



***“Should Full Employment Be
A Mandate For Central Banks?”***

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It is a pleasure to welcome everyone attending the Boston Fed’s 57th economic conference. The topic of this year’s conference – fulfilling the full employment mandate – is particularly relevant today, when most developed countries have unemployment rates substantially above their estimates of full employment.

I see a number of important questions about the full employment mandate that should be explored at this conference and beyond. For example, how should central banks react to high unemployment rates in a period of well-anchored inflation expectations? Does the *unconventional* nature of many of the monetary policy tools currently being employed alter how

central banks should think about their mandate? And even more fundamentally, what should be the mandate of central banks – should there be a single inflation goal, as occurs in many countries around the world, or should there be a dual mandate as has evolved in the United States?

My answer to this last question is an emphatic yes, by the way – the Fed should have a dual mandate. But I expect that conference participants and those reading the papers and presentations from afar will gain fresh perspectives on these and other important questions.

Before I begin my remarks I would like to note that the views I express today are my own, not necessarily those of my colleagues on the Board of Governors or the Federal Open Market Committee (FOMC).

In the United States, we currently have an unemployment rate of 7.5 percent and an inflation rate of 1.5 percent using the personal consumption expenditure (PCE) price index. Falling short on both elements of the Federal Reserve’s dual mandate from Congress – inflation and employment – provides a strong rationale for continuing our highly accommodative monetary policy. With inflation at 1.5 percent, and with my own forecast that inflation will remain well below our 2 percent target over the next two years, one could argue that consistently missing our inflation target *alone* would justify a highly accommodative policy. However, coupled with persistently high unemployment, the justification for continuing highly accommodative policy by large-scale asset purchases is clear. This is a time when the dual mandate is important and, I would add, particularly useful for communicating policy to the general public.

The dual mandate is being utilized in recent Federal Reserve policy statements to clearly describe to the public how monetary policy will be conducted, going forward. In particular,

recent FOMC policy statements have made explicit reference to the role of employment in considering changes to our monetary policy stance. With regard to the Fed's large-scale asset purchase program, the March statement said the FOMC will continue purchases "until the outlook for the labor market has improved substantially in a context of price stability."

The FOMC statement highlights that maintaining interest rates at exceptionally low levels will be appropriate "at least as long as the unemployment rate remains above 6.5 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent long-run goal, and longer-term inflation expectations continue to be well anchored." Data for both inflation and unemployment measures are readily available, and with the publication four times a year of the Committee's projections for these variables via the Summary of Economic Projections (SEP)¹ the public can observe the FOMC's outlook for these measures as well.

Both inflation and unemployment are viewed by the public as important gauges of economic well-being, so tying the trajectory of policy to data and published forecasts for these economic outcomes clarifies things for the public. In fact, this type of central bank communication has been quite effective. With a clearer understanding of the policy objective, yield curves have flattened and forward rates have fallen to reflect policy announcements.

Such announcements would likely not be as straightforward in countries with a single mandate related only to inflation. In such countries, a modest shortfall in inflation relative to target would not by itself justify a significant monetary policy response. In circumstances such as today's, invoking a non-mandated "escape clause" to attend to real activity while inflation is well-contained would not do justice to the size of the problems in the real economy. To be sure, many countries have found ways around these difficulties in recent times, but the Federal

Reserve's dual mandate is especially well suited for times like these, when it is clear that the primary rationale for our aggressive policies derives from the first-order problems in labor markets, not from a second-order escape clause that "permits" (but does not mandate) monetary policymakers to consider labor markets.

Given the communication challenges that are present with a single inflation mandate at a time of a significant slack in resources (high unemployment), it is natural to ask if there are significant differences in how central banks with a single inflation mandate behave relative to central banks with a dual mandate. The conclusion I will reach – by looking at the data – is that with a dual mandate in the United States, our inflation outcomes have been at least as good as those in countries with a single mandate, and we have the added benefit of a much clearer and more direct way to communicate with the public.

I would note that several nations have been considering revisiting their central bank mandate. The evidence I will share with you today suggests that there should be a broader consideration of moving to a dual mandate, such as we have in the United States.

To give you an overview of my presentation today, I will first explore whether countries with a single mandate, focused solely on inflation, generate different outcomes. Then I will explore the issue of central bank actions when inflation *exceeds* the target. I will follow with a discussion of current policy in the United States and the role played by the dual mandate, before offering some concluding observations.

