Financial Market Turmoil and U.S. Macroeconomic Performance

Craig K. Elwell
Specialist in Macroeconomic Policy

June 9, 2009

Congressional Research Service
7-5700
www.crs.gov
R40007

CRS Report for Congress
Prepared for Members and Committees of Congress

Summary

A large and relatively unimpeded flow of credit through healthy financial markets is a salient attribute of the U.S. economy and any well functioning modern economy. Banks and other financial institutions channel the economy's savings toward a variety of current productive uses. By borrowing short-term and lending long-term, these institutions create a flow of credit that passes liquidity from savers to investors, and transforms liquid short-run assets into less liquid long-term assets. These long-term assets are created by credit-financed, current spending by households on housing, consumer durables, and education, and current spending by businesses on new plant and equipment.

Lending in credit markets requires confidence in the borrowers' ability to repay the debt (principal and interest) in full and on schedule. The current turmoil in U.S. financial markets is the result of a breakdown in that necessary confidence. In an environment of distrust, financial institutions are far less willing and able to lend long-term. The move toward short-term lending diminishes the flow of long-term credit to the non-financial economy and dampens the economic activities of households and businesses that are dependent on borrowing. A reduced flow of credit will likely dampen economic activity that is dependent on such borrowing as residential investment spending (purchasing new homes) by households, business investment spending (purchasing new plant and equipment) and consumer spending (purchasing autos, appliances, and higher education) by households.

A number of indicators have pointed to a substantial rise in the cost of credit and a decrease in the flow of credit to the broader economy. Residential investment spending has fallen over 40% between the fourth quarter of 2005 and the fourth quarter of 2008, and has on average subtracted about 1.0 percentage point from real GDP growth in each of those six quarters. Non-residential investment spending continued to increase in 2007 and the first half of 2008, but the pace fell steadily, and in the fourth quarter of 2008 it declined 22%. Consumption expenditures had been increasing, but at a decelerating rate in 2007 and the first half of 2008. However, in the third quarter and fourth quarter of 2008 consumer spending fell 3.8% and 4.3%, respectively. A recent study estimates that the decrement to the U.S. economy's supply of credit is about $1 trillion, leading to a potential drag on real GDP of about 1.8 percentage points for two years.

Economic policy may be needed to get credit flowing smoothly again and to mitigate the damage incurred by households and non-financial businesses. Three types of policy response exist and are being applied in varying degrees. The first type is the conventional macroeconomic policy tools of monetary and fiscal policy, used with the aim of broadly supporting bank liquidity and aggregate spending. Monetary policy, having greater flexibility than fiscal policy, will usually play the prominent role. The second type of policy measure for responding to a credit crisis is the Fed's traditional role of "lender of last resort," typically involving some expanded use of the Fed's discount window, the facility the Fed uses to make short term loans to banks that need to bridge a short-run shortage of liquidity. Such measures are more narrowly focused on the needs of troubled institutions. The third type of policy response is the use of "extraordinary measures" involving direct interventions by the federal government to restore confidence in financial markets, forcing a greater volume of credit to flow broadly.

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Introduction

A large and relatively unimpeded flow of credit through healthy financial markets is a salient attribute of the U.S. economy and any well functioning modern economy. Banks and other financial institutions channel the economy's savings toward a variety of current productive uses. By borrowing short-term and lending long-term, financial institutions create a flow of credit that passes liquidity from savers to investors and which transforms liquid short-run assets into less liquid long-term assets.

These long-term assets are created by credit-financed spending by households on housing, consumer durables, and education; and by businesses on new plants and equipment. In a highly developed financial system, this flow of credit will not only be to households and non-financial businesses, but also to other financial institutions to meet occasional short-term needs for liquidity that serves to minimize disruptions in the flow of credit to the non-financial economy.

This act of borrowing short-term and lending long-term, however, makes financial institutions less liquid and therefore inherently vulnerable to crisis. This vulnerability is magnified if financial institutions are tempted to increase their opportunities for profit by borrowing to increase the amount of funds they have to invest to substantially more than their own capital (equity). This use of borrowed funds to "leverage" up potential profits, however, reduces liquidity and increases the size of potential losses along with the risk of insolvency if losses are sizable. In recent years, the degree of leverage employed by many financial institutions had become large, with debt to equity ratios in excess of 30-to-1.

It is a sustainable situation, however, so long as there is widespread confidence, particularly among lending institutions themselves, in the quality of the assets being created. Specifically, it requires confidence in the ability of those assets to sustain a flow of earnings sufficient, at a minimum, to meet the lending institutions' short-term borrowing costs (liabilities).

The current turmoil in U.S. financial markets is the result of a breakdown in that necessary confidence. A widespread fear of insolvency problems constricts the flow of credit. In an environment of distrust, financial institutions are less willing or able to lend long-term. While still willing to borrow short-term, in the face of great uncertainty they will tend to also lend short-term in an attempt to enhance their own liquidity. They prefer to hold riskless Treasury securities that offer low returns rather than lend to a business or consumer who presents even moderate risk. The move toward short-term lending diminishes the flow of long-term credit to the non-financial economy and dampens the economic activities of households and businesses that are dependent on borrowing.

The breakdown of confidence in U.S. financial markets is an outgrowth of the end of the housing boom in 2006 and the subsequent fall of home prices. As home prices fell sharply in many areas of the country, a surge in delinquencies and foreclosures on mortgage loans occurred, reducing the flow of earnings to lenders who held these nonperforming mortgages. As the fall in earnings grew larger, it became increasingly evident by the late summer of 2007 that an unusually high percentage of the mortgages and mortgage backed securities (MBSs) created during the housing boom were of lower quality then originally estimated. The initial overvaluing of these assets has been attributed to an adverse interaction between lax underwriting practices by the originators of the loans and deficient evaluations by credit rating companies of the MBSs created with those

loans. These shortcomings were easily overlooked so long as home prices were rising, but became evident once home prices fell.

The fall in the value of these mortgages and mortgage related assets translated into growing losses for the financial institutions who held them. As their balance sheets deteriorated, so did their ability to lend to each other and to lend to the non-financial economy. The financial market disruptions escalated during 2008. Because of the wide distribution and complex structure of many MBSs it became very difficult for a potential lender to confidently appraise the quality of assets on the balance sheet of potential borrowers and the risk of the borrower defaulting on the loan. Thus even well capitalized banks became reluctant to lend. As research by psychologists has shown, fear of loss is often a stronger motivator than the prospect of gain, explaining why in a crisis, financial institutions' concern for preserving wealth overrides the desire to increase wealth.

The rational choice for any one burdened financial institution is to reduce its debt by selling assets. But, as many similarly burdened institutions attempt to reduce debt by simultaneously selling assets, the price of assets is driven sharply down, deteriorating their balance sheets further rather than improving them. This process of acute *asset price deflation* causes a sharp constriction of the flow of credit, increasing the drag on economic activity in the credit dependent non-financial sectors.

