

# FEDERAL RESERVE BANK *of* CHICAGO

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## The Great Inflation 2.0 Debate

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Thanks for inviting me and thanks for that kind introduction. You'll note that I became president and CEO of the Federal Reserve Bank of Chicago exactly two years ago. While I can assure you there's no correlation, this period has been among the most interesting and extraordinary in the history of the Federal Reserve System. So much of what the Fed has done in the last two years has been under scrutiny from the government, the media, the general public and various others. And while the debate has been loud and at times far ranging, our mandate from Congress has remained quite clear: the goal of the Fed and its monetary policy arm, the Federal Open Market Committee (FOMC), is to promote monetary and financial conditions that facilitate the attainment of maximum employment and price stability. For about the last 30 years, there has typically been no conflict in pursuing each of these goals with a single tool—the short-term interest rate. This is because rising inflationary pressures are often accompanied by unsustainably high growth, and economic slowdowns are typically associated with disinflationary pressures.

Nevertheless, this simple description of the way monetary policy responds to growth and inflation prospects belies the fact that discussions within the FOMC often touch on a wide range of drivers for inflationary pressures. A small set of relevant factors should include money growth, resource slack, inflationary expectations, energy and commodity price shocks, and assessments of the credibility of future policy commitments. And there is a surprising amount of disagreement and uncertainty over the exact roles forces play. I'm not talking out of school on this issue: A careful reading of FOMC transcripts over the last 20 years will reveal many different views on inflation. Perhaps this is not surprising. The economics community itself continues to debate strongly the importance of different transmission channels for inflation. Policymakers who are informed by these developments—and, in many cases, have contributed to the scholarly research in this area—continue to have a healthy discourse over the issues and facts.

During normal times, inflation evolves gradually, and this debate rarely spills over into major disagreements about policy. But, today, we are not in normal times. The inflation debate on the determinants of inflation has broken out on the front pages of newspapers, with major disagreements among distinguished experts. For example, in recent *New York Times* op-eds Paul Krugman said that large resource gaps have made him worried about deflation, while Allan Meltzer said that massive growth in the monetary base has made him worried about inflation.<sup>1</sup>

Certainly, the stakes could not be higher. We have ample evidence of the harm that deflation can cause. The history of the U.S. economy in the 1930s is a case in point, where the price level fell by over 25 percent,<sup>2</sup> contributing to the severity of the Great Depression. But, history also shows us the damage that high inflation can wreak on the U.S. economy. From 1965 to 1980, inflation rose from about 1-1/2 to 10-1/2 percent.<sup>3</sup> Many economists refer to this period as the "Great Inflation." The costly process of breaking the Great Inflation and then, subsequently, the achievement of price stability took the better part of the next 17 years.<sup>4</sup> So it is quite disconcerting when highly regarded analysts talk about the possibility of another debilitating deflation while others—just as highly regarded—suggest that even though we have avoided the Great Depression 2.0, the U.S. economy may be facing the Great Inflation 2.0.

This morning, I would like to frame these two extreme views on inflation risks within the language economists and policymakers use to discuss these issues. After highlighting the terms of these disagreements, I will provide some commentary on the "lessons learned" from the historical record on inflation. In brief, I think neither a harmful deflationary episode nor a repetition of the Great Inflation is very likely. Stimulative policies combined with the economy's resilient market forces will, over time, reduce resource gaps. Deflation has been averted. And as the economy continues to improve, and when we see rising inflation pressures, Fed policy will respond aggressively. Having said this, the main threat to these outcomes would be if clear danger signals were ignored or if central bank independence were compromised.

As always, my remarks today reflect my own views and do not reflect those of my colleagues on the Federal Open Market Committee or the views of the Federal Reserve System.

### Two articles of faith

It is natural to start by considering the factors that affect inflation. What do economists say? Well, macroeconomists are a contentious bunch. The most accomplished scholars in this field share two overpowering attributes. First, they are highly intelligent; and, second, when the subject is monetary policy and inflation, they appear to agree on very little. Nevertheless, I think that there are two strongly held articles of faith that are, in fact, shared by the vast majority of macroeconomists.

