Is Deflation On The Horizon?

Donald Sutherland
Institute for SocioEconomic Studies

October 30, 2008

Introduction

As a result of the implosion of the U.S. housing bubble that began in 2006, home prices through August 2008 declined by more than 20%.[1] *In Las Vegas, Los Angeles, Miami, Phoenix, San Diego, and San Francisco, the drop in value was more than 30%.*[2] *This decline in home prices raises the possibility that we may be in for a period of destructive deflation. An examination of three major cases of deflation suggests, however, that while the United States is not presently at imminent risk of destructive deflation, there is a growing risk that we will suffer a bout of at least mild deflation.*

The collapse of asset price bubbles is a deflationary phenomenon.[3] Although mild deflation has coincided with economic growth[4], some deflationary episodes have triggered a destructive debt-deflation cycle, along with a severe recession or even a depression. In his classic essay, "The Debt-Deflation Theory of Great Depressions," Irving Fisher described such a cycle as follows:

…deflation caused by the debt reacts on the debt. Each dollar of debt still unpaid becomes a bigger dollar, and if the over-indebtedness with which we started was great enough, the liquidation of debts cannot keep up with the fall of prices which it causes. In that case, the liquidation defeats itself. While it diminishes the number of dollars owed, it may not do so as fast as it increases the value of each dollar owed. Then, the very effort of individuals to lessen their burden of debts increases it, because of the mass effect of the stampede to liquidate in swelling each dollar owed. Then we have the great paradox which…is the chief secret of most, if not all, great depressions: The more the debtors pay, the more they owe. The more the economic boat tips, the more it tends to tip. It is not tending to right itself, but is capsizing.[5]

During the buildup of the real estate bubble that began to implode in 2006, U.S. mortgage debt rose to unprecedented levels. Previously, year-end mortgage debt peaked at 65.9% of GDP in 1991 before falling back to 61.5% of GDP in 1995.[6] Afterward, mortgage debt relative to GDP rose steadily and sharply, peaking at 105.8% of GDP in 2007.[7]

Considering the large adverse impact a debt-deflation cycle could have given the amount of mortgage debt that accrued during the inflation of the now dissipating housing bubble, the relevant and urgent question for businesses, investors, and policy makers is whether the U.S. housing bust will lead to a destructive deflationary episode.

Deflation: A Quick Sketch

Deflation is a sustained decline in the overall price level as opposed to disinflation, which is a sustained fall in the inflation rate.[8] Deflation becomes destructive when people begin losing their jobs or start postponing their purchases.[9] Although there had been relatively frequent occurrence of deflation in the pre-World War II period, outbreaks of deflation have been rare, if not unknown, since then.[10] Perhaps the most important period of deflation in the post-World War II experience occurred in Japan beginning in the middle 1990s, following the implosion of massive stock market and real estate bubbles.

Favorable Conditions for the Appearance of Deflation

Examining past deflation outbreaks, one can identify a number of factors that characterize the economic landscape just prior to the onset of deflation. Three major deflationary episodes that occurred during the past century are particularly instructive:

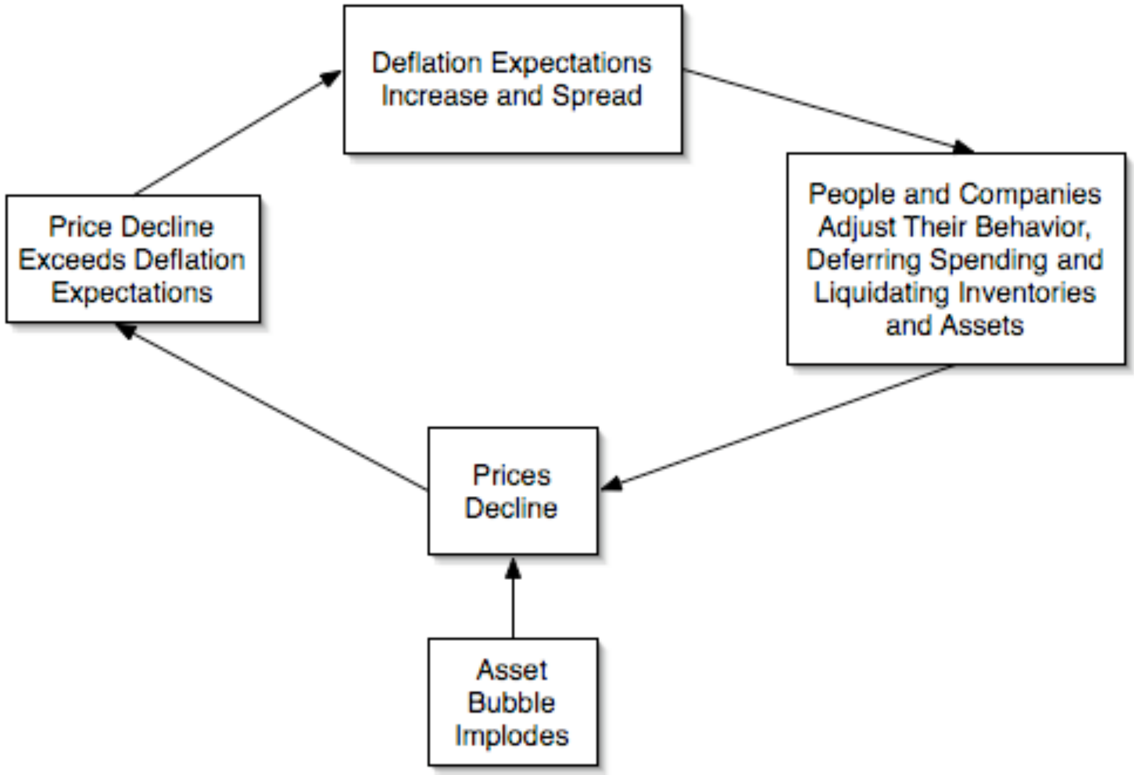
- The 1920-21[11] deflation: June 1920-August 1922; 20.6% price decline.[12]
- The Great Depression: November 1929-March 1933; 27.2% price decline.[13]
- Japan: October 1994-February 2006; 4.3% peak price decline.[14]

Among the factors that defined the economic landscape during these three episodes were (1) deflationary expectations, (2) high or rising interest rates, (3) a strengthening currency on foreign exchange markets, (4) fiscal tightening, and (5) reduced demand for exports.

The two pre-World War II cases also had in common a gold standard. Although money is no longer backed by gold, the monetary policy constraints created by a gold standard are worth mentioning. During financial crises, investors would flee from financial assets to gold. In such circumstances, central banks responsible for reserve currencies would be concerned about the depreciation of such currencies and the capital losses that would result from their devaluation. They would sell their holdings of foreign exchange to soak up their domestic currency to reduce the risk of its losing value against the foreign currencies. In turn, these developments contracted the money supply. Tighter money intensified the deflationary pressures.[15]

Expectations: Expectations can play a leading role in bringing about or worsening deflationary trends. In some cases, falling prices can strengthen expectations for additional price declines. In turn, those enhanced expectations can bring about consumer, investor, and business behavior that lead to further declines in prices. That cycle can become self-reinforcing, much as can happen during an economic panic when "the initiation or 'real' phase gives way to the imitative or 'derived' phase in which a second wave of people are infected, not by the original circumstances, but by the news and the fact of the run."[16] In the case of deflation, price declines that exceed expectations trigger confirmation of the initial deflationary expectations and a recalibration of such expectations toward even greater deflation.

