarter of 2008, and its level is now more than 7 percent below most estimates of trend production.[28] Employment has declined by 6.9 million since the business cycle peak in December 2007, and will surely decline further before growing again.[29] To put it bluntly, in the year following the collapse of Lehman Brothers, the American economy, and American workers in particular, have been through hell.

But just as we saw in the aftermath of the Great Depression, effective policy and the resilience of the American economy and American workers are helping us turn the corner on this recession. Data on industrial production and surveys of manufacturers show that American factories are starting to produce again.[30] Building permits and orders for durable goods suggest

that investment is starting to pick up.[31] Even the reluctant consumer is starting to spend again, though an important part of this in July and August was due to the very popular "Cash for Clunkers" program.[32] Because of these positive signs, virtually every forecaster from industry, government, and the financial sector expects positive GDP growth starting in the current quarter.

The key question is whether growth will be strong enough to generate material improvement in the labor market. For the last several months, productivity growth has been exceedingly high. As a result, the improvement in the trajectory of GDP has only partly translated into an improving trajectory for employment. For the unemployment rate to fall, we need not just that GDP growth be positive, but likely that it be greater than the normal growth rate of about 2½ percent. And, the more GDP growth exceeds its normal growth, the more likely it is that firms will begin to hire again in substantial numbers and that the unemployment rate will fall significantly.

The importance of rapid growth to the recovery of employment means that policymakers will need to be very careful in managing the winding down of the extraordinary policy response. In this regard, we have another chance to learn from the mistakes of the 1930s. A common misperception is that the recovery from the Great Depression was anemic. In fact, real GDP growth averaged nearly 10 percent per year between 1933 and 1937, and the unemployment rate fell more than 11 percentage points over that period.[33] The reason that we tend to think of the recovery as slow is that it was interrupted by a second severe recession from mid-1937 to mid-1938.

The source of this second recession was an unfortunate combination of monetary and fiscal contraction. The Federal Reserve, fearing that it might not be able to tighten when it needed to, tried to legislate away banks' vast holdings of excess reserves by raising reserve

requirements—only to discover that nervous banks wanted excess reserves and so contracted loans to replace them.[34] On the fiscal side, Social Security taxes were collected for the first time in 1937, and government spending declined substantially following the one-time veterans' bonus of 1936.[35]

The economic historian in me cringes every time I hear mention of "exit" from fiscal stimulus and rescue operations in the current situation. "Exit strategy" is one thing—of course we should be planning for the time when private demand has recovered and government-stimulated demand can be withdrawn. But to talk seriously about stopping policy support at a time when the unemployment rate is nearing 10 percent and still rising is to risk nipping the nascent recovery in the bud.

The Challenges Ahead

So far, I have emphasized how, despite the enormity of the shocks we have endured, the U.S. economy has avoided a more calamitous decline because of the policy actions that have been taken. But, there is an area where modern policymakers risk being less forward-looking than our predecessors in the 1930s: financial regulatory reform.

In response to the pain of the Great Depression, President Roosevelt and the Congress put in place a regulatory and policy structure that helped prevent severe financial crises for the next 75 years. The Banking Act of 1933 created the FDIC. The Securities Exchange Act of 1934 created the Securities and Exchange Commission, which put in place requirements for disclosure and fair dealing in stock markets. The Banking Act of 1935 created the Federal Open Market Committee, replacing a system in which it was not clear where ultimate responsibility for monetary policy lay, and where a single regional Federal Reserve Bank could create major

barriers to policy actions. The Investment Company Act of 1940 brought regulation and disclosure to mutual funds, and the Investment Adviser Act of 1940 did the same for financial advisers.[36] And finally, the Employment Act of 1946 explicitly charged the government with responsibility for macroeconomic stabilization—and, I can't help but mention, created the Council of Economic Advisers. These major legislative accomplishments created a structure to provide sensible protections for investors, rules of the road for financial institutions, and a framework for monetary and fiscal policy.

What the current crisis has shown us is that this 1930s structure has not kept up with the evolution of financial markets. We now see that there are crucial gaps and weaknesses in our regulatory structure. The most glaring is that the current structure is designed to evaluate individual institutions and no regulator has a mandate to evaluate risk to the entire system. A related gap is that some institutions that potentially pose systemic risk are either not regulated at all or are inadequately regulated because of regulatory arbitrage. A third gap is that the government does not have a resolution mechanism for major non-bank financial institutions. The government currently faces the unacceptable choice between disorganized, catastrophic failure and a taxpayer-funded bailout. Finally, regulation of consumer lending is spread across many agencies, and no agency has consumer financial protection as its central mandate. The proposal for financial regulatory reform that the Administration has laid out seeks to close these and other important gaps in our regulatory framework.