First, large, sustained and explosive growth in money is associated with high and variable rates of inflation. The logic and evidence are overwhelming. Economies that are running the printing presses on overdrive, usually to finance unsustainable fiscal deficits, generate great instability in prices and high inflation. We saw this in post-WW1 hyperinflations in Germany and Austria, and, more recently, in high-inflation episodes in Portugal, Italy, and Argentina. In addition, numerous studies have documented that when sustained over long periods of time, even moderately high rates of money growth are often associated with significant inflation. However, it's important to note that over shorter time frames, and at lower rates of money growth, other factors can intervene to significantly weaken the strong positive relationship between money and prices that we see in the high inflation examples and in long run studies.<sup>5</sup>

The second article of faith is that high unemployment rates and slack capacity utilization—which we refer to as resource gaps—are often associated with falling inflation. A prime example of this is the 1981-82 recession, when unemployment rose to nearly 11 percent as the Volcker-led Fed broke the Great Inflation. But, similar to money growth, the evidence regarding the influence of resource gaps on inflation is strongest when considering extreme economic conditions—when there is either a large degree of slack or, on the flip side, an excessive strain on productive capacity.

Clearly, these two articles of faith can help frame the current discussion of inflation risks. On the one hand, the explosion of the Federal Reserve balance sheet has led to an enormous increase in bank reserves and the monetary base. Left unchecked, these monetary facts seem to scream "inflation risks." On the other hand, the unemployment rate is 9.7 percent, and manufacturing capacity utilization is currently only 65 percent, which is the lowest level since this statistic started to be computed in 1948.<sup>6</sup> These resource gaps suggest that disinflationary winds are blowing with gale-force effect.

In trying to assess inflation risks from monetary conditions and resource slack, we must remember that these factors are strong predictors only in relatively extreme cases. So it is the fact that we currently find ourselves in a situation with competing extreme cases—both large resource gaps and big expansions in the monetary base—that leads to today's Great Inflation 2.0 debate.

In a few minutes I'll return to how I see this conflict turning out. But these two articles of faith provide only a partial understanding of the factors that determine inflation during more usual times. So it is useful to first describe a relatively mainstream view on how inflationary pressures emerge under more typical circumstances.

#### **First-order forces of inflation determination**

Although inflation is ultimately a monetary phenomenon, many factors come in to play when thinking about its evolution over the medium term. The most important ones are: changes in resource costs, wage and price setting behaviors, and inflation expectations.<sup>7</sup> As we'll see, these forces are related to both articles of faith that I just discussed. However, there are disagreements over how much weight to place on each factor, and also how to interpret the fundamentals underlying each of them.

Let me begin with resource costs. When firms set prices for the products they sell, they pass along current and expected future changes in input costs, including labor costs. As a result, market prices and inflation move in the same direction as these resource costs. Resource costs, in turn, move with changes in demand and supply. And everything else equal, expansionary monetary policy will increase demand.

It's natural to use movements in measures of aggregate resource utilization, such as unemployment and capacity utilization, to capture changes in the supply-demand balance. In this way, resource costs are linked to resource gaps, which was the focus of our second "article of faith" about inflation determination. Unfortunately, for a host of theoretical and statistical reasons, these measures of resource utilization are imperfect proxies for supply and demand pressures, and as such, have an uncertain relationship with price determination. As a result, economists will disagree on the importance of these measures for inflation determination at a given point in time. I will return to these uncertainties in a few minutes.

Another factor affecting inflation is inertia in wage and price setting behavior. Businesses, workers, and households typically make changes to their wages and prices in an orderly fashion. For example, firms tend to stick to their pricing plans, and workers' wages are typically revisited only on an annual basis. This sort of pricing behavior makes inflation inertial. However, these behavioral regularities are not always well understood and we don't really know whether this sort of inertia will continue to characterize inflation in all future economic conditions.

In addition to direct cost pressures, price setting is influenced by expectations of future underlying inflation. Many things can influence peoples' expectations about the future path of inflation—it is a veritable kitchen sink. In addition to the resource costs I just talked about, other important influences are: changes in money growth, fiscal factors, and central bank credibility and independence. Higher money growth today may lead people to conclude that inflation will increase in the future.