Adverse Deflation-Deflation Expectations Feedback Loop

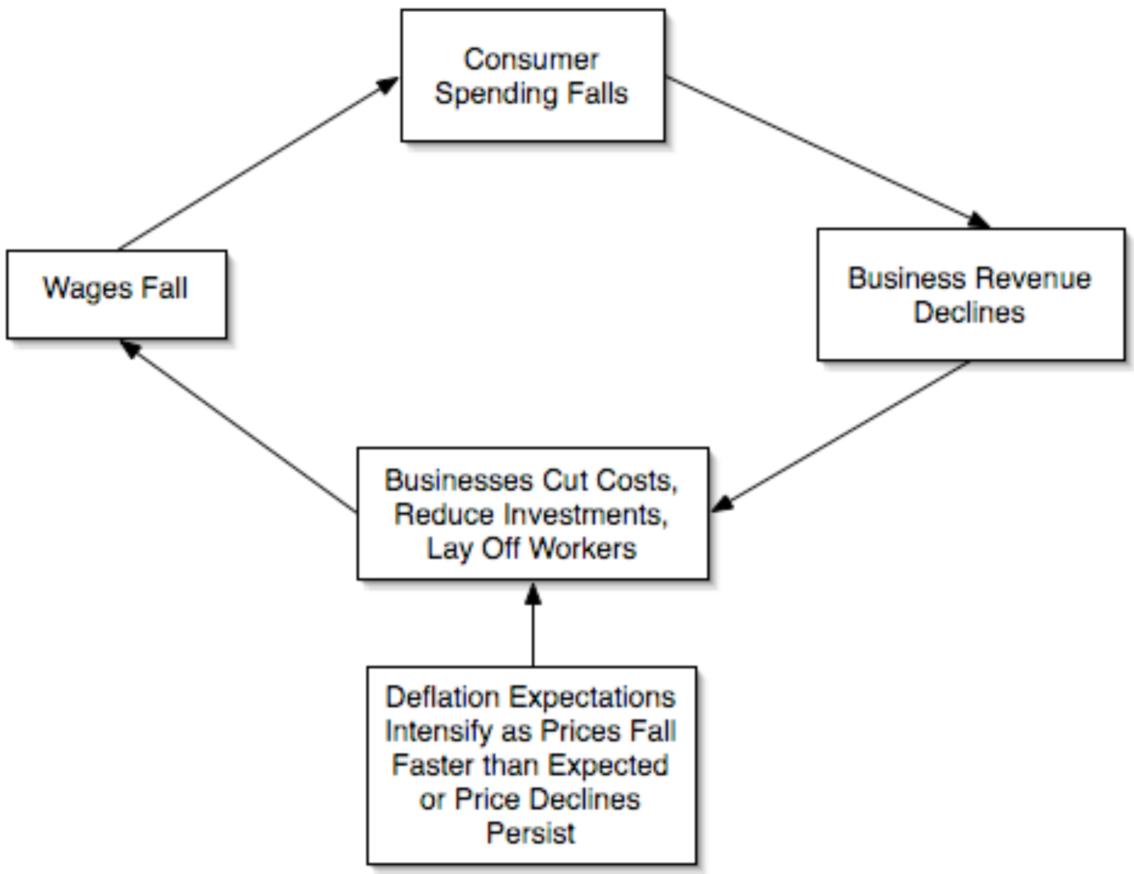


In general, if the public expects deflation, those expectations can lead to high real interest rates. The high real interest rates occur on account of expectations-driven reductions in personal consumption expenditures. As personal consumption expenditures decline, the general price level falls. Falling prices increase the time-value of money. That increased purchasing power translates into real (after-inflation or after-deflation) interest rates increasing relative to nominal rates. Those high real interest rates can intensify or prolong deflation.[17]

In addition, just as inflation expectations can kick off a destructive wage-price spiral that feeds a rise in prices[18], deflation expectations might well also be capable of triggering a downward wage-price spiral. In such a situation, deflation expectations cause businesses to slash costs. In response, wages fall and the unemployment rate rises.

Consequently, consumer spending declines. Reduced consumer spending coupled with efforts by businesses to liquidate inventories in a weakening macroeconomic environment bring about a decline in revenue and an additional squeeze on profits. Businesses then seek additional rounds of cost cutting and the cycle becomes self-perpetuating.

Deflationary Wage-Price Spiral



Once expectations for deflation are in place, they can prove quite stubborn. Empirical research has found that inflation/deflation expectations can be persistent and that long-term expectations matter more than short-term ones.[19] Deflation expectations played a pivotal role in the two pre-World War II deflation episodes in the United States, as well as in the deflation that plagued Japan beginning in the middle 1990s.

High or Rising Interest Rates: Prior to the onset of deflation, economies often experience vast credit booms that contribute to the development of asset bubbles.[20] As interest rates begin to rise, those asset bubbles invariably collapse. Credit dries up as interest rates either continue to rise or remain persistently high. On the international trade front, rising interest rates can increase the value of a nation's currency and suppress its ability to export goods and services. In some cases, interest rates become "irrelevant because money is not available at any price."[21] All three reference cases noted earlier were preceded by high and/or rising interest rates.

A Strengthening Currency on Foreign Exchange Markets: When domestic personal consumption expenditures decline in real or even nominal terms, rising exports can offset some of the economic contraction that might otherwise take place. The benefit growing exports provide in cushioning an economic downturn might well make the difference between a milder disinflationary recession and a more severe deflationary economic contraction. A strengthening domestic currency makes a nation's exports more expensive for foreign customers. A strongly appreciating currency can precipitate a decline in exports, which coupled with diminishing personal consumption expenditures, can sharpen a nation's economic downturn. Both pre-World War II deflationary episodes in the U.S. featured a strengthening U.S. dollar and a corresponding drop in American exports.