A central part of the administration's reform proposal is to give the Federal Reserve regulatory responsibility for all financial institutions whose failure could threaten financial stability. Regardless of whether they call themselves banks, hedge funds, investment banks, or insurance companies, if they are large enough and interconnected enough that their failure could

threaten the system, the Federal Reserve should regulate them. In our view, a key part of that regulation will involve setting capital standards high enough that institutions have the necessary incentives to be prudent. Placing regulation of systemically important institutions in the hands of the Federal Reserve makes sense because it has the knowledge, infrastructure, and reputation for independence necessary to do the job. Concentrating responsibility in one place guarantees the American people that accountability will be centered in one place as well.

A second part of the proposal for regulatory reform is the creation of a council of regulators. This council serves a number of purposes. Together with the Federal Reserve, it will evaluate systemic risk and identify emerging financial innovations. It will be part of the early-warning system needed to stop problems before they threaten the stability of the financial system. A coordinated council of regulators will also ensure that institutions don't fall through the cracks. Regulators will speak with one voice and apply uniform standards.

A third part of the proposal is resolution authority. One of the miracles of the current system is the way the FDIC is able to close a bank on Friday afternoon, send in a team to figure out the books over the weekend, and reopen the bank on Monday morning under new management. The FDIC can do this because it has the authority to impose settlements and force action. Regulators need that same power for large, systemically important non-bank financial institutions.

Finally, the Administration has proposed concentrating authority for consumer financial regulation in a new Consumer Financial Protection Agency. Consumers will be served best by a single agency charged only with looking out for their interests. This new agency will not seek to limit innovation or thwart the provision of credit. Its job will be to ensure consumers are well informed, that they always have the choice of a standard, easy-to-understand credit option, and

that they are protected from unfair and predatory practices.

Conclusion

There is no question that the economic crisis that began in earnest last fall has been unlike any since the Great Depression. As I have described today, the key reason that we begin this fall with a sense of hope rather than dread of a second Great Depression is because the policy response in 2008 and 2009 has been fast, bold, and effective.

But, now is not the time for a victory lap. To turn that sense of hope into reality for the millions of Americans without a job will require continued vigilance and the courage to stick with programs that are working until their work is truly done. And, to turn the pain of the last year into more than just a bad memory, we have to use it to spur fundamental improvements in our regulatory structure. Only by building a new regulatory framework for the twenty-first century can we help ensure that our children and grandchildren will not have to walk their economies back from the brink, as we have had to do this past frightful year.

NOTES

[1] Data for 1929 are the S&P 90; data for 2008 are the S&P 500. The data are from Global Financial Data, https://www.globalfinancialdata.com/, series SPXD.

[2] 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.

[3] House price data are from the Federal Housing Finance Administration. We use the seasonally-adjusted purchase-only house price index, http://www.fhfa.gov/webfiles/14980/MonthlyHPI92209.pdf.

[4] 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 real net worth is 0.99.

[5] Christina D. Romer, "The Great Crash and the Onset of the Great Depression," *Quarterly Journal of Economics* 105 (August 1990): 597-624.

[6] Ben S. Bernanke, "Irreversibility, Uncertainty, and Cyclical Investment," *Quarterly Journal of Economics* 98 (February 1983): 85-106.

[7] Nicholas Bloom, "The Impact of Uncertainty Shocks," *Econometrica* 77 (May 2009): 623-685; Nicholas Bloom, Max Floetotto, and Nir Jaimovich, "Really Uncertain Business Cycles," unpublished paper, July 2009.

[8] Data for 1929 are the S&P 90, a daily index with 50 industrial stocks, 20 railroad stocks, and 20 utilities. 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.

[9] Milton Friedman and Anna Jacobson Schwartz, *A Monetary History of the United States: 1867-1960* (Princeton: Princeton University Press for NBER, 1963), pp. 334-339.

[10] Friedman and Schwartz, *A Monetary History of the United States*, pp. 308-313. Though dwarfed by the later waves of panics, 608 banks failed in the last two months of 1930.

[11] See Diya Gullapalli and Shefali Anand, "Bailout of Money Funds Seems to Stanch Outflow," *The Wall Street Journal* (September 20, 2008), for example.

[12] Board of Governors of the Federal Reserve System, 3-Month Treasury Bills, and 3-month LIBOR. Downloaded from Bloomberg, September 14, 2009.

[13] 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.

[14] Employment data are from the Bureau of Labor Statistics, http://www.bls.gov/data/#employment, series CES0000000001.

[15] Real GDP data are from the Bureau of Economic Analysis, http://www.bea.gov/national/nipaweb/Index.asp, Table 1.1.1.

[16] Friedman and Schwartz, *A Monetary History of the United States*, Chapter 7. The data on the money stock refer to the sum of currency and demand deposits, and are from Table A-1, column 7.