Unchecked fiscal imbalances can also lead to higher expected inflation if the public believes that at least some of the fiscal deficit will be paid off by printing money. And inflation expectations can increase if everyone believes that a central bank will refrain from increasing policy rates for political reasons, even in the face of inflationary pressures.

Expectations are clearly a powerful determinant of inflation, but they are inherently unobservable. Expectations reflect a confluence of both objective market data and subjective beliefs of market participants. Similar to other important economic forces—like the output gap—the lack of observability and difficulty in measuring inflation expectations represent a powerful challenge for monetary policymakers. Here is how I approach the issue. Initially, we can attempt to directly assess each important force for future inflationary pressures. This approach could construct a risk assessment for inflation pressure indicators and would include all of the factors cited above, at a minimum, along with an assessment (or weighting) of their importance.<sup>8</sup> Although there will be disagreements, I find this constructive approach facilitates rigorous and robust debate.

An alternative approach is to be agnostic about the factors that influence how inflation expectations are formed. Instead, we would simply try to infer expectations from surveys and financial market data. Although this is intriguing, there are limitations in using this approach to the exclusion of more direct measures of inflationary forces. In particular, if monetary policy is so fully credible that everyone believes inflation will not deviate from its goal, inflation expectations will not respond to changes in the economic environment. For example, many believe that the European Central Bank's commitment to price stability over the medium term is so strong that measures of euro-zone inflation expectations rarely move. But this sort of stability in expected inflation does not mean that the central bank can relax its vigilance against inflationary forces. On the contrary, this stability is a consequence of that very vigilance. We cannot rely solely on direct measures of expected inflation without some sort of risk assessment that monitors indicators of inflation pressures. Fortunately, these two approaches for assessing inflation expectations are not mutually exclusive; indeed, they are complementary.

One of the big questions, however, is to ask what the historical record says about the importance of these different factors. So now would be a good time to turn to a couple of quite salient historical examples.

### **The Great Inflation 1.0: 1965-82**

The Great Inflation in the U.S. from 1965 to 1982 provides a good example of how a long, sustained increase in money growth tends to increase both contemporaneous inflation and expectations of future inflation. Over this period the price level more than tripled, with the inflation rate peaking at over 11 percent in 1980. This rise in the price level was accompanied by strong growth in both narrow and broad monetary aggregates. The monetary base, like the price level, more than tripled over this period, with a growth rate peaking at nearly 10 percent.<sup>9</sup> M2, which is a broader measure of transaction money, more than quadrupled during this period, and its growth rate topped 11 percent.<sup>10</sup> It is important to note that this broader measure of money, M2, largely consists of the liabilities of the private banking sector, so an expansion of broad money can be triggered by an increase in base money only if there's an associated growth in bank credit provision. Increased bank lending was a key factor in broad money growth and the Great Inflation.

To see how this works, note that an expansion of base money implies an increase in both a bank's deposit liabilities and—at least for the moment—its excess reserves at the central bank. Banks may choose to put these excess reserves to work by making loans, which will further increase the aggregate balance sheet of the commercial banking sector through the standard money multiplier story. This increase in broad money, in turn, can increase inflation.

During normal times, an increase in the monetary base results in an increase in broad money because banks generally lend out almost all of their excess reserves. But if, for some reason they choose not to do so, then broad money will not increase as fast as the monetary base, and the likelihood of an increase in inflation is greatly diminished. An example of this occurred during the early part of the Great Depression, when base money grew significantly but the broad money stock actually fell by a third.<sup>11</sup> We also find a disconnect today between the monetary base and broad money. Over the past year, the monetary base has nearly doubled as the Fed has rapidly expanded its balance sheet. But, given the sluggish growth in bank credit, broader money has risen much less—by only around 8 percent. So, we'll need to see much more expansive bank lending if the monetary base expansion is to trigger an inflation response. And we have yet to see this happen in the current economic downturn.