Left to market forces alone, this systemic failure would arguably only resolve itself slowly and at great cost to the wider economy. The Great Depression is seen by many economists as an example of the perils of leaving the resolution of a major financial crisis to the markets themselves. Recent research shows that "fire sales" driven by a sharp increase in investors' preference for liquidity can push asset prices below their fair market value and be very costly to the financial system by forcing the inefficient liquidation of long-term investments and to the wider economy by reducing the availability of credit for productive endeavors.[1]

Therefore, mainstream economists today argue that when there is a severe financial crisis economic policy measures are needed to get credit flowing smoothly again and to mitigate the damage incurred by households and non-financial businesses arising from reduced access to credit. The form and scope of such policy initiatives can, nevertheless, vary. Further, because of the substantial interdependence of the global financial system, a coordinated policy response by the affected countries could be needed.[2]

Evidence of Tighter Credit Conditions

In 2007 and 2008, a number of indicators pointed to a substantial rise in the cost of credit and a decrease in the flow of credit to the non-financial sectors of the U.S. economy. These indicators include the following:

[1] For a full examination of the economic implications of acute asset price deflation, see Franklin Allen and Douglas Gale, *Understanding Financial Crises* (Oxford: Oxford University Press, 2007).

[2] For background on financial instability and its implications, see, Irving Fisher, "The Debt-Deflation Theory of Great Depressions," *Econometrica 1: 1933*, pp. 337-357; Charles Kindleberger, *Manias, Crashes, and Panics* (New York: Basic Books, 1978); and Hyman Minsky, *Stabilizing an Unstable Economy* (New Haven: Yale University Press, 1986).

- Despite the Fed's lowering the federal funds rate by 4.25 percentage points between August 2007 and October 2008, the added liquidity did not cause most mortgage interest rates to ease. The rates on non-conforming jumbo loans increased substantially.[3]
- Despite the Fed's efforts to bolster the inter-bank loan market, the difference between what banks and the Treasury pay to borrow money rose to exceptional heights. This spread, known as the TED spread, would normally be 50-70 basis points; but on October 10, 2008 it soared to 464 basis points.[4] Such a large spread suggests a huge increase in perceived risk and a great reluctance of banks to make short-term loans to each other.
- According to the Fed's July and September 2008 surveys of senior loan officers for a sample of banks, most banks were tightening lending standards for residential mortgages, consumer loans, and business loans. Common changes were decreased loan size, decreased loan term, increased level of collateral required, and an increased spread of the loan rate above the banks' cost of funds.
- New issues of speculative grade bonds fell and the interest rate on lower grade corporate bonds increased.
- Credit extended by banks fell from about $1.1 trillion in the fourth quarter of 2007 to only $80 billion in the fourth quarter of 2008.[5]

Credit flows reflect the interaction of supply and demand in financial markets. All of the above indicators of tighter credit conditions have emerged at a time when economic activity, for reasons separate from events in financial markets, has been slowing, an event that would weaken the demand for credit and otherwise tend to loosen credit conditions. This configuration of economic and financial indicators suggested a diminished supply of credit resulted in tighter credit conditions in U.S. financial markets.

The Effect of Tighter Credit Conditions on Macroeconomic Activity

Financial markets exert their influence on real economic activity by affecting both the price and the quantity of credit supplied to borrowers in the non-financial sectors of the economy. It is expected that a higher price of credit (higher interest rates) will dampen credit supported spending by households and businesses. It is perhaps less obvious that changes in the quantity of credit offered (credit rationing) to non-financial borrowers can have an effect on their spending apart from the effect of increased price. In a financial crisis, banks and other lending institutions can become so illiquid or risk averse that even at higher interest rates, little credit will be made available to long-term borrowers—and a true credit crunch emerges.

[3] Data for federal funds rate found at http://www.federalreserve.gov/releases/h15/data/Weekly_Wednesday_/H15_FF_O.txt.

[4] Data for the TED spread found at http://www.bloomberg.com/apps/quote?ticker=.TEDSP%3AIND.

[5] Credit flow data came from the Federal Reserve Board, *Flow of Funds Account of the United States, Statistical Release Z.1*, March 12 ,2009, Table F.1, p. 9, line 35, at http://www.federalreserve.gov/releases/z1/current/z1.pdf.

A reduced flow of credit will tend to dampen economic activity highly dependent on borrowing, such as residential investment spending (purchasing new homes) by households, business investment spending (purchasing new plant and equipment) and consumer spending (purchases of autos, appliances, and higher education) by households.

In a situation where the prices of assets owned by households are falling, there are likely to be two primary channels of negative effect on consumer spending: the direct dampening effect of tighter credit conditions, and the indirect dampening effect on spending caused by a decrease in household wealth due to declining prices of homes and of financial assets held by consumers.

Slower spending by households and businesses slows the growth of real GDP, the most general measure of overall economic well-being and a possible precursor of rising unemployment.

U.S. aggregate economic activity has been slowing for the last two years. In 2006, real GDP increased 2.8%, a pace generally considered close to the economy's sustainable long-term rate of growth. In 2007, growth slowed to 2.0%, as the weakness of the housing sector exerted a significant drag on economic activity. More substantial deceleration occurred during 2008. On a year-over-year basis real GDP advanced 1.1%, however, the quarterly pattern of growth is more telling of the economy's growing weakness: real GDP increased 0.9% and 2.8% in the first and second quarters, but would decrease 0.5% and 6.3% in the third and fourth quarters (and preliminary estimates show real GDP falling another 5.7 % in the first quarter of 2009). [6]

Much of the economic weakening in the first half of 2008 is attributable to a sizable loss in real purchasing power caused by sharply higher energy and food prices, which has slowed several categories of aggregate spending. The further weakening of economic activity, reflects the added dampening effects of the turmoil in financial markets and the associated constricted flow of credit beginning to spread to the broader economy. These negative effects are particularly pronounced in the most credit-sensitive categories of aggregate spending.

Impact of Tight Credit on Residential Investment

The effect of progressively tighter credit conditions in 2007 and 2008 was most evident on real residential spending, which is highly sensitive to changes in the price and quantity of mortgage lending. By July 2008, the inventory of unsold homes was reported to have increased to a high of around 4.6 million units or equivalent to about an eleven month supply. Through March 2009, the inventory of unsold homes had fallen to about 3.6 million units or about a 10-month supply. [7] Similarly, housing starts have fallen precipitously from over 2 million units in February of 2006 to an annual rate of less than 500 thousand units in April 2009, or a total decline in housing starts of about 75%.[8]

In terms of GDP growth, real residential investment spending has fallen more than 40% between the fourth quarter of 2005 and the fourth quarter of 2008, and on average has subtracted about 1.0 percentage points from real GDP growth in each of those eight quarters. Because residential

[6] The source for GDP data is the U.S. Department of Commerce, Bureau of Economic Analysis (BEA),*U.S Economic Accounts*, http://www.bea.gov/newsreleases/national/gdp/2009/pdf/gdp109p.pdf.

[7] National Association of Realtors, "Existing Home Sales," http://www.realtor.org/research/research/ehsdata.