Fiscal Tightening: A tight or tightening fiscal policy in which budget surpluses are pursued or budget deficits are minimized during severe economic downturns was a factor in the two pre-World War II deflationary episodes in the United States. In contrast, large budget deficits created from spending increases, tax cuts, or both could minimize the prospect of deflation. Washington University Economics professors Hyman Minsky and Mark Vaughan observed:

Unquestionably, the rise of big government in the postwar era, as exemplified by the rise in federal spending from 3 percent of GNP in 1929 to roughly 24 percent today, has stabilized business profits during recessions. Such profit stabilization enables firms, in the aggregate, to fulfill their payment commitments, and, in addition, supports dividends and retained earnings. As a result, no sustained fall in capital assets prices can take place. For example, even in the deep recession of 1974-75, large cyclical federal deficits pushed aggregate business gross profits higher during the quarter in which unemployment peaked than they had been a year earlier. In short, the deficits big government runs in a recession obviate the possibility of a debt-deflation.[22]

Reduced Demand for Exports: A decline in exports occurred in all three historic cases under discussion here. When personal consumption expenditures, gross private investment, and/or government expenditures are declining, an increase in exports can help cushion the blow. Robust exports can help reduce a pile-up in inventory and thereby mitigate production cutbacks that might otherwise occur.

The Cases

All three cases experienced developments consistent with the deflation framework described in this short paper. The two pre-World War II cases occurred while the United States was participating in a gold standard. In the interests of examining only those criteria that are relevant today, the gold standard is not included in this brief case summary.

1920-21 Deflation:

Expectations:	• *Previous major wars* [such as World War I] *had been accompanied by large inflations and followed by sharp deflations, facts which were well known from the history books if not firsthand.*[23] • *There is evidence that production in the leading basic industry, iron and steel is overtaking demand… It is probable that the world-wide stringency will exceed expenditures and probably until there is deflation in both currency and prices.*[24] • *…Federal Reserve officials have not been satisfied with the manner of the deflation process. The implication has been manifest that the deflation would have to be more rapid than has taken place heretofore…*[25] • *...deflationary expectations played a prominent role.*[26]
High or rising interest rates:	• *Call money loaned on the Stock exchange yesterday* [December 29, 1919] *at 25 percent, the highest rate seen since ht flurry on Nov. 12 last, when loans were arranged at a maximum of 30 percent… How long the stringency will continue, bankers find it difficult to predict.*[27] • *Monetary policy began to shift in December 1919, then changed markedly in January 1920. The Federal Reserve Bank of New York's discount rate, which had been pegged at 4 percent since April 1919, was raised to 4.75 percent in December 1919, to 6 percent in January 1920, and to 7 percent in June 1920. Similar discount rate increases were made at the other Federal Reserve Banks.*[28]
Strengthening currency:	• *The severe decline of sterling exchange* [the world's reserve currency, relative to the U.S. dollar] *probably reflects not simply the adverse trade position of the United Kingdom itself but in addition the pressure of the burden which London is carrying, of a good portion of the entire floating indebtedness of the other European countries to the United States.*[29]
Fiscal tightening:	• *...instead of the Government's being able to reduce the taxes this year, new taxes must be levied to take care of the expected soldiers' bonus… Representative I.W. Mondell, Republican House leader, in a statement issued today* [April 4, 1920], *warned the country that there would be a crisis in the fiscal affairs of the Government unless the most rigid economy was exercised in expenditures.*[30] • *...the primary factors were a shift in the Federal budget from a deficit to a surplus position…*[31]
Reduced demand for exports:	• *...the foreign situation discourages many who have been counting on resumption of heavy exports at an early date…*[32] • *The root of the disorder of the exchanges is that we have too many goods for our own use, and that foreign buyers have too little money to relieve us of them.*[33]

The Great Depression's Deflation:

Expectations:	• *This movement* [improved industrial efficiency] *has made it possible not only to maintain wage scales but likewise to reduce prices to the consumer, thereby substantially increasing sales volume and, by the same token, increasing industrial profits, even with prices continually falling away. As a matter of fact, it is due largely to these circumstances that prices have continued to fall away.*[34] • *Wheat values continue to move downward… Sentiment generally has become extremely bearish…*[35]
High or rising interest rates:	• *…the Federal Reserve Bank of New York announced yesterday* [July 12, 1928] *an advance from 4 ½ to 5 percent, in its rediscount rate, effective today. This is the highest level that has been in force here since Nov. 3, 1921, and represents a further step in the aggressive campaign which the Federal Reserve authorities have been waging since the first of this year to check the diversion of bank credit into speculative channels.*[36] • *The immediate effect of the Federal Reserve Board's decision to raise the rediscount rate at New York to 6 percent, a full 1 percent advance, was a drastic and effective liquidation of stocks of all sorts…*[37]
Strengthening currency:	• *…sterling exchange dropped to a new low for the present moment, at $4.84 ¾ for cable transfers…*[38] • *Sterling, franc, and guilder exchanges fell yesterday* [February 10, 1930] *to their lowest prices reached this year, and the remainder of the list of European currencies showed general weakness against the dollar.*[39]
Fiscal tightening:	• The U.S. ran annual budget surpluses from 1920 through 1930 that peaked at $1.155 billion in 1927[40] or 1.2% of GDP.[41]
Reduced demand for exports:	• *Exports were the first component of aggregate demand to begin falling, indicative of the impact of the contraction in the rest of the world on the United States.*[42] • *Last week's outgo [of grain] 1,686,000 bushels, against 3,846,000 a year ago.*[43]

Japan:

Expectations:	• *…the…fiscal stimulus has been far less effective than most economists predicted. Big spending on public works…has apparently created little "multiplier effect" because much of the income is going into bank accounts rather than private demand. Consumers are reluctant to spend when…"the toaster you buy next year will be cheaper than the one you buy this year."*[44] • *…some economists warn that Japan may be sinking into a deflationary spiral. Economists fear a vicious cycle in which falling prices and profits lead to rising unemployment, which would curb consumption and bring down prices further.*[45] • *While the Bank of Japan's quantitative easing policy has kept short-term interest rates at zero and helped to stabilize the financial system, it has been unable to end deflation, ease deflationary expectations, or promote growth in broad money and bank credit.*[46]
High or rising interest rates:	• *The Bank of Japan moved today* [December 25, 1989*] to raise its official discount rate by half a point, to 4.25 percent, effective immediately… The increase, the third this year came as no surprise…*[47] • *…the Bank of Japan ended weeks of speculation by announcing…that it was raising its official discount rte a steep one percentage point to 5.25 percent, its highest level since 1981.*[48] • *Interest rates on the 10-year Government bond have climbed from 6.4 percent in January* [1990] *to more than 7.5 percent now* [end of July 1990]...[49]
Strengthening currency:	• *In earlier recessions, a weakening exchange rate made Japanese goods irresistible in world markets. This time around…the yen actually strengthened—a circumstance Ronald McKinnon, an economist at Stanford University, attributes to pressure from Washington to contain the Japanese trade surplus.*[50]
Fiscal tightening:	• *Standard antirecessionary tools are not working in the face of falling prices. And the Government seems trapped by politics and myopia into staying the course, which—perversely—includes a big rise in the national sales tax next April* [April 1997].[51]
Reduced demand for exports:	• *Japan has been at pains to prevent the yen from declining further because a weaker currency would tend to widen the country's already huge trade surplus.*[52]

The United States: Autumn 2008

Although outbreaks of deflation have been rare in the post-World War II period, with Japan being a notable exception, the United States is by no means certain to escape a deflationary episode. That deflation has not surfaced during the two-plus years since the U.S. housing bubble began to implode provides little comfort. Deflation first appeared in Japan about five years after its twin stock market and real estate bubbles burst.[53] Moreover, the deflation descended on Japan after a short-lived economic rebound in 1994 fueled by increased housing activity fizzled out.[54] This deflation occurred in two episodes, spanning 1994-1996 when consumer prices fell 1.3% and 1998-2006 when consumer prices fell 4.3%.[55] The second bout of deflation may have been triggered by a combination of the dynamics resulting from the collapse of Japan's asset bubbles and the onset of the Asian Financial Crisis, which unfolded during 1997-98.[56]

The deflationary environment framework described above could prove useful in assessing the risk of deflation in the United States, as its economy sinks into recession and/or credit markets remain dysfunctional. At present, the United States is in a disinflationary environment[57] with a few parts of the nation seeing retailers increase their discounting and/or planning to pass recent cost reductions on to consumers.[58]

Expectations: Since mid-July, the Cleveland Federal Reserve's adjusted 10-Year TIPS-derived expected inflation has fallen sharply from near 3.3% to near -0.3% by October 28.[59] In addition, on October 29, 2008, 5-year Treasuries yielded 2.77% while the 5-year real rate amounted to 3.73%.[60] That represents, at a minimum, a substantial disinflationary trend for the 10-year period and a growing risk of deflation for the short-and medium-term. In addition, summer witnessed the start of a broad-based decline in commodities prices that continued into the first part of fall.[61] Some deflationary expectations among economists began emerging in September,[62] and a CNN/Opinion Research Corp. poll conducted in early October revealed that 21% of respondents felt that a depression was "very likely" and another 38% suggested that a depression was "somewhat likely."[63] In the months ahead, should the ongoing general decline in commodities and asset prices persist or worsen, there would be a risk that such a trend could tilt public expectations toward deflation. Should consumers further reduce their consumption and/or businesses seek to liquidate their inventories at fire sale prices, general price levels could begin to decline.