Do Countries with a Single Inflation Mandate Generate Better Outcomes?

The first matter I would like to explore is the inflation experience of single mandate versus dual mandate countries. The data show that many countries over the past 20 years have

been very close to a 2 percent average inflation rate over that period; a result that is surprisingly consistent with price level targeting, where large increases or decreases in inflation are offset in future periods to maintain the same average inflation rate. Interestingly, by this measure the United States performs a bit better than countries that use only an inflation mandate.

Figure 1 shows the inflation experience of the U.S., the Euro area,² and Japan over the past 20 years. The price level for each is indexed to 100 in January of 1993. The Federal Reserve now has a 2 percent inflation target tied to the PCE inflation index, and the red line indicates the path the price level would take if inflation were exactly 2 percent for the entire 20 year period (which would be consistent with either error-less inflation targeting or perfect price level targeting).

While the 2 percent inflation target was only officially adopted by the FOMC in January 2012, the figure suggests that the Federal Reserve observed an *implicit* inflation target of 2 percent over this 20-year period. The actual path followed by the PCE level is represented by the darker blue line. The fact that the PCE price index always returns to the 2 percent line over the 20-year period implies, naturally, that the average inflation rate over that period was 2 percent. Also, the proximity of the PCE price index to the 2 percent line indicates that inflation deviated very little from 2 percent during that period. The only period of significant divergence occurred when oil prices rose significantly in 2008, and that divergence clearly proved temporary.

One might think that the unexpectedly severe “Great Recession” forced the inflation rate back to the 2 percent path. However, it is interesting to note that even before the Great Recession, the average was very close to 2 percent. With inflation generally falling at the beginning of this period, the pattern is consistent with a U.S. monetary policy that may not have “forgiven” the period of above-target inflation as “water over the dam,” as a 2 percent inflation

targeting central bank would, but instead engineered *below*-2 percent inflation in the ensuing period, to achieve a 2 percent average inflation rate – much like a price-level targeting central bank would.

This in turn implies a central bank that was more restrictive following the period of above-2 percent inflation than a pure inflation-targeter would be, potentially leading to a higher unemployment rate than would otherwise have been the case. Of course, it is possible that these inflation outcomes simply arose from a pattern of exogenous shocks (such as oil shocks) to inflation that produced an average inflation rate of 2 percent, in spite of the central bank's actions. But whether this pattern arose by chance or design, the chart is striking. The chart also highlights that during the most recent period of highly elevated unemployment – when we have remained persistently below 2 percent inflation – we could have justified even more accommodative policy than was generally enacted.

The Euro area's harmonized price level index is shown on the chart in lighter blue. While also quite close to the 2 percent line, the inflation rate in Europe has tended to be higher than that of the United States, and at the end of the 20-year period is above the 2 percent line, and above the inflation index for the United States. Of course, the ECB took control of monetary policy in January 1999, at the inception of the euro, but the statement is still true if one begins this exercise at that time.

The other line provides the index for Japan. While recently the Bank of Japan has discussed a 2 percent inflation target, that does not appear to have been the target over the last 20 years. Reflecting the inflation outcome, it would appear that the Bank of Japan has been following essentially a zero percent price level target and that the recently announced intent to

hit a 2 percent target, if implemented, will be a significant change from the past 20 years in Japan.

Given the very different inflation target and outcome for Japan during much of the last two decades, I will today focus on countries that have been following a 2 percent inflation target. Figure 2 shows the price level path for the U.S., the U.K., and Sweden. Both the U.K. and Sweden have 2 percent inflation targets, and both remain fairly close to the 2 percent line. However, at the end of the 20-year period, the U.K. is *above* the 2 percent line and above the inflation experience of the U.S. while Sweden is *below*. Clearly the United States has yielded no worse outcomes on inflation than other countries with a single mandate.³

In terms of inflation outcomes, all countries have been relatively close to the 2 percent inflation line (with the exception of Japan), consistent with a move toward well-anchored expectations in all of these countries. However, it is notable that even with a dual mandate the United States is the country *closest* to the 2 percent line at the end of the 20-year period.