[8] Housing start data reported by U.S. Department of Commerce, Bureau of the Census, New Residential Construction Statistics, May 19, 2009 http://www.census.gov/const/www/newresconsthist.html.

investment spending typically accounts for only about 5% to 6% of GDP in normal circumstances, economic weakness in the housing sector by it self may slow the economy but is unlikely to cause it to stall if other spending categories remain strong.[9]

A significant factor in the sizable decrease of residential investment has likely been a sharp slowing of the flow of mortgage credit from lenders. As recently as the fourth quarter of 2007, mortgage lending to households occurred at an annual rate of $612 billion, but that flow turned sharply negative in the second half of 2008, with mortgage lending *falling* at an annual rate of nearly $312 billion in the third quarter of 2008 and $248 billion in the fourth quarter of 2008.[10]

The recovery of residential investment spending will likely require a recovery of the flow of mortgage credit. However, even if there is a relatively quick improvement in credit conditions, the large inventory of unsold homes suggests that residential investment spending will unlikely give any boost to the economy through 2009.

Impact of Tight Credit on Business Investment

Real non-residential investment spending continued to increase in 2007 and the first half of 2008 despite the growing turmoil in U.S. financial markets. Since then, the rate of increase has been slowing. After advancing 7.5% in 2006, the pace of spending by businesses on new plant and equipment slowed to 5.0% in 2007, and through the second quarter of 2008 that pace had slowed to about 2.3%. In the second half of 2008, however, real nonresidential investment declined sharply, falling 1.7% in the third quarter and a huge 21.7% in the fourth quarter.[11] Preliminary data suggest that this steep decline intensified in the first quarter of 2009, with nonresidential investment spending falling 37.9%. And in testimony before the Joint Economic Committee on May 5, 2009, Fed Chairman Bernanke said that "the available indicators of business investment remain extremely weak."[12]

It is likely that a recent history of substantial profits reduced the need for corporations to use external sources of funds to finance investment spending. That insulation allowed this category of spending to largely avoid the dampening effect of deteriorating credit conditions in the first half of 2008.

In the second half of 2008, reflecting the increased weakness the economy, corporate profits fell about 20%. In a slowing economy, a further weakening of profit performance can be expected. This prospect makes it unlikely that businesses can continue to use internal funds to finance such a large share of investment spending. The sizable fall of real nonresidential investment in the fourth quarter of 2008, although small, suggests to some that for many businesses a point as been reached where a dwindling flow of credit becomes a significant constraint on non-residential investment spending. For most corporations the primary credit constraint is not likely to be a lack of bank credit but the inability to issue bonds on affordable terms.

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[9] See BEA *U.S. Economic Accounts*.

[10] See Federal Reserve Z.1 data, table F2, line11, http://www.federalreserve.gov/releases/z1/Current/z1r-3.pdf.

[11] See BEA *U.S. Economic Accounts*.

[12] Testimony of Chairman Ben S. Bernanke, *The Economic Outlook*, before the Joint Economic Committee, U.S. Congress, Washington DC, May 5, 2009, found at http://www.federalreserve.gov/newsevents/testimony/bernanke20090505a.htm.

Beyond the cost of borrowing, businesses' willingness to undertake investment spending will be strongly influenced by their expectation of the future demand for their products. If consumer spending is expected to remain weak for some time forward, businesses are unlikely to increase current investment spending.

Impact of Tight Credit on Consumer Spending

Consumer spending is the largest component of GDP, accounting for about 70% of total aggregate spending. In addition, consumer spending tends to be relatively stable, generally free of wide swings and decreasing in only the most severe economic downturns. Nevertheless, given its great size, even modest swings in consumption spending will have a strong influence on the growth of GDP through both its direct effect and its indirect effect on business investment spending. As discussed above, business investment spending will slow if the expectation for the growth of demand for their products is downgraded following signs of slower consumer spending.

Real consumption expenditures had been increasing, but steadily decelerating their rate of advance in 2007 and the first half of 2008. After increasing about 3.0% in 2006, that pace slowed to 2% in 2007, and through the first half of 2008 slowed further to about a 1% annual rate. However, in the third and fourth quarters of 2008, real consumer spending fell sharply, down 3.8% and 4.3%, respectively.[13] That's large enough to subtract nearly 3.0 percentage points from the growth rate of real GDP in the second half of 2008 and suggests a sizable economic downturn. Many argue that the deceleration of consumer spending over the first half of 2008 was substantially the result of lost purchasing power due to the sharp rise in energy and food prices. Only in the third quarter of 2008 and subsequently was there strong evidence of tight credit conditions dampening consumer spending. Preliminary estimates for the first quarter of 2009 show real consumer spending increasing 2.2%, perhaps suggesting that weak consumer demand may be stabilizing.

Until recently, the flow of credit to households (other than mortgage lending) was not greatly diminished. As recently as the third quarter of 2007, bank loans to households increased at an annual rate of $60 billion. By the fourth quarter of 2008, however, bank loans to households *decreased* at a $51 billion annual rate.[14] This diminished flow of bank credit constrains many types of consumer purchases such as autos, major appliances and higher education.

In contrast, the flow of consumer credit (largely credit cards) remained relatively strong through the second quarter of 2008, down from an annual pace of $134 billion in 2007 but still increasing at a $101 billion annual rate in the second quarter of 2008. This pattern of borrowing probably indicates that households were running up their credit card balances to sustain their spending. This pattern of spending could not be maintained indefinitely, and by the fourth quarter of 2008 flow of consumer credit was a negative $83 billion (meaning on balance funds were flowing out of this credit market).[15]

[13] See BEA, *U.S. Economic Accounts*.

[14] See Federal Reserve Z.1 data, table F.100, line 44, http://www.federalreserve.gov/releases/z1/Current/z1r-3.pdf.

[15] See Federal Reserve Z.1 data, table F.100, line42, http://www.federalreserve.gov/releases/z1/Current/z1r-3.pdf.

The effect of tighter credit on consumer spending is likely to be more evident in the sub-category of consumer durable goods. These are expenditures that are typically financed by borrowing and are also purchases that often can be postponed until economic conditions improve. Real consumer durable spending declined 4.3% and 2.8% in the first two quarters of 2008 respectively. But, consumer durable spending weakened much more sharply in the third and fourth quarters of 2008, down 14.8% and 22.1% respectively. These large decreases subtracted 1.5 percentage points from real GDP growth in the last half of 2008. However, preliminary data for the first quarter of 2009 show real consumer spending on durable goods increasing 9.4%. This increase could be evidence that household spending is stabilizing.[16]

The biggest contributor to the decline of consumer durable goods purchases was a sharp fall in automobile sales in 2008, down from about 16 million units in 2007 to an annual rate of less than 12 million units in 2008. [17] In addition to tighter credit conditions, record high gasoline prices likely contributed to the weak automobile sales over the period, as has the steady fall in household wealth caused by falling home prices (see next section's discussion of this effect). Nevertheless, the sharpness of the fall in the second half of 2008 is also probably a manifestation of the abrupt further deterioration of credit conditions that began around mid-year.