1979 to 1982 provides a different example of the tenuous link between money and inflation. Between 1980 and 1982 the inflation rate declined from its peak at 11.6 percent to 4.8 percent.<sup>12</sup> Yet this disinflation was accompanied by an *increase* in broad money growth, with M2 growth rising from 7.8 to 8.8 percent.<sup>13</sup> It is noteworthy that a decline in money growth was not essential for reducing inflation. The explanation is that this was a period of restrictive credit, with real interest rates soaring to over 10 percent. Partly as a result of this tight credit environment, economic activity weakened considerably, generating substantial resource gaps. Restrictive credit conditions and resource gaps dominated the influence of relatively high rates of money growth. This episode constitutes a caveat for the monetary explanation of inflation pressures: you need to consider both demand and supply pressures for money—you can't ignore the prices of liquidity and credit. Indeed, empirical research has found that outside of extreme cases money growth generally does not have much predictive power for inflation over the short and medium runs.<sup>14</sup>

### **Measures of resource slack may be misleading**

History also cautions us about relying purely on resource slack as the sole guide to inflation pressures. For example, although high rates of unemployment are typically viewed as disinflationary, the stagflation of the 1970s serves as a counterexample. A problem here is that measures of resource slack can be misleading. One popular measure of resource slack is the output gap, which is the difference between actual and potential output. Here, potential output is defined as the maximum level of output

that can be produced without generating inflationary resource cost pressures. The problem is that potential output changes over time. Furthermore, it is not directly observable and must be estimated. If our estimate for potential output is off, then so is our measure of the output gap. This mismeasurement could confound policy. Athanasios Orphanides argues that something of the sort happened in the 1970s.<sup>15</sup>

According to his story, economic weakness was interpreted by the Fed as evidence of a substantial output gap. This apparent gap prompted the Fed to expand monetary policy in an effort to attain maximum sustainable growth. But this period of economic weakness coincided with a major structural slowdown in productivity growth and rising structural unemployment. So the sluggish economy represented not so much an output gap as a slowdown in the growth rate of potential output. In effect, the resource and output gaps were overestimated, leading to an overly accommodative monetary policy.

Is this sort of dynamic likely to be a factor in the current situation? Although some of these forces may be present, I am skeptical of their quantitative significance. Recent studies done at the Chicago and San Francisco Feds find little evidence that sectoral reallocation or other factors are increasing the unemployment rate or reducing measured output gaps on a very large scale.<sup>16</sup> So I believe that resource gaps remain substantial today. That's a significant mitigating factor against inflation pressures.

### **Fiscal deficits and weak central banks**

Before concluding, let me turn to the relationship between central bank independence, fiscal policy, and inflation outcomes. Independence of the central bank is always important. Periodically, the central bank at times must take tough actions that are needed for future and medium-term prosperity, even though these actions are painful in the immediate short-term. The classic example is the need to increase policy rates on early signs that inflation could be rising substantially even though the real economy remains weak. In this situation, there may be pressure for the central bank to inappropriately re-weight its dual mandate objectives and postpone the monetary tightening until matters in the real economy improve further. A central bank that lacks independence and therefore opts to postpone tightening policy has effectively abandoned its low inflation goal. As a result, both expected and actual inflation can increase.

Fiscal pressures can also pose problems for central bank independence if large deficits are expected into the foreseeable future. Even if the central bank pursues a tight monetary policy, both current and expected future inflation can still increase if the public believes that the central bank will be forced to monetize the government debt sometime in the future. Tom Sargent and Neal Wallace coined the term "Unpleasant Monetarist Arithmetic" for this process.<sup>17</sup> In principle, very large debt levels could compromise the independence of even the strongest central bank if the choice is between monetizing the debt or, inducing a costly monetary contraction.

Here again, the historical link between fiscal pressures and very high inflation is clear. As I noted earlier, the major hyper-inflations in Austria, Hungary, Germany and Poland during the inter-war years, and more recent high-inflation episodes in Argentina, Portugal and Italy, all involved to varying degrees large structural fiscal imbalances combined with some lack of central bank independence. The key take-away is that rising, unsustainable fiscal deficits can derail the low inflation plans of a weak central bank, and can test the souls of the strongest central bankers. Unpleasant monetarist arithmetic argues that fiscal discipline is a necessary component for favorable inflation outcomes. There is no reason to think that this conclusion does not apply to the U.S. While significant fiscal stimulus was an appropriate response to a very large recession, it is essential that the nation show that it has a plan for restoring long-run fiscal balance.

