



# TD Economics

## Special Report

May 4, 2009

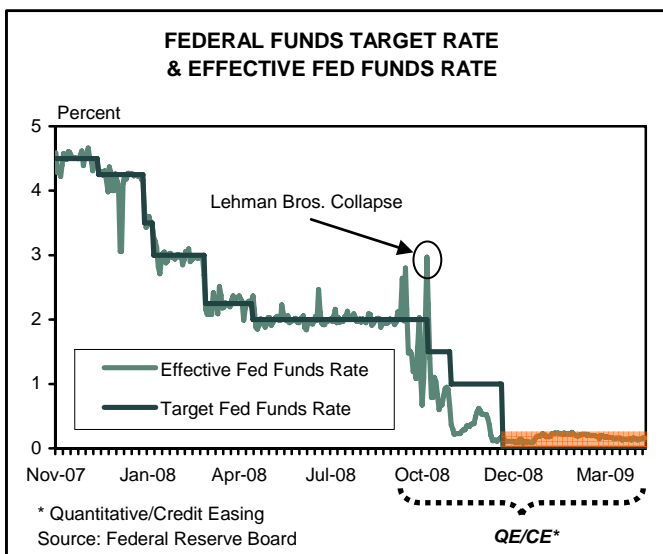
### WILL GUARDING AGAINST DEFLATION NOW LEAD TO AN INFLATION PROBLEM IN THE FUTURE?

The events of the last year have dramatically changed the face and trajectory of the U.S. and global economies. One of the worst banking crises in history has pulled the world into a deep recession that in length and scope already weighs in among the longest and deepest in recent memory. The unprecedented nature and synchronicity of the decline has raised fears of both deflation in the near term, and the possibility of rapid inflation further down the road.

In response to the risk of deflation, policy makers have taken unprecedented action to recapitalize the global financial system, to restore confidence through expansive fiscal spending, and to ease the cost and availability of credit by lowering interest rates, injecting liquidity into financial markets and dramatically expanding the monetary base. These efforts have helped to pull the U.S. economy away from the deflationary brink. Currently, signs are mounting

#### HIGHLIGHTS

- The deep economic recession currently being experienced in the United States is one of the worst in recent memory. Falling consumer confidence and a crippled banking system has increased the risk of deflation.
- With nominal interest rates now close to 0%, the Federal Reserve has turned to non-traditional monetary policy in order to prevent deflation - dramatically increasing the amount of money available in the financial system.
- The large increase in base-money has led to fears that the long-term consequences of Fed action will be rampant inflation.
- Inflation is not an immediate concern because deleveraging households have dramatically pulled back their spending and the extra money is currently sitting in bank vaults.
- The substantial amount of economic slack currently existing in the U.S. economy limits the risks of inflation over the near-term. Empty factories and rising unemployment give businesses and workers little room to bid up prices and wages.
- As an economic recovery takes place and economic slack is lessened, the rise in money supply could once again lead to rising prices. In order to prevent this the Fed must be willing and able to pull-out the liquidity it has injected. If they are not able to do this fast enough, rising inflation could be the result.



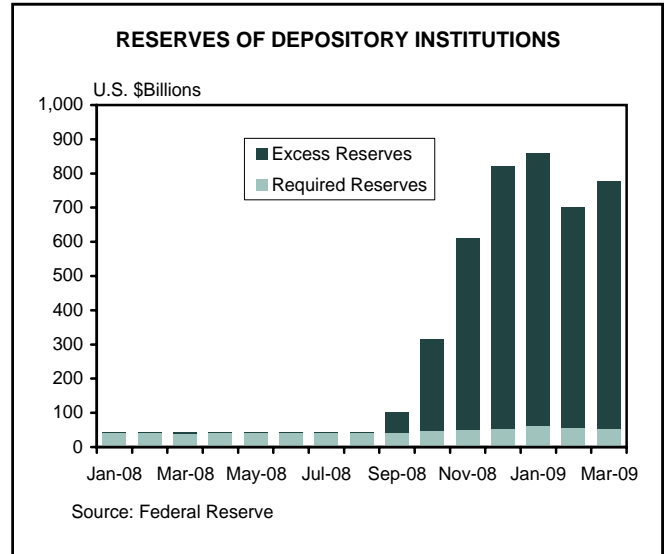
that the pace of decline is abating and the economy is slowly inching towards recovery.

Nonetheless, the extraordinary policy response and, in particular, the increase of cash in the system has led to heightened fears that surging inflation could become the lasting legacy of this crisis. After all, basic economic theory tells us that an increase in money supply leads to higher inflation, as too much money chases too few goods. However, the lingering fallout from the current financial crisis and the current deep economic downturn both suggest that the risk of an inflationary problem in 2009 and 2010 are remarkably low, but risks increase in 2011 and 2012.