Interest Rates/Monetary Policy: Since September 2007 when a declining subprime mortgage market began impacting financial activity, the Federal Reserve has aggressively reduced interest rates. From September 18, 2007 to the present, the Federal Reserve slashed its intended federal funds rate by 425 basis points to 1.00%.[64] In addition, the Federal Reserve created and dramatically expanded a wide-range of temporary facilities to provide liquidity to financial institutions, primary dealers, and backstop the commercial paper market.[65] Nevertheless, with banks' non-borrowed reserves having fallen to -$360 billion in October, any improvement in private lending could be slow.[66]

U.S. Dollar Foreign Exchange Rate: The U.S. dollar declined steadily against the world's major currencies through March 2007.[67] Afterward, it held nearly steady.[68] However, on account of weakening in other economies and deepening financial system strains, the dollar began an appreciable recovery in August.[69] In the July-September 2008 timeframe, the dollar increased 6.5% against the world's major currencies.[70] Factors such as a flight to safety as economies in Europe, parts of Asia, and especially a number of developing countries undergo downturns, along with the financing of the $700 billion financial stabilization package by the United States could impact the dollar's foreign exchange rate in coming months.

Fiscal Policy: U.S. fiscal policy has been highly expansionary over the past fiscal year. The debt held by the public increased 14.9% from $5.057 trillion to $5.809 trillion during FY 2008.[71] Approximately $531.8 billion of the overall $751.5 billion increase in the debt held by the public occurred in the July 1-September 30 timeframe.[72] The mid-session review of the FY 2009 budget suggested that outlays would increase to 21.1% of GDP.[73]

Demand for Exports: In the January-August 2008 period, U.S. exports grew at an annualized rate of 19.7%, reaching $164.715 billion in August.[74] That growth rate peaked in the May-July timeframe at 38.0%.[75] In contrast, exports grew 14.6% in 2007.[76] However, the August trade data showed a 2.0% decline in exports.[77] The combination of a slowing world economy[78] and strengthening U.S. dollar could continue to slow U.S. export growth in coming quarters.

Conclusion

At present, the deflation framework based on select major episodes of deflation suggests that the U.S. is at growing risk of at least a temporary bout of mild deflation, particularly on account of a substantial and rapid shift in expectations. Among other things, premature monetary policy tightening and increased fiscal restraint prior to the onset of a sustained and robust economic recovery could increase the United States' risk profile for deflation, particularly if aggregate demand continues to decline due to shifting public expectations for deflation and if the global economy remains sluggish. On the other hand, delayed monetary or fiscal policy restraint following the onset of sustained economic growth could lead to renewed inflation.