### **Policy conclusions**

I started today by describing two extreme views for the future of inflation. One view, motivated by the expanding Fed balance sheet, has inflation greatly increasing in the future, while the other view, motivated by a sluggish economy and large resource gaps, has strong disinflationary forces. My view is that large resource gaps have been met by a large growth in reserves: In an effort to prevent a repeat of the Great Depression, the Fed acted quickly and decisively over the past year to provide liquidity to markets and to prevent systemically important institutions from failing. These are things that the 1930s Fed did not do. It is precisely these actions that have greatly expanded our balance sheet. So, the co-existence of the motivating observations for the two extreme inflation views is not very surprising.

Now for the hard part: Just as the Fed acted responsibly to prevent a potential deflation, it will do so to prevent a future increase in inflation above our price stability objective. Unfortunately, this sounds too much like, "just trust us to do the right thing." This is uncomfortable for everyone, but it is a natural dilemma at this point in the economic cycle when it is yet too soon to actually begin removing policy accommodation.

I am confident that the Federal Reserve will achieve the price stability component of our mandate. Our response will embody three principles; prepare, monitor, and act. Chairman Bernanke recently testified on the tremendous preparations that the FOMC is undertaking in order to be sure our balance sheet can be reduced and that appropriately restrictive monetary policies can be implemented when necessary. And the FOMC is monitoring economic and inflation conditions for the signs that adjustments in policy are needed. I hope my comments on inflation expectations and direct assessments of inflationary pressures have been helpful in this regard. Finally, the Fed will act in a timely and appropriate manner to achieve our dual mandate objectives of maximum employment and price stability.

**Note: Opinions expressed in this article are those of Charles L. Evans and do not necessarily reflect the views of the Federal Reserve Bank of Chicago or the Federal Reserve System.**

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<sup>1</sup> See Krugman (2008, 2009) and Meltzer (2009).

<sup>2</sup> According to Friedman and Schwartz (1963), the implicit price deflator level fell by about 25 percent between 1929 and 1933.

<sup>3</sup> The PCE (personal consumption expenditures) chain price index increased 1.7 percent between December 1964 and December 1965 and 10.5 percent between December 1979 and December 1980.

<sup>4</sup> Year-over-year PCE inflation did not consistently fall below 2 percent until May 1997. It remained below 2 percent until December 1999.

<sup>5</sup> See, McCandless and Weber (1995), Fischer et al (2002), and Stock and Watson (1999, 2003).

<sup>6</sup> Manufacturing capacity utilization was 65.4 percent in July 2009, which is the lowest reading since January 1967 when the NAICS-based capacity utilization series start. (NAICS is North American Industry Classification System.) Before 1967, capacity utilization is available on an SIC (Standard Industry Classification) basis; at no time between then and its first reading in January 1948 does this measure fall below 70 percent.

<sup>7</sup> These ideas are embodied in macroeconomic analyses from Friedman (1968) and Lucas (1972) to current generations of dynamic stochastic general equilibrium models like Christiano, Eichenbaum, and Evans (2005).

<sup>8</sup> These weights could be informed by the performance of formal statistical inflation forecasting models that use these indicators.

<sup>9</sup> Between 1971 and 1980, the monetary base grew, on average, about 8 percent per year.

<sup>10</sup> Growth in seasonally adjusted M0 from Jan 1965-Dec. 1982 = 238.67 percent; growth in SA M1 over the same period = 195.46 percent; growth in SA M2 over the same period = 346.62 percent.

<sup>11</sup> Friedman and Schwartz (1963), p. 299, also Table B-3.

<sup>12</sup> These are December-to-December changes in the PCE chain price index.

<sup>13</sup> Year-over-year growth in M2 was 8.0 percent in October 1979 and 8.8 percent in October 1982.

<sup>14</sup> See Stock and Watson (1999, 2003).

<sup>15</sup> See Orphanides and van Norden (2002) and Orphanides (2004).

<sup>16</sup> See Valletta and Cleary (2008), Fernald and Matoba (2009), and Rissman (2009). In contrast, Weidner and Williams (2009) estimate a large decline in potential output during the current recession.

<sup>17</sup> See Sargent and Wallace (1981).

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