The Effect on Consumer Spending of Falling Asset Values Reducing Household Wealth

In addition to the direct dampening effect of tighter credit conditions on consumer spending, there is an indirect dampening effect caused by falling asset prices reducing household wealth. Falling prices for stocks and bonds decreases the value of households' retirement and investment portfolios, inducing consumers to spend less and save more in an attempt to replenish lost wealth. In addition, falling home prices erase accumulated equity, decreasing a ready source of liquidity for households to finance current expenditures. Also, tighter credit conditions and tougher loan terms may make it more difficult to convert any remaining wealth (equity) into liquidity (cash).

Economic research indicates that for every $100 billion decrease in the housing component of household wealth, consumer spending tends to fall $4 billion to $10 billion, with the change emerging over several years.[18] Over the last year, household net worth declined nearly $3 trillion. If past relationships continue to hold, that decrease in wealth could cause a cumulative decrease in consumer spending of between $500 billion and $1.3 trillion. A spending change of that size would translate into a drag on economic growth equivalent to 3% to 9% of GDP. That spending reduction could grow larger if home and other asset prices continue to fall, causing household wealth to continue to fall.

[16] See BEA, *U.S. Economic Accounts*.

[17] Auto sales data found at http://www.motorintelligence.com/m_frameset.html.

[18] See Christopher D. Carol, Misuzu Otsuka, and Jirka Slacalek, "How Large is the Housing Wealth Effect? A New Approach," *NBER Working Paper No. 12746* (Cambridge, MA: National Bureau of Economic Research, December 2006), p.12.

The Double-Edged Influence of the International Sector on GDP

International Flows of Goods

In addition to relatively steady consumer spending, the U.S. economy's ability to maintain moderate real GDP growth over most of the last two years, despite the sharp fall of the housing sector and unprecedented disruptions in financial markets, is largely explained by the strong growth of real net exports since mid-2006.

The strength of net exports had been a consequence of relatively stronger economic growth among major U.S. trading partners and of more competitively priced American goods resulting from the more than 30% decline in the dollar's real (trade-weighted) exchange rate from 2002 through 2007.

In 2007, real export sales increased 8.4% whereas import purchases increased only 2.2%. Through the first half of 2008, export sales remained strong and import purchases actually decreased. This pattern was strongly evident in the second quarter of 2008, when net exports generated nearly all of that quarter's annualized GDP growth rate of 2.8%. In the third quarter, real export sales fell off their second quarter pace, but were still strong, and imports continued to decline. Overall, net exports contributed 1.1 percentage points to the third quarter's real GDP growth, continuing as a source of economic strength, but not strong enough to offset the quarter's sharp fall in consumer spending. However, in the fourth quarter of 2008 the demand stimulus from net exports ceased, with export sales decreasing nearly 24%. [19]

The collapse of export sales was the result of a pronounced slowing of the pace of economic growth in foreign economies. This slowing was the combined effect of three factors: reduced purchasing power caused by high energy and food prices, credit constraints as a result of the spread of the negative effects of the U.S. credit crisis to many industrial economies with closely linked financial markets, and less accommodative policy responses by foreign governments. The prospect of slower economic growth abroad is likely to continue to weaken the demand for U.S. exports and reduce their positive impulse on real growth in the United States over the near term.

International Flows of Capital (Assets)

The depreciation of the dollar since 2002 has been animated by a slow but steady weakening of the demand for dollar-denominated assets on the part of foreign investors, reducing the inflow of foreign capital. This gradual ebbing of the foreign inflow of capital is equivalent to a reduction in the inflow of foreign credit (lending), but it has not over this period been disruptive or caused any abrupt increase in U.S. interest rates. Nevertheless, capital outflows are likely to have a heightened significance in the current state of financial turmoil and diminished credit flows to the domestic economy.

The negative effect on domestic credit conditions would be more substantial if the inflow of capital slows sharply. That could happen if foreign investors, faced with the financial turmoil in the United States, suddenly decide that dollar assets are too risky. An abrupt fall in capital inflows would be an added decrement to the supply of credit, exerting stronger upward pressure on U.S.

[19] See BEA, *U.S. Economic Accounts*.

interest rates, exacerbating the negative effects already affecting the credit and interest rate sensitive sectors of the economy.

For the 12 months through February 2009, the U.S. Treasury reports that the U.S. economy received a net foreign inflow of foreign capital of $316 billion, down from $483 billion during the preceding 12 months. This overall inflow was composed of $190 billion of private capital inflows and by $125 billion of official purchases (inflows of capital from foreign central banks). However, in January and February of 2009, there were net private capital outflows of $156 billion and $106 billion, and official purchases recorded small inflows of about $9 billion in both months.[20]

If this pattern of large reductions of foreign capital inflows continues along with a weakening demand for U.S. exports, the near-term negative effects of this capital outflow on credit sensitive economic activity risk offsetting any concurrent positive effects from net exports.

If, however, economic conditions abroad deteriorate greatly, a "flight to quality" toward dollar assets, particularly low-risk Treasury securities, may have a positive effect on credit conditions in the United States. The recent strength of the dollar suggests that this move into highly liquid dollar assets is occurring, but it is an open question how long it may be sustained.

An Estimate of the Potential Drag on Real GDP Growth from a Diminished Flow of Credit

Although the GDP data indicate that the economy weakened in 2008 and early 2009, it is difficult to say how much of the slowdown evident so far is attributable to the ebbing of credit flows to the non-financial sectors. The sharp surges in energy and other commodity prices are thought to have had a significant dampening effect on economic activity in 2008, and there were clear signs that the economy was already slowing prior to the recent escalation of financial turmoil, in part due to the weakness of residential investment since 2006, and in part due to the erosion of real purchasing power caused by increased energy prices. It is likely that the negative effects of the financial market turmoil on the real economy was partially evident in the second half of 2008 and will be more fully evident in 2009. How big an economic blow might be coming?

A Simulation of the Effect of a Diminished Credit Flow on Real GDP

A recent study contains an estimate of the potential overall effect of reduced credit flows on real GDP.[21] It examines the linkage running from home prices falling, to mortgage credit losses and reduced capitalization of leveraged financial institutions, to a reduced supply of credit flowing to households and non-financial business. This study is not presented as the last word on this

[20] U.S. Department of the Treasury, Office of International Affairs, Treasury International Capital (TIC) data for February 2009, released April 15, 2009, http://www.treas.gov/press/releases/hp1215.htm.

[21] Jan Hatzius, "Beyond Leveraged Losses: The Balance Sheet Effects of the Home Price Downturn," *Brookings Papers on Economic Activity*, fall 2008, http://www.brookings.edu/economics/bpea/~/media/Files/Programs/ES/BPEA/2008_fall_bpea_papers/2008_fall_bpea_hatzius.pdf.

subject, but it is carefully constructed and presents plausible estimates of gross magnitudes of effect and has the added advantage of being timely.

The study focuses on the supply of credit provided by three sets of financial institutions: (1) on balance-sheet lending by banks (and other leveraged financial institutions), (2) off-balance sheet lending by the asset backed securities (ABS) market, and (3) lending by government-sponsored enterprises (GSEs). The study estimates the dampening effect of the reduced flow of credit from these three sources on the rate of growth of real GDP.