**Liquidity provision versus credit expansion**

By any measure, the response by both fiscal and monetary policy makers to the current crisis has been immense. The goal of Federal Reserve policy is to restore the flow of credit in the economy. The Fed has relied on two policy instruments to ease credit conditions: lowering the federal funds rate through Open Market Operations (OMO) and increasing their lending to financial institutions through a range of auction facilities and at the discount window.

When engaging in OMO, in order to lower the fed funds rate, the Federal Reserve uses the monetary base (currency and deposits of commercial banks with the Fed) to buy government securities. By buying government securities (which then become assets of the Fed), the central bank increases the amount of reserves in the system and exerts downward pressure on short-term interest rates. In addition to OMO, the Fed can also lend to financial institutions directly, offering cash in exchange for collateral. The

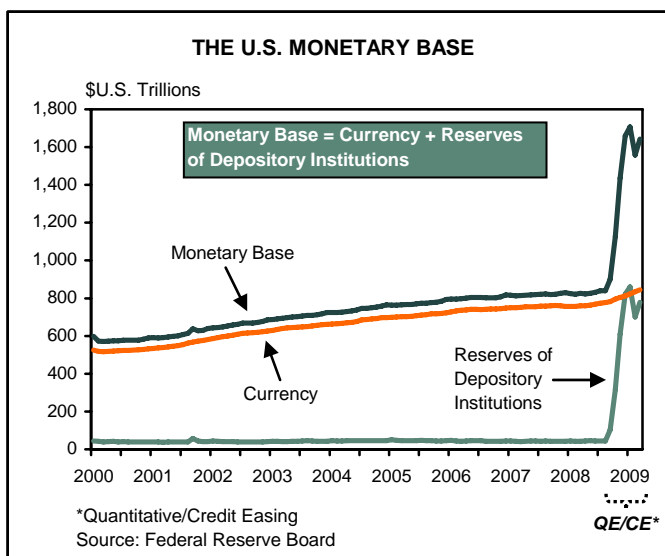


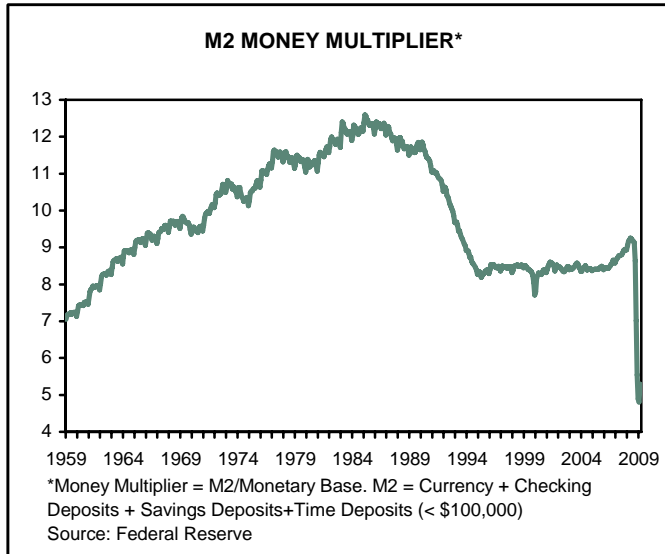
simultaneous use of Fed lending and OMO allows the Fed to specifically target liquidity constrained institutions, while at the same time maintaining the overall amount of liquidity in the system. Prior to September 2008, increased lending by the Federal Reserve was best characterized as liquidity provision – the Federal Reserve altered the composition (but not the size) of its balance sheet by taking on more private loans and collateral and selling its holdings of treasury securities.

**Bringing out the bazookas**

As of September 2008, the Federal Reserve shifted its tactics and increased its lending provisions without offsetting the outlays by selling government securities. In essence, the Fed funded its lending by creating money - allowing the monetary base – currency and cash reserves of commercial banks with the Federal Reserve to rise dramatically. As a result, between August 2008 and January 2009, the monetary base close to doubled from \$840 billion to over \$1,700 billion.

Economists generally agree that inflation is essentially caused by an increase in the money supply. However, the monetary base is not the same thing as the “money supply.” The money supply represents all of the money available in the economy at any given time, including money in private checking and savings accounts, and under broader definitions, the money sitting in money market mutual funds that can easily be converted into cash by its holders. The difference between the monetary base and the aggregate money supply depends importantly on the amount of lending that takes place in the economy. In a system of frac-





tional reserve banking, banks lend out all but a small portion of the deposits they receive from the public. As banks lend out their excess reserves, these loans become deposits for other financial institutions. This process then carries on down the line.