It is, of course, possible that over two decades inflation could average 2 percent, but that a country with a dual mandate might allow inflationary pressures to build up more than a country whose sole mandate was inflation, leading to more pronounced swings of inflation (and the price level) around its target. One way to explore this possibility is to examine the cumulative squared deviation of inflation from the 2 percent target – a measure that places greater weight on large misses from the target. Figure 3 provides the cumulative squared deviations of the annual (year over year) inflation rate from a 2 percent inflation target. The analysis⁴ is symmetric, meaning it places an equal weight on large misses *above* 2 percent and similarly on large deviations *below* 2 percent.

The most rapid increase in the cumulative squared deviation from the inflation target for the United States was in 2008, when rising oil prices caused a sharp increase in energy prices that persisted for several quarters. However, in the period after 2009 the U.S. line really flattens. The unemployment rate remained quite elevated, and the inflation rate stayed quite close to the 2 percent target and, in fact, is much flatter than in Sweden and the U.K., which have only an inflation mandate. In addition, the misses – the cumulative squared deviations from the inflation target – over the *entire* period are smaller for the U.S. than for the U.K. or Sweden, but somewhat higher than for the Euro area.

However, since much of the miss in the United States is the result of the temporary spike in oil prices in 2008, it is worth examining whether underlying inflation measured by *core* inflation provides the same picture. Core inflation measures exclude the volatile food and energy segments that are obviously very important but are not controllable by central banks. Figure 4 provides the cumulative squared deviations of core inflation from a 2 percent target. For the United States we see that the increases in the cumulative squared deviations from the inflation target are quite gradual over the entire period. Perhaps even more notable, using core inflation the cumulative squared deviations for the U.S. are lower than those of the U.K., Sweden, or the Euro area. Furthermore, when the unemployment rate is the highest in the United States, the increases in the cumulative squared deviations are less than in the other three areas.

Now I'd like to show a figure, first with the countries not labeled and then with them labeled. This figure, Figure 5, provides a scatter chart depicting core inflation and unemployment outcomes over the past 16 years. The key question, I would suggest, is whether inflation and unemployment outcomes for the United States, with a dual mandate, look significantly different than for other countries.

In terms of quarterly inflation outcomes, both Sweden and the U.K. have more high-inflation observations than the United States. Sweden, the U.K., and the Euro area all have a higher range of quarterly inflation outcomes than the United States. In terms of unemployment, the United States has more density in unemployment rates between 4 and 6 percent relative to the other three, but the range of unemployment rates is wider than that of the U.K. and Sweden.

That the U.S. has a tighter inflation range and a broader unemployment range than many other countries with a single inflation mandate is striking, as is the very high unemployment rate in Europe. The results suggest that criticism that a dual mandate country might suffer from more frequent and enduring spells of high inflation is overdone – and if anything the evidence might raise the question of whether, with a dual mandate, there should have been more aggressive monetary accommodation during periods of elevated unemployment, particularly in the past five years.

Another interesting aspect of the analysis shown in Figure 5 is whether the dual mandate results in the United States having a larger concentration of high-inflation outcomes *during periods of high unemployment*. But the opposite is true, as most of the high-inflation observations occur during periods of low unemployment. Interestingly, for Sweden and the U.K. more of the high-inflation observations are during periods of *high* unemployment, which might partly be attributable to open economies that may be more exposed to exchange rate and energy shocks.

To summarize, I would note that the dual mandate in the United States has been criticized by some for providing an inflationary bias. However, the data show little such evidence. Inflation outcomes in the United States over the past 15-20 years appear to compare quite favorably to those of single mandate countries.

Central Banks' Actions When Inflation Exceeds the Target

One way of capturing differences that might exist between single and dual mandate countries is to examine whether single-mandate central banks were much more reticent to ease policy *if* unemployment were high *and* they were currently somewhat above their inflation target. Such an approach can certainly be justified when bound to a single mandate for inflation, but the justification for easing policy in such a circumstance would be that the inflation forecast suggests that inflation will return to 2 percent. Contrast this with a dual mandate country, where rather than relying on an inflation forecast that is expected to fall – possibly because of slack resources – the central bank can directly appeal to the elevated unemployment rate as balancing the concerns over a somewhat elevated inflation.