The central projection of the study is based on the assumption that home prices fall 10% from their mid-2008 level. Mortgage credit losses are projected to accumulate to $636 billion through 2012. Given a series of assumptions about tax rates, recapitalization rates, and leverage ratios, a credit loss of that size is projected to cause a decrement to the U.S. economy's supply of credit of about $1 trillion, and lead to a drag on real GDP of about 1.8 percentage points for two years. For an economy that is likely already growing significantly below its trend rate of near 3%, this degree of drag from deteriorating credit flows has the potential to halt real economic growth over the next two years.

A particularly critical assumption for this outcome is that Fannie Mae and Freddie Mac (the main GSEs) continue to expand credit growth at their recent pace. During 2008, despite a decline in the market value of their equity capital, the GSEs added more than $500 billion of lending. The study's central projection of credit growth has the GSEs continuing to expand their lending at a $750 billion annual rate.

However, if the GSEs should stop expanding their lending, the study estimates that the decrement to total credit growth would increase to $1.7 trillion, and the estimated drag on real GDP would increase to 3.2 percentage points over the next two years. That would be a substantial blow to overall economic activity and probably, other factors constant, has the potential to generate a deep recession.

These estimates do not include other negative effects of the housing downturn on overall economic activity, such as the wealth related dampening of consumer spending, nor does it reflect the sizable real income losses stemming from higher energy prices. Nevertheless, the study suggests that a substantial credit crunch by itself has the potential to deliver a major negative blow to the economy, potentially inflicting significant economic damage well beyond the housing sector and the financial markets.

Economic Policy Responses to the Credit Crisis

How can economic policy contain or mitigate the potentially large negative economy-wide effects of a major credit crisis? In general, there are three types of policy response to be applied separately or in combination as the severity of the problem warrants. The first type comprises the conventional macroeconomic policy tools of monetary and fiscal policy, used with the aim of broadly supporting bank liquidity and aggregate spending. Monetary policy, having greater flexibility and precision than fiscal policy, will usually cause it to play the prominent role.

The second type of policy for responding to a credit crisis is greater use of the Fed's traditional role of "lender of last resort." This policy will typically involve expanded use of the Fed's discount window, the facility the Fed uses to make short term loans to banks that need to bridge a

short-run shortage of liquidity. Theses policies will be more narrowly focused on the needs of troubled institutions and deal more directly with un-blocking the flow of credit than would conventional macroeconomic policy.

The third type of policy response is the use of "extraordinary measures" involving direct interventions by the federal government to restore confidence in financial markets and the remove impediments to credit to flowing broadly and at greater volume. This "extraordinary intervention" may involve a restructuring of the debt of troubled financial institutions and significant changes in the regulation of financial markets. It is also argued that, to be effective, a government most often will need to apply "extraordinary measures" *quickly and decisively* so that the actions remove uncertainty about profit and loss in the financial sector.

The U.S. government, to date, has employed all three types of policy responses to the current credit market crisis.

Conventional Macroeconomic Policy

Monetary Policy

Monetary policy is the Fed's standard and most frequently used tool to exert broad-based influence on credit conditions and economic activity so as to achieve full employment and price stability. U.S. monetary policy is implemented by targeting (raising or lowering) the short-term federal funds rate, a market-determined interest rate that banks charge each other for short-term loans. The targeting of the federal funds rate is accomplished with open market operations whereby the Fed buys or sells Treasury securities for cash to increase or decrease liquidity in the financial markets, increase or decrease real borrowing costs, and thereby increase or decrease investment (and other credit sensitive) spending.[22]

From the standpoint of financial institutions, open market operations affect the prices of assets and the cost of carrying debt. Through both of those changes, the Fed may be able to influence banks' willingness and ability to lend.

In response to a financial crisis, the Fed would apply a stimulative monetary policy. A stimulative monetary policy is initiated with the Fed entering the federal funds market, making open-market purchases of Treasury securities from banks in exchange for cash. The infusion of cash increases the reserves (liquidity) of the banking system, exerting downward pressure on interest rates. The effect on interest rates is likely to be reflected quickly and most fully on short-term interest rates and then, hopefully, spread to longer-term interest rates. Beginning in September 2007, in response to continuing evidence that "disruptions in financial markets" could have adverse effects on the wider economy, the Fed aggressively applied successive injections of monetary stimulus, as it added reserves and pushed down the federal funds rate from 5.25% to its current level of 0.0%-0.25%.[23]

[22] See CRS Report RL34427, *Financial Turmoil: Federal Reserve Policy Responses*, by Marc Labonte.

[23] See the minutes of The Fed's Open Market Committee from September 2007 through March 2009 at http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

However, the stimulative effects of a much lower federal funds rate to the wider economy seem to be substantially muted as evidenced by the slowness of long-term interest rates to fall during 2008. This lack of a stimulative effect is occurring because banks, still lacking the needed degree of "confidence" have been content to increase reserves and liquidity, but not increase their lending activity. They are still not willing to borrow short-term and lend long-term, the behavior needed to keep an adequate flow of credit (liquidity) moving to the non-financial sectors.

The phrase often used to describe this lack of effect on real economic activity is that monetary policy can not get "traction." In the economic literature, the extreme form of this phenomenon is called a "liquidity trap," a situation where the financial system's seemingly limitless appetite for short-term liquidity keeps the economy stuck in a sub-optimal equilibrium of slow economic growth that monetary policy (alone) cannot push it out of. At this extreme, monetary policy's attempt to move the economy is likened to "pushing on a string."

In the current situation, the economy may not have fallen into a "liquidity trap," and getting the economy back to its trend rate of growth may only be a matter of applying more monetary stimulus. But there may be some restrictions on the Fed's ability to apply more stimulus. For one, the federal funds rate is about at the "zero bound." When the short-term policy rate is at or near zero, the conventional approach for conducting a stimulative monetary policy is not possible.

However, there are alternative means that the Fed can employ to provide stimulus in this situation. First, the Fed could try to *change financial market's interest rate expectations*. The current interest rate on long-term assets depends on the entire expected future path of short-term interest rates, including the zero rate for the federal funds rate. If the central bank can persuade the public that it will hold the short-term rate at zero for longer than had been expected, interest rates across the whole term-structure should also fall, stimulating spending. Such an outcome would hinge on whether the Fed's policy commitments are taken as credible by the public.