However, if there is an increase in reserves and the commercial banks do not lend out the additional funds, the aggregate money supply will not grow despite the increase in the monetary base. In order to maintain the federal funds rate close to its target at 0.0-0.25%, the Federal Reserve has been paying a 0.25% rate of interest on the excess reserves that commercial banks hold with them. Currently, a large number of commercial banks would rather earn this negligible risk-free rate than lend the funds out because their balance sheets are so weak. Since the Fed has been adding reserves to the system, the excess reserves of commercial banks have grown from \$1.9 billion in August 2008 to \$798 billion in January 2009. As a result of this hoarding, the multiplier of the monetary base to the broader money supply (M2) has fallen dramatically from 9.3 to 5.1.<sup>1</sup> Accordingly, the increase in the monetary base is not as inflationary as it looks at face value.

### Inflation and the velocity of money

Yet another reason that inflationary pressures have not yet arisen in the economy is that the decline in spending has reduced the rate at which money changes hands. Nominal GDP equals the current dollar value of production in the economy – that is, the quantity of production multiplied by the current price. Since nominal GDP is equal to total expenditure, it must also equal the total amount of money

multiplied by the number of transactions. If for any given amount of money, the number of transactions falls, the result would be a decline in total expenditures or nominal GDP. Economists call the frequency of money transactions the velocity of money.<sup>2</sup>

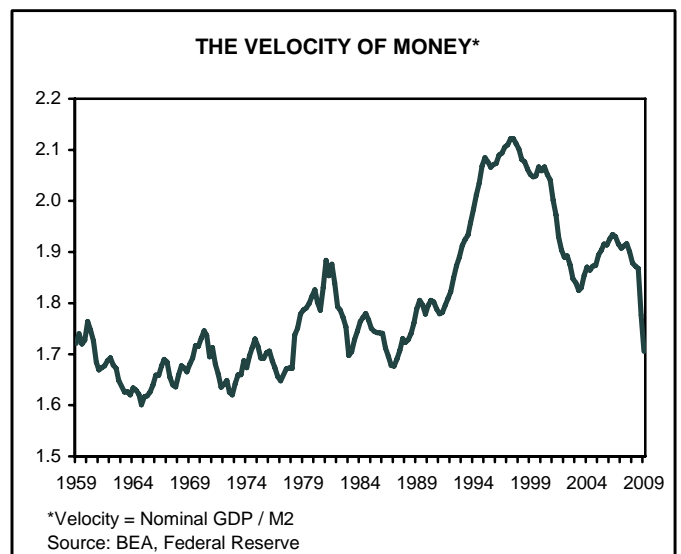
Inflation, broadly speaking, is the increase in prices in the economy.<sup>3</sup> The change in prices is positively related to the change in money supply and any increase in the circulation of money, and negatively to the rate of change of real output. If the money supply increases, while everything else is unchanged, this should be expected to result in higher prices. But if, on the other hand, the money supply increases, but the increase takes place alongside a fall in the circulation of money (or a rise in real output), prices may not increase at all, or in extreme cases may actually fall (deflation).

In the current environment, the fall in the circulation of money reflects the increased preference of households for liquid assets and the decline in the availability of credit. The loss in household wealth has led to an increase in the household savings rate, which in combination with increased risk aversion in financial markets has led to outlays from riskier financial assets and into either government bonds or cash. At very low interest rates, the difference between the return on risk-free government bonds and cash is very small, raising the appeal of cash holdings.

The takeaway from all this is simple: if lenders won't lend and borrowers won't borrow, the rise in the monetary base will not result in inflation.