[17] *The Annual Report of the Secretary of the Treasury on the State of Finances, 1932* (Washington, D.C.: U.S. Government Printing Office, p. 21) estimated that the bill would increase revenue in fiscal 1933 by $1.1185 billion. We average the 1932 and 1933 nominal GDP figures (from the Bureau of Economic Analysis, http://www.bea.gov/national/nipaweb/Index.asp, Table 1.1.5) to estimate nominal GDP in fiscal 1933.

[18] The unemployment data are from *Historical Statistics of the United States: Colonial Times to 1970* (Washington, D.C.: Government Printing Office, 1975), Part 1, p. 135, series D86.

[19] The $787 billion figure is 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. Adding their estimate of the stimulus in fiscal year 2009 and one-quarter of the estimate for fiscal 2010 yields $285 billion in calendar year 2009, or about 2 percent of GDP. A similar procedure yields $333 billion in 2010, or about 2½ percent of GDP.

[20] The deficit figures are from *Historical Statistics of the United States: Colonial Times to 1970*, Part 2, p. 1104, series Y337. Nominal GDP data are from the Bureau of Economic Analysis, http://www.bea.gov/national/nipaweb/Index.asp, Table 1.1.5. Calendar year nominal GDP figures are averaged to estimate fiscal year values.

[21] Executive Office of the President, Council of Economic Advisers, "The Economic Impact of the American Recovery and Reinvestment Act of 2009: First Quarterly Report," September 10, 2009. Available at http://www.whitehouse.gov/assets/documents/CEA_ARRA_Report_Final.pdf.

[22] In addition to the CEA Quarterly Report referenced above, a more detailed analysis of the international evidence is presented in Executive Office of the President, Council of Economic Advisers, "The Effects of Fiscal Stimulus: A Cross-Country Perspective," available at http://www.whitehouse.gov/administration/eop/cea/EffectsofFiscalStimulus/.

[23] CPI data are from the Bureau of Labor Statistics, http://www.bls.gov/data/#prices, series CUUR0000SA0.

[24] Daniel B. Nelson, "Was the Deflation of 1929-30 Anticipated? The Monetary Regime as Viewed by the Business Press," *Research in Economic History* 13 (1991): 1-65; Stephen G. Cecchetti, "Prices during the Great Depression: Was the Deflation of 1930-32 Really Unanticipated?" *American Economic Review* 82 (March 1992): 141-156.

[25] CPI data are from the Bureau of Labor Statistics. http://www.bls.gov/data/#prices, series CUUR0000SA0.

[26] 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. At the end of August 2009, 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/.

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

[28] Real GDP data are from the Bureau of Economic Analysis, http://www.bea.gov/national/nipaweb/Index.asp, Table 1.1.6. Assuming that real GDP was equal to its trend level in 2007Q4 and that trend GDP has been growing at an annual rate of 2.6 percent implies that real GDP in 2009Q2 was 7.4 percent below trend.

[29] Employment data are from the Bureau of Labor Statistics, http://www.bls.gov/data/#employment, series CES0000000001.

[30] The industrial production data are from the Board of Governors of the Federal Reserve System, Industrial Production and Capacity Utilization, http://www.federalreserve.gov/datadownload. The manufacturing data are from the Institute for Supply Management, Manufacturing Report on Business, http://www.ism.ws/ISMReport/content.cfm?ItemNumber=10752&navItemNumber=12961.

[31] The building permit data are from the U.S. Bureau of the Census, http://www.census.gov/const/www/permitsindex.html#estimates. The data on advanced durable goods orders, shipments, and inventories are from U.S. Bureau of the Census, http://www.census.gov/indicator/www/m3/.

[32] Retail sales data are from the Bureau of the Census, http://www.census.gov/retail/marts/www/retail.html. For an analysis of the effects of the "Cash for Clunkers" program, see Executive Office of the President, Council of Economic Advisers, "Economic Analysis of the Car Allowance Rebate System," September 2009, available at http://www.whitehouse.gov/assets/documents/CEA_Cash_for_Clunkers_Report_FINAL.pdf.

[33] GDP data are from the Bureau of Economic Analysis, http://www.bea.gov/national/nipaweb/Index.asp, Table 1.1.1. Unemployment data are from *Historical Statistics of the United States: Colonial Times to 1970*, Part 1, p. 135, series D86.

[34] Friedman and Schwartz, *A Monetary History of the United States*, Chapter 9.

[35] For the veterans' bonus, see Lester G. Telser, "The Veterans' Bonus of 1936," *Journal of Post-Keynesian Economics* 26 (Winter 2003-2004): 227-243. For Social Security taxes, see http://www.ssa.gov/history/hfaq.html. The data on expenditures are from *Historical Statistics of the United States: Colonial Times to 1970*, Part 2, p. 1104, series Y336.

[36] For a description of these and other financial regulatory reforms, see Lester V. Chandler, *America's Greatest Depression, 1929-1941* (New York: Harper & Row, Publishers, 1970), Chapter 9.