Second, the Fed could *alter the composition of its balance sheet*. The Fed's asset holdings have historically been primarily of Treasury securities of different maturities ranging from one month to 30 years, but because its targeted interest rate for the conduct of monetary policy has been the short-term federal funds rate it has relatively large holdings of short-term securities. (The average maturity of its assets is typically around one year.) If the Fed were to shift the composition of its balance sheet toward long-term assets by selling short-term treasuries and buying long-term securities, it could possibly lower long-term yields to provide stimulus to economic activity. Since late 2007, the Fed has dramatically shifted the composition of its balance sheet, reducing the share of short-term treasury securities to less than 40% of its balance sheet, while substantially increasing the shares of private short term and long term securities.[24]

A third option for implementing monetary policy at the "zero bound" is to *expand the size of the Fed's balance sheet*. This, of course, is the conventional means of conducting a stimulative monetary policy of buying securities to increase the supply of reserves in the banking system. The policy focus, however, is shifted from the price of reserves (interest rates) to the quantity of

[24] For this process to work, however, investors must treat Treasury securities of different maturities as imperfect substitutes, otherwise an increase in the supply of short-term securities coupled with a like-size decrease in the supply of long-term in public hands would not cause a significant decrease in long-term interest rates. The evidence is limited, but it would tend to indicate that the public sees only a small degree of imperfect substitutability between short-term and long-term Treasury securities, raising doubt about the efficacy of altering the composition of the Fed's balance sheet to generate a stimulative monetary policy.

reserves. From August 2008 through January 2009, the Fed increased the reserves of the banking system by more than $800 billion.[25]

Monetary Policy in the Great Depression

The Great Depression gives support to the belief that monetary policy can be an effective counter force to financial crisis and economic weakness. In the 1929-1933 economic collapse, simulative monetary policy was not tried, the Fed did not counter a prolonged monetary contraction or prevent massive numbers of bank failures. Many economists argue that it was the Fed's commitment to the gold standard that prevented it from fighting the economic collapse. In 1933, President Franklin Roosevelt temporarily took the United States off the gold standard and freed the Fed from having to maintain high interest rates to maintain the dollar's fixed parity to gold. The dollar depreciated by about 40% over the course of 1933 and 1934. The devaluation would allow the United States to expand the money supply by about 42% between 1933 and 1937 without concern for the impact on gold flows or the exchange rate.[26]

This monetary expansion, however, was implemented by the U.S. Treasury, not by the Federal Reserve. Under the gold standard, the Treasury was allowed to issue gold certificates, in proportion to the gold stock, that were interchangeable with Federal Reserve notes. The devaluation directly increased the nominal value of the existing U.S. stock of gold. In addition, the devaluation induced a large inflow of gold through its effects on the trade balance and the attractiveness of dollar assets. (Rising political tensions in Europe would also contribute to the attractiveness of dollar assets.) The Treasury issued gold certificates equal to the rising value of the gold stock and deposited them with the Fed. As the government spent them, they were converted into Federal Reserve notes, increasing the monetary base.

Despite nominal interest rates being at the zero bound, credit became more readily available and real interest rates were reduced, stimulating interest rate sensitive components of aggregate spending. In addition, the large monetary expansion arguably changed expectations from negative to positive, making prospective borrowers and lenders more confident. In response, the economy grew strongly and unemployment fell substantially.

Nevertheless, operation of monetary policy at the zero bound for the federal funds rate would be a passage through uncharted waters for U.S. monetary policy. There remains substantial uncertainty about how well the alternative operating procedures might work, particularly given the important role often volatile investor expectations would play in the alternative procedure's ability to stimulate economic activity.

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[25] Quantitative easing is thought to affect real economic activity through three channels. First, it induces a shift in investor portfolios away from cash and toward other financial assets, so it would tend to push up asset prices and push down yields. Second, by altering investor expectations about the future path of the federal funds rate by demonstrating a willingness to keep reserves high, it could (as already discussed above) induce a decrease in interest rates. Third, quantitative easing could generate a stimulative fiscal effect as the swapping of non-interest bearing currency and reserves for interest bearing Treasury debt leads to a reduction of the current and future interest cost of the federal government and a lowering of the associated tax burden on the public.

[26] For further discussion of the impact of devaluation and monetary expansion during the Great Depression see, Barry Eichengreen and Jeffery Sachs, "Exchange Rates and Economic Recovery in the 1930s," *Journal of Economic History*, vol. 45 (1985), pp. 925-946.

The Constraint of Inflation and the Risk of Deflation

Another important constraint on the Fed's ability to conduct a stimulative monetary policy is the risk of inflation. After 2006, inflation began to accelerate. The Consumer Price Index (CPI) increased 2.5% in 2006, but through July 2008 the CPI was rising at about a 5.4% rate. [27] Much of the upward pressure on the price level was the consequence was a sharp rise in energy and other commodity prices. In addition, the falling dollar had increased the domestic price of many imports.

In contrast, over the last half of 2008, inflation turned to deflation with the CPI decreasing in the fourth quarter of 2008. Perhaps this indicates that economic growth has slowed enough to remove the upward pressure on energy and food prices. If so, this apparent abatement of inflation may allow the Fed to worry less about near term inflation effects of a large scale monetary stimulus to counter the dampening effect on economic activity of the current financial market crisis.

The issue of long-term inflation effects of current monetary stimulus still exists. The Fed has injected large amounts of liquidity into the economy that could pose an inflation problem once the economy returns to a normal rate of growth. However, measures of inflation expectations have fallen since June 2008.[28]

In a rapidly weakening economy, the fall of the CPI in the fourth quarter of 2008 could be the precursor of deflation—a sustained, and substantial fall of the price level. Deflation tends to exacerbate the constriction of the flow of credit in a financial crisis and the associated weakening of economic activity. The large scale deflation that caused the price level of the U.S. economy to fall 25% from 1929 to 1933 was an important reason for depth and duration of the Great Depression. How can economic policy contain or mitigate the potentially large negative economy-wide effects of a deflation caused by a negative demand shock? The simple answer is that the government can take actions to support current aggregate spending. These actions could include a stimulative monetary policy.

Nevertheless, policies in addition to monetary stimulus were thought to be needed to get credit flowing and support aggregate spending.

Fiscal Policy

Fiscal policy can support economic growth through an increase in the budget deficit via lower taxes and increased government spending (including both changes in discretionary spending and changes in the automatic stabilizers). A policy of fiscal stimulus would involve tax cuts or spending increases (or some combination of the two). Unlike monetary policy, which must transmit its stimulative impact to economic activity indirectly through financial markets, fiscal policy has a relatively direct impact on economic activity. Increased government spending is a direct addition to aggregate spending.

[27] Bureau of Labor Statistics, CPI Detailed Report for July 2008 and December 2008, data available at http://www.bls.gov/cpi/cpid0807.pdf

[28] University of Michigan Inflation Expectation, Survey Research Center: University of Michigan, data available at http://research.stlouisfed.org/fred2/series/MICH/.

A tax cut is less direct because it must first pass through household income before it boosts spending, and there is always the possibility that all or part of the tax cut is saved rather than spent by households. In addition to its effect on aggregate spending, fiscal stimulus may have an indirect positive effect on the condition of financial institutions' balance sheets as the salutary effect on economic activity also exerts upward pressure on asset prices[29]. To be most effective, fiscal policy initiatives would occur in conjunction with a stimulative monetary policy.