### Economic slack and price pressures

While these considerations have focused on the dynam-

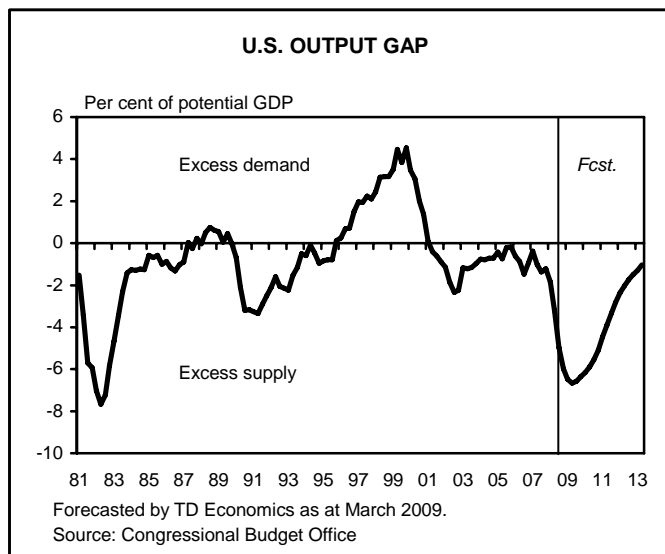


ics of money creation, inflation represents the bidding up of prices in the economy as a result of an increase in demand that outstrips the supply of scarce resources. The current U.S. economy (and indeed the global economy as well) is characterized by a state of excess supply – factories sit empty and the unemployment rate is approaching double digits. In this environment of falling demand, businesses are in poor position to raise prices, while workers facing the prospect of being laid off are in poor position to negotiate higher wages. Meanwhile, the drop in production means that there is an increasing amount of idle plant and equipment.

There are a number of ways to quantify how much excess supply there is in an economy. One way is to consider what the size of the economy would look like if it were to grow at its potential rate of growth - the rate consistent with the full utilization of resources, including both labour and capital. We estimate that given the current decline in U.S. economic activity compared to trend rates of productivity and labour force growth, the U.S. economy is currently operating at a level more than 5% below its potential. The slow pace of growth expected even as the economy recovers will lower the U.S. economy even further from potential. Inflation will not become an issue until the economy once again moves closer to operating at its full potential – a prospect that we do not feel will occur for the next several years.

### Where do the risks lie?

The risks of inflation down the road are also best understood within the framework laid out above. Consider



the money multiplier: the money multiplier will rise if commercial banks begin drawing down their excess reserves in order to make loans. Movement up in the money-multiplier would signal that more of the Fed's easing is making its way to the aggregate money supply through an easing in credit conditions. Similarly, a high level of money supply relative to output would be inflationary if the circulation of money picks up, something that will also show up in higher frequency spending data. In other words, the extra money has to be spent in order for prices to be bid up, which would imply strong economic growth for a sustained period of time. If this occurred and the Fed did not react by cutting back the monetary base, the outcome would be an inflation problem.

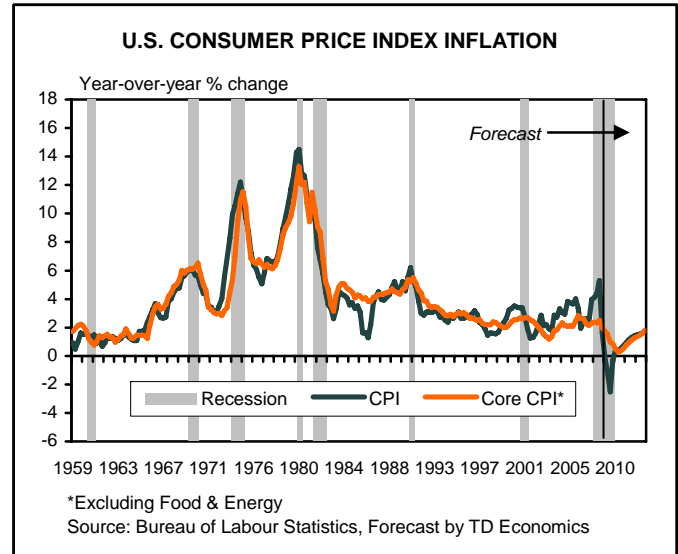
The other consideration is of course the amount of economic slack built up in the economy, which is currently disinflationary. A removal of this slack along with an expansion of credit would eventually stem these disinflationary pressures, but only once excess supply has been drawn down. This recession is unique in its impact on the balance sheets of households and financial institutions. Deleveraging as a result of losses has resulted in a dramatically weakened real economy. However, this relationship works both ways - a weaker real economy increases the credit risk of businesses and individuals, making credit more expensive and less available to both.

The risk that inflation becomes a problem is the risk that the Fed does not get the timing right in reducing the money supply as the economic recovery takes hold. One reason that this is indeed more of a risk in the current environment is the dramatic changes in the composition of the Fed's balance sheet. Whereas in the past, the Fed's balance sheet assets consisted mainly of government securities, they now include a range of less liquid private securities, commercial paper, and direct loans to financial institutions and securities dealers, which may prove more difficult to wind down as economic conditions recover. Moreover, whereas the traditional monetary policy mechanism relies on movements in short-term interest rates to work through the yield curve and temper the flow of credit, when the Fed begins selling longer term securities, especially those linked to the price of consumer credit and mortgage credit, such as agency backed mortgages and securities backed by credit cards, student loans and car loans, this will directly increase the cost of borrowing in these sectors, a much more politically onerous task than the traditional mechanism.