Endnotes

[1] http://www2.standardandpoors.com/spf/pdf/index/CSHomePrice_History_102831.xls.
[2] http://www2.standardandpoors.com/spf/pdf/index/CSHomePrice_History_102831.xls.
[3] Charles P. Kindleberger and Robert Aliber, *Manias, Panics, and Crashes* (Fifth Edition), Hoboken, New Jersey: John Wiley & Sons, Inc., 2005, p.154.
[4] Andre Atkeson and Patrick J. Kehoe, "Deflation and Depression: Is There an Empirical Link?" *The American Economic Review*, May 2004, p.102.
[5] Irving Fisher, "The Debt-Deflation Theory of Great Depressions," *Econometrica*, October 1933, p.344.
[6] http://www.bea.gov/national/xls/gdplev.xls and Table L.4 (http://www.federalreserve.gov/releases/z1/Current/data.htm).
[7] http://www.bea.gov/national/xls/gdplev.xls and Table L.4 (http://www.federalreserve.gov/releases/z1/Current/data.htm).
[8] International Monetary Fund, *World Economic Outlook*, May 2008, p.35.
[9] Reed Abelson, "If Deflation Hits, It's a Whole New Game," *The New York Times*, November 22, 1998.
[10] International Monetary Fund, *World Economic Outlook*, May 2008, p.35.
[11] Although the deflationary period lasted from 1920 into 1922, the 1920-21 period marks the timeframe during which the deflation was most severe. As a result, the episode is referenced by 1920-21 in the economic literature.
[12] ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt.
[13] ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt.
[14] 2005-Base Consumer Price Index at the Portal Site of Official Statistics of Japan.
[15] Barry Eichengreen, "Understanding the Great Depression," *The Canadian Journal of Economics*, February 2004, pp.12-13.
[16] Leon Mann, Trevor Nagel, and Peter Dowling, "A Study of Economic Panic: The 'Run' on the Hindmarsh Building Society," *Sociometry*, September 1976, p.234.
[17] Lars E. O. Svensson, "Escaping from a Liquidity Trap and Deflation: The Foolproof Way and Others," *The Journal of Economic Perspectives*, Autumn 2003, p.150.
[18] Charles I. Plosser, "Perspectives on the Economy, Inflation, and Monetary Policy," Federal Reserve Bank of Philadelphia, July 22, 2008, p.7.
[19] Lars E. O. Svensson, "Escaping from a Liquidity Trap and Deflation: The Foolproof Way and Others," *The Journal of Economic Perspectives*, Autumn 2003, pp.150-151.
[20] Many of the manias that fueled the rise in asset bubbles have been fed by an abundance of credit. Charles P. Kindleberger and Robert Aliber, *Manias, Panics, and Crashes* (Fifth Edition), Hoboken, New Jersey: John Wiley & Sons, Inc., 2005, pp.12-15.
[21] Charles P. Kindleberger and Robert Aliber, *Manias, Panics, and Crashes* (Fifth Edition), Hoboken, New Jersey: John Wiley & Sons, Inc., 2005, p.206.
[22] Hyman P. Minsky and Mark D. Vaughan, "Debt and Business Cycles," *Business Economics*, July 1990, p.27.
[23] J. R. Vernon, "The 1920-21 Deflation: The Role of Aggregate Supply," *Economic Inquiry*, July 1991, p.577.
[24] "Commodity Liquidation May Start in Autumn," *The Wall Street Journal*, April 26, 1920.
[25] "Federal Reserve Bank Raises Discount Rates," *The Wall Street Journal*, May 31, 1920.
[26] J. R. Vernon, "The 1920-21 Deflation: The Role of Aggregate Supply," *Economic Inquiry*, July 1991, p.572.
[27] "Call Money Rate Hits 25 Per Cent," *The New York Times*, December 30, 1919.
[28] J. R. Vernon, "The 1920-21 Deflation: The Role of Aggregate Supply," *Economic Inquiry*, July 1991, p.573.
[29] "No Quick Relief," *The New York Times*, December 27, 1919.
[30] "Urges Economy To Avert A Crisis," *The New York Times*, April 5, 1920.
[31] J. R. Vernon, "The 1920-21 Deflation: The Role of Aggregate Supply," *Economic Inquiry*, July 1991, p.574.
[32] "Commodities Are Under Heavy Liquidation," *The Wall Street Journal*, August 15, 1919.
[33] "Financial Timidity," *The New York Times*, February 6, 1920.