The Economic Stimulus Act of 2008[30] provided tax rebates to households and accelerated depreciation rules for business that amounted to an increase in private sector income of about $120 billion in 2008.[31] Taking potential multiplier effects into consideration, the rebate could generate an even larger stimulus to total economic activity.[32] History and economic theory, however, indicate that one-time tax cuts often do not stimulate consumer spending. Nevertheless, evidence from the 2001 federal tax rebate showed that households eventually spent about two-thirds of that rebate. The Bureau of Economic Analysis's estimate of personal saving increased substantially in the second and third quarters of 2008, suggesting that a substantial portion of the 2008 rebate has been saved so far. In 2009, Congress passed and President Obama signed a much larger stimulus package composed of spending and tax cuts. The American Recovery and Reinvestment Act of 2009 (ARRA) is a $787 billion package with $286 billion in tax cuts and $501 billion in spending.[33]

In addition, the "automatic stabilizers," which are policies or programs designed to provide an offset to current economic trends without additional legislation, have been enhanced by extending the term of unemployment benefits from 20 weeks to 40 weeks. Because unemployment benefits tend to get spent quickly, they usually give a timely and direct stimulus to economic activity.[34]

Total real federal spending in 2008 increased about 5%, and contributed an estimated 0.4 percentage points to the growth of real GDP over this period.[35] However, to correctly gauge government's effect on aggregate spending, its revenue and spending actions need to be evaluated. The generally accepted way of determining whether the influence of the government budget on aggregate spending and real GDP is positive or negative is the direction of change of the "standardized budget measure."

The standardized measure excludes the effect of cyclical fluctuations and factors that are short-lived and unlikely to affect aggregate spending in the short run. The Congressional Budget Office (CBO) projected in March 2009 that the standardized budget deficit increased from 1.2% of potential GDP in 2007 to 3.2% of potential GDP in 2008, which suggests that government fiscal actions are expected to provide a stimulative impulse to the economy equal to 2.0% of potential GDP. In 2009, the standard budget deficit is projected to increase to 13.1% of potential GDP,

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[29] For further discussion see, CRS Report RS21136, *Government Spending or Tax Reduction: Which Might Add More Stimulus to the Economy?*, by Marc Labonte.

[30] P.L. 110-185, 122 Stat. 613-622.

[31] For further discussion see, CRS Report RS22850, *Tax Provisions of the 2008 Economic Stimulus Package*, coordinated by Jane G. Gravelle.

[32] Multiplier effects are the additional increases in aggregate spending that occur when an expansionary fiscal policy increases consumer spending.

[33] See BEA, *U.S. Economic Accounts*.

[34] For further discussion see, CRS Report 92-939, *Countercyclical Job Creation Programs*, by Linda Levine.

[35] See BEA, *U.S. Economic Accounts*.

which signals a major increase in the government budget's stimulative effect on aggregate spending.[36]

The Fed as "Lender of Last Resort"

In the role of "lender of last resort," the Fed offers credit to solvent but temporarily illiquid financial institutions. These are financial institutions that are solvent because the value of their assets exceed the value of their liabilities, but because their debts tend to be short-term and liquid while their assets are long-term and illiquid, they are in need of short-term funds to meet short-term debt obligations. The expectation is that with improved access to short-term liquidity, financial institutions will be more willing and able to lend to each other and to the non-financial sectors of the economy, and thereby remove excess volatility in financial markets.

The Fed's "discount window" is its facility for making loans to financial institutions with short-term liquidity problems and the "discount rate" is the interest rate charged for these loans.[37] Financial institutions are often reluctant to use the discount window out of concern that financial market participants will draw a negative inference about their financial condition if their borrowing from the Fed becomes known.

During the collapse of the U.S. economy in 1929-1933, the Fed did not engage in "lender of last resort" actions. At that time, the Federal Reserve allowed the financial turmoil that followed the 1929 stock market crash to destroy much of the U.S. banking system. In late 1930, the first wave of bank failures began. The Fed did not try to abate these failures by being lender of last resort. By 1933, more than 9,000 banks or nearly half of the banks in operation in 1929 would fail.[38]

The bank failures caused the money supply to contract by nearly 30%, accelerating deflation, constricting the flow of credit, and intensifying the economy's collapse. In 1930, the economic contraction did not look unusual. From 1931 through 1933, the economic decline would transform from an ordinary recession to the Great Depression. Many economists argue that it was the massive collapse of the banking system and the associated fall of the money supply, unchecked by the Fed's unwilling to assume the lender of last resort role, which caused that hugely costly transformation.

In conjunction with conventional monetary stimulus (discussed above), the Fed, beginning in August 2007, has taken a number of steps to make use of the discount window more attractive. It has broadened the group of eligible participants, it has extended the term of loans, and it has lowered the discount rate.

Enhancements to the Fed's lender of last resort function have included the creation of the Primary Dealer Credit Facility which opened the discount window to non-member financial institutions, the Term Auction Facility to make loans to member banks based on a broader range of collateral, and the Term Securities Lending Facility to lend Treasury securities in exchange for some asset backed securities. The Fed has also entered into asset swaps with the European Central Bank and

[36] Congressional Budget Office, *The Cyclically Adjusted and Standardized Budget Measures*, Table F-11, March 2009,. http://www.cbo.gov/ftpdocs/100xx/doc10014/HistoricalMar09.pdf.

[37] For further discussion of Fed policy, see CRS Report RL34427, *Financial Turmoil: Federal Reserve Policy Responses*, by Marc Labonte.

[38] For further discussion of economic policy during the Great Depression, see Christina D. Romer, "The Nation in Depression," *The Journal of Economic Perspectives*, vol. 7, no. 2 (spring 1993), pp. 19-39.

several other foreign central banks to increase dollar liquidity in foreign financial markets. (These direct loans to the financial sector are typically "sterilized" by the Fed through the purchase of Treasury securities so as to keep the total value of its asset holdings steady and avoid generating any inflationary pressure.)

Maintaining market confidence in the financial sector also involves ensuring that any exit of firms from the sector occurs in an orderly way. To this end, the Fed in March 2008 facilitated with loans the purchase of a troubled investment bank, Bear Stearns, by J.P. Morgan. The Fed judged that, given the severe illiquidity of the financial system at that time, a bankruptcy filing by Bear Stearns would have led to much broader liquidity problems. The Fed argued that lending support for the sale of Bear Stearns was necessary to avoid the systemic risk of a disorderly exit.

The Fed's enhanced discount window initiatives have pumped a large volume of liquidity into the U.S. financial system. For the twelve months ending in April 2009, the Fed increased system-wide reserve funds by $1.3 trillion. For comparison, reserve funds increased only about $27 billion over the twelve months ending April 2008. In March 2009, the Fed initiated an additional lending program called the Term Asset Backed Security Loan Facility (TALF) to lend funds to private purchasers of assets backed by securitized loans. The total amount of funds provided by TALF could be as much as $1 trillion.[39]

Despite their size, the Fed's "lender of last resort" initiatives (along with conventional monetary stimulus) have not yet resulted in renewed credit flows at pre-crisis levels, as financial institutions have accumulated reserves, but remained reluctant to generate new long-term lending. This lack of effect has suggested to some that the problem goes beyond a matter of short-run illiquidity, and involves long-term solvency issues. (Long-term insolvency means that the "true" market value of some financial institutions' assets is not sufficient cover their liabilities.)

The Fed's ability to continue pursuing large "lender of last resort" activities may eventually be constrained by the changing risk profile of the central bank's balance-sheet. Its recent "lender of last resort" initiatives have meant that the Fed has exchanged a sizeable portion of its holdings of low-risk Treasury securities for high-risk collateral. Although the Fed is able to hedge some of this risk, the average level of risk carried in the Fed's total asset holdings has increased. More lending by the Fed could potentially increase the level of risk in its asset holdings to a point beyond which it is not willing to go.