So far, the Fed has responded to these risks by increasing access to information on the conditions of their balance sheet as well as signaling to the market that they have an exit strategy in place once economic conditions recover. While it has been stated that the Fed's dual mandate to consider both employment and inflation may lead to a lack of attention to the later, the Federal Reserve has continually stressed that the best way to stabilize employment even in the short run is to maintain inflation expectations at a low rate over the long term.

Should inflation expectations become unanchored while the economy is still relatively weak, this will pose problems for the Fed, as their ability to stimulate the real economy also depends their credibility as an inflation fighter. This fact has been recognized explicitly by Federal Reserve Chairman Bernanke (on multiple occasions):

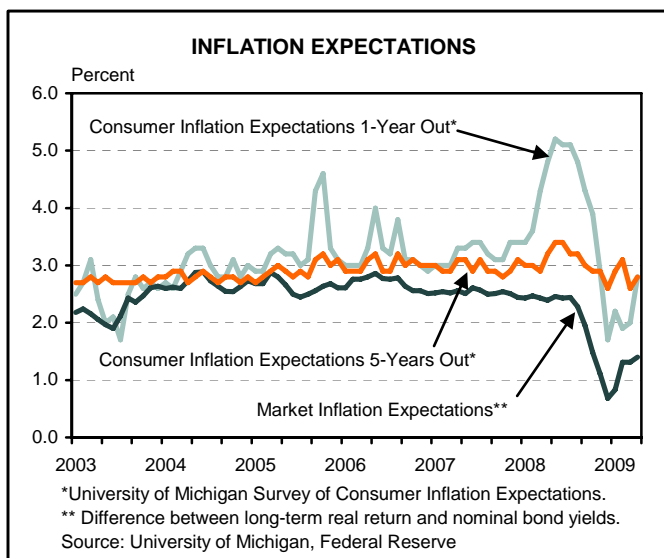
*Well-anchored inflation expectations (by which I mean that the public continues to expect low and stable inflation even if actual inflation temporarily deviates from its expected level) not only make price stability much easier to achieve in the long term but also increase the central bank's ability to stabilize output and employment in the short run. Short-run stabilization of output and employment is more effective when inflation expectations are well anchored because the central bank need not worry that, for example, a policy easing will lead counterproductively to rising inflation and inflation expectations rather than to stronger real activity.<sup>4</sup>*



**Bottom Line**

The Federal Reserve's actions to ease credit conditions by increasing lending and dramatically expanding the amount of cash in the system have led to fears that inflation may once again become a problem in the United States. It is perfectly understandable to expect inflation to arise as a result of an increase in the money supply. After all, in the long run, inflation is an inherently monetary phenomenon. In the short run however, a number of barriers stand in the way of the increase in cash from translating into an increase in prices. Trouble in the banking system and deleveraging among households has led to a much slower flow of credit, while the fall in capacity utilization and rising unemployment signal a significant amount of economic slack having built up in the system that will need to be worked off before price pressures gain much traction. A slow pace of economic recovery implies that it will likely take years to work off the excess supply currently available in the United States. Given our forecast for real economic activity, which foresees a return to fairly tepid growth in 2010, inflation is unlikely to become a problem over the next two years. Nonetheless, once an economic recovery does take place, there remain risks that the Federal Reserve is unable to pull liquidity out of the system fast enough and vigilance will be required to ensure that inflation does not become a problem further out in the future in 2011 and 2012.

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## Endnotes

- 1 Federal Reserve. Table H3: Aggregate Reserves of Depository Institutions and the Monetary Base. Table H6: Money Stock Measures.
- 2 As an equation, the relationship between nominal GDP, money and the circulation of money can be represented as  $PY=MV$ , where P is the current price, Y is current level of production, M is the money supply, and V is the velocity of money circulation. In the fourth quarter of 2008 nominal GDP fell by 1.5%, while at the same time the aggregate money supply (M2) grew by 3.6%. This discrepancy is explained by the fact that the velocity of money fell by 4.9% in the quarter - the largest single quarterly decline in this measure of velocity on record going back to 1959.
- 3 Re-arranging the relationship above, the current price, P, may be expressed as a function of the amount of money, the velocity of money and output:  $P=MV/Y$ .
- 4 Bernanke, Ben (2003). "A Perspective on Inflation Targeting." Remarks at the Annual Washington Policy Conference of the National Association of Business Economists, March 25,2003.

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