[34] John Oakwood, "A New Kind of Price Drop," *Barron's*, July 25, 1927.
[35] "Wheat Goes Lower While Exports Lag," *The New York Times*, February 16, 1930.
[36] "Rediscount Rate Up To 5 Per Cent Here," *The New York Times*, July 13, 1928.
[37] "Financial Markets," *The New York Times*, August 10, 1929.
[38] "Sterling Exchange Continues Decline," *The New York Times*, June 14, 1929.
[39] "Sterling And Franc Lowest This Year," *The New York Times*, February 11, 1930.
[40] U.S. Census Bureau, *Statistical Abstract of the United States: 2003—Mini Historical Series*, 2003, p.88-Table No. HS-47.
[41] http://www.measuringworth.org/datasets/usgdp/result.php.
[42] Barry Eichengreen, "Understanding the Great Depression," *The Canadian Journal of Economics*, February 2004, p.4.
[43] "Grain Export Below 1929," *The New York Times*, January 22, 1930.
[44] Peter Passell, "Japan Inc., so resilient in the past, can't find its footing," *The New York Times*, September 19, 1996.
[45] Sheryl WuDunn, "Japan's Economy Appears Bleaker," *The New York Times*, January 13, 1998.
[46] International Monetary Fund, *World Economic Outlook*, September 2003, p.30.
[47] James Sterngold, "Japan Lifts A Key Rate Half a Point," *The New York Times*, December 26, 1989.
[48] James Sterngold, "Japan Loan Rate Lifted Sharply," *The New York Times*, March 20, 1990.
[49] Jonathan Fuerbringer, "Less Optimism On Japan Stocks," *The New York Times*, August 1, 1990.
[50] Peter Passell, "Japan Inc., so resilient in the past, can't find its footing," *The New York Times*, September 19, 1996.
[51] Peter Passell, "Japan Inc., So Resilient in the Past, Can't Find Its Footing," *The New York Times*, September 19, 1996.
[52] James Sterngold, "Japan Loan Rate Lifted Sharply," *The New York Times*, March 20, 1990.
[53] Sheryl WuDunn, "Erosion in Japan's Foundation," *The New York Times*, October 4, 1995.
[54] Sheryl WuDunn, "Erosion in Japan's Foundation," *The New York Times*, October 4, 1995.
[55] 2005-Base Consumer Price Index at the Portal Site of Official Statistics of Japan.
[56] Dick K. Nanto, "The 1997-98 Asian Financial Crisis," Congressional Research Service, February 6, 1998.
[57] Timothy R. Homan, "U.S. Consumer Prices Unchanged in September; Core Rate Up 0.1%," Bloomberg.com, October 16, 2008.
[58] Federal Reserve's *Current Economic Conditions*, October 2008, pp. v, III-4, IX-3 – IX-4, and XI-1.
[59] http://www.clevelandfed.org/research/data/tips/index.cfm.
[60] http://www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/.
[61] Robert Guy Matthews, "Corporate News: Aluminum Producers Change Plans as Prices, Demand Fall," *The Wall Street Journal*, September 19, 2008 and Devon Maylie and Matthew Walls, "Shipments Decline 52% As Demand Slackens," *The Wall Street Journal*, October 1, 2008.
[62] StacyMarie Ishmael, "Six experts give their views on the global financial crisis and reveal their strategies to restore market confidence," *Financial Times*, September 19, 2008 and John Fraher, "Deflation Threat Returns as Asset Markets Decline," *Bloomberg.com*, October 6, 2008.
[63] Chris Isidore, "Poll: 60% say depression 'likely,'" *CNN.com*, October 6, 2008.
[64] http://www.federalreserve.gov/fomc/fundsrate.htm.
[65] http://www.federalreserve.gov/newsevents/press/monetary/20081007c.htm, http://www.federalreserve.gov/newsevents/press/monetary/20081006a.htm, http://www.federalreserve.gov/newsevents/press/monetary/20080929a.htm, http://www.federalreserve.gov/newsevents/press/monetary/20080919c.htm, http://www.federalreserve.gov/newsevents/press/monetary/20080914a.htm, http://www.federalreserve.gov/newsevents/press/monetary/20080730a.htm, http://www.federalreserve.gov/newsevents/press/monetary/20080316a.htm, http://www.federalreserve.gov/newsevents/press/monetary/20080311a.htm, and http://www.federalreserve.gov/newsevents/press/monetary/20071212a.htm.
[66] http://www.federalreserve.gov/releases/h3/Current/.
[67] http://www.federalreserve.gov/releases/h10/Summary/indexn_m.txt.
[68] http://www.federalreserve.gov/releases/h10/Summary/indexn_m.txt.
[69] http://www.federalreserve.gov/releases/h10/Summary/indexn_m.txt.
[70] http://www.federalreserve.gov/releases/h10/Summary/indexn_m.txt.

[71] http://www.treasurydirect.gov/NP/NPGateway.
[72] http://www.treasurydirect.gov/NP/NPGateway.
[73] Office of Management and Budget, *Mid-Session Review: Budget of the United States: Fiscal Year 2009*, Table S-1 Budget Totals, p.21.
[74] http://www.bea.gov/newsreleases/international/trade/2008/pdf/trad0808.pdf.
[75] http://www.bea.gov/newsreleases/international/trade/2008/pdf/trad0808.pdf.
[76] http://www.bea.gov/newsreleases/international/trade/2008/pdf/trad0808.pdf.
[77] http://www.bea.gov/newsreleases/international/trade/2008/pdf/trad0808.pdf.
[78] Christopher Swann, "IMF Says World Economy Heading for 'Major Downturn,'" *Bloomberg.com*, October 7, 2008.