Extraordinary Measures (Large Scale Intervention)

The Fed has implemented extensive "lender of last resort" measures to help the financial sector bridge temporary liquidity problems of turning assets into cash and avoiding selling at "fire-sale" prices. The Fed has also continued to apply a stimulative monetary policy that has provided liquidity, lowered market interest rates at the short end of the yield curve, and increased the demand for financial assets. The objective of both policy initiatives is to reduce the risk of insolvency and assuage banks' reluctance to lend long-term.

[39] Data on reserve growth comes from the Board of Governors of the Federal Reserve System, "Factors Affecting Reserve Balances of Depository Institutions", H.4.1 release, May 14, 2009, http://www.federalreserve.gov/releases/h41/Current/h41.pdf.

The "conventional initiatives" alone were not seen to be enough, however. In two bold steps beyond the conventional, the government, to forestall bankruptcies that could be particularly devastating to the whole financial system, took control of the mortgage giants Fannie Mae and Freddie Mac and the insurance giant AIG.

Nevertheless, despite these efforts, the financial turmoil persisted, credit flows remained anemic, despite falling from their record size risk spreads remained large, and the threat of more widespread bankruptcies of financial institutions increased. The prospect of a collapse of the entire financial system, with large negative repercussions on the wider economy, prompted the federal government to initiate a massive intervention into the financial system to restore confidence and resume the flow of credit. Hence, the Troubled Asset Relief Program (TARP) was initiated with a variety of features, but the heart of the program is that it gives the Secretary of the Treasury up to $700 billion to either buy mortgages and other troubled assets or directly recapitalize selected financial institutions.[40]

How TARP Works

The central objective of TARP is to increase demand relative to supply for risky assets in order to stabilize their price. Arguably, the government will now target, as it does the federal funds rate, the price of risk in the economy. Stabilizing the price of risk may reduce the incentive of financial institutions to hoard liquidity and induce them to return to their conventional role of borrowing short-term and lending long-term, and begin to pass a larger flow of liquidity to the non-financial sectors to support credit dependent spending.

In general, there are at least two ways for TARP to stop the price of risky assets from falling. First, the Treasury can reduce the supply of risky assets by buying them or guaranteeing them (a guarantee reduces the supply because it transforms a risky asset into a not risky asset). Second, the Treasury can recapitalize the financial system either through inducing it to capitalize itself or through the government taking some level of equity position in troubled financial institutions. With recapitalization, the demand for risky assets is expected to recover, exerting upward pressure on asset prices. (The initial spending of TARP funds was for recapitalization.)

Within this general framework, critical decisions, therefore, must be made about *what assets* to buy or guarantee: whole mortgages and mortgage pools; mortgage backed securities; or "other assets" deemed important to promote financial market stability. In addition, decisions will be made about *what price* to pay for the troubled assets. The Treasury could either buy at "market price," to protect taxpayers, or it could buy at "above market price," to provide recapitalization of the assisted institution, conferring a significant benefit to that institution but none to many others.

Will Interventions Solve the Problem?

TARP takes the U.S. economy into uncharted waters and it is uniquely difficult to predict what the outcome of the program will be. Many economists argue that some initiative broadly like this was probably needed to stave off an economic catastrophe that would have extended far beyond the housing sector and Wall Street. One lesson that some have drawn from Japan's banking

[40] For further discussion, see CRS Report RS22963, *Financial Market Intervention*, by Edward V. Murphy and Baird Webel.

troubles in the 1990s was that the Japanese government's failure to act quickly and decisively in restructuring financial sector debt was an important reason why Japan emerged from its financial crisis so slowly, enduring a decade of lost economic growth.

If such a large and extraordinary intervention into U.S. financial markets is needed to assure their smooth functioning, it raises the longer term question of whether the management of risk can safely be left to financial markets themselves. Some argue that a permanent public guarantee of risk could be necessary to avoid overly volatile asset markets, to ensure the ability to issue debt, and to preserve an adequate flow of credit to the non-financial economy.

Skeptics counter that large scale government support and guarantee of risk may induce "moral hazard"; that is, if financial markets come to believe that government will come to the rescue any time problems occur, then those markets will have less incentive to prudently manage risk and more incentive to take on imprudent risk. To resolve the moral hazard problem posed by TARP, more extensive prudential supervision and regulation of financial markets may be required.

Forecasting the U.S. Economy's Path Through the Financial Crisis

Economic forecasts are different from simulation studies such as the one above. A forecast of the rate of growth of real GDP attempts to incorporate all of the significant forces, positive and negative, that are likely to influence economic growth. Among these forces are the expected effects of current and anticipated economic policy initiatives to counter the negative effects of the financial crisis. Nevertheless, some perspective on the expected magnitude of the repercussions on economic activity can be gained from how economic forecasts have changed over the year as the financial turmoil has unfolded.

Most forecasts at the beginning of 2008 projected some slowing of economic growth due to the effects of the housing crisis, rising energy prices, and conventional cyclical forces. The degree of the financial market melt-down that emerged in the spring was not anticipated in those early forecasts, however, and would force sizable revisions of most forecasts by the fall. Focusing on 2009, the first full year when the economic repercussions on economic growth would be most evident, the following revisions have occurred:

- The IMF's April 2009 forecast for U.S. real GDP growth in 2009 is a *decrease* of 2.8%, down from a January 2008 projection of a 1.8% increase.[41]
- The Congressional Budget Office forecast for growth of real GDP in 2009 has fallen from a January 2008 projection of a 2.8% increase to a January 2009 projection of a 3.0% *decrease*.[42]

[41] International Monetary Fund, *World Economic Outlook*, April 2009, p. 2, http://www.imf.org/external/pubs/ft/weo/2009/01/pdf/c1.pdf.

[42] Congressional Budget Office, "CBO's Economic Projections for Calendar Years 2009-2011," http://www.cbo.gov/ftpdocs/100xx/doc10014/03-20-PresidentBudget.pdf.

- The Blue Chip Indicators consensus forecast of U.S. real GDP growth in 2009 has moved down from a January 2008 projection of a 2.9% increase to a January 2008 projection of a 2.6% *decrease*.[43]

Economic forecasts carry a high degree of uncertainty, and most of the risks in the current economic situation are judged to be on the down-side. One important risk is that the constraint on credit flows from the de-leveraging of financial institutions could be deeper and more protracted than expected. A second substantial risk is that the housing prices do not stabilize, and instead deteriorate further. In addition, the global dimension of the crisis broadens the problems beyond the U.S. market and adds the risk of destabilizing shifts in international capital flows.

On the upside, U.S. economic policy has shown the ability to change quickly and substantially in response to the financial market turmoil, and the United States has a strong record of successfully managing recoveries from business cycle downturns.

Author Contact Information

Craig K. Elwell
Specialist in Macroeconomic Policy
celwell@crs.loc.gov, 7-7757

[43] Blue Chip forecast can be found in CRS Report RL30329, *Current Economic Conditions and Selected Forecasts*, by Marc Labonte.