Over the past five years, short-term interest rates in many countries have been close to, or at, the zero lower bound. So it may be instructive to explore just how willing countries have been to expand their central bank's balance sheet during periods of above-target inflation. Figure 6 shows the core rate of inflation in the U.S. and the size of the Federal Reserve's balance sheet in recent years. The only observations of core inflation above 2 percent were in 2008. However, this was the period of the most rapid expansion of the Federal Reserve's balance sheet. With a dual mandate, a period of fast-rising unemployment rates makes it straightforward to communicate the need to rapidly expand the balance sheet.

Figure 7 provides similar information for the Bank of England. Unlike the United States, the core inflation rate in the U.K. has been above 2 percent for much of this period. Interestingly, the most rapid expansion of the balance sheet occurred in late 2008 when core inflation was above 2 percent, and the balance sheet began to grow further in 2011 when inflation was well above the 2 percent target. So, despite the single mandate, the Bank of

England has been willing to expand its balance sheet even with core inflation rates persistently higher than target.

Figure 8 contains similar information for the Euro area and the European Central Bank. The most rapid increase – but not the largest – in the balance sheet was in 2008 when the core inflation rate was above 2 percent. While core inflation remained below 2 percent for the rest of the period, the expansion of the balance sheet resumed in 2011 when the core inflation rate was at a local maximum very close to 2 percent.

Figure 9 provides the same information for Sweden. Sweden, like other countries, increased its balance sheet when core inflation was above 2 percent. What is distinctive about Sweden is the reduction in the central bank’s balance sheet, and how low their balance sheet has remained despite being well below 2 percent core inflation.

The good news is that periods of higher inflation do not seem to constrain any of these countries from easing monetary policy when the real economy is in serious distress, even if they are above a 2 percent inflation target. But again, I would observe that with a dual mandate, the communication around these periods and policy actions is likely to be much more straightforward. Perhaps a lesson to draw from these episodes is that, regardless of the formal structure of the central bank, all of us are dual mandate banks “at heart.”

Current Policy in the United States and the Dual Mandate

Figure 10 looks at an estimate of the period-by-period loss function for the U.S. central bank, proxied by the squared deviations of inflation from an inflation target (not cumulative) in the top panel, and the squared deviations of unemployment from an estimate of full employment utilizing the Congressional Budget Office (CBO) assessment of the natural rate for each year

(not cumulative) in the bottom panel. There is no stated inflation target for the United States during much of the sample period, so that during the earlier periods a filter is utilized that provides a smoothed inflation target that ranges from 2 to 5 percent.⁵

Figure 11 stacks the deviations from the previous two charts. The misses from inflation are shown in dark blue and the misses from unemployment are in light blue. In effect this reflects a loss function that places an equal weight on inflation misses and unemployment misses. Parenthetically, I would point out that an interesting question to consider is whether the possibility of long-term effects of unemployment, as will be discussed during this conference, should alter the relative weights of inflation and unemployment in the loss function.

Most of the large misses in the 1970s and early 1980s were the result of very high inflation rates. After the Federal Reserve dramatically reduced inflation rates under the leadership of Chairman Volker, inflation has remained well anchored and has not resulted in large inflation misses. What is more striking is that now the misses have been associated with periods of high unemployment. The Great Recession resulted in such a large miss in unemployment that the squared deviations were higher than in any period in the past 30 years. Even now, the squared deviations remain at a high point for the past 20 years. This may indicate that during the period of the 1970s and early 1980s too little weight may have been placed on inflation misses but in the more recent past we may have placed too little weight on unemployment misses – and if anything, we should have acted more aggressively to reduce the unemployment rate.

With the unemployment rate at 7.5 percent and both core and total PCE inflation at 1.5 percent, the communication of accommodative monetary policy is quite straightforward. We are

well above our unemployment target and well below our inflation target, so highly accommodative policy is both appropriate and necessary.

Furthermore, the dual mandate, coupled with the FOMC's January "framework" statement, has made it easier to provide forward guidance. The threshold language has clearly stated that unemployment is an important objective of monetary policy and an important determinant of when we will begin to raise short-term interest rates. Similarly, the FOMC statement makes clear that we are looking for substantial improvement in outlook for the labor market, in a context of price stability, before stopping large-scale asset purchases. Given how far we are below the 2 percent inflation target, these actions could be motivated by large misses on inflation – but the dual mandate provides a much clearer, more transparent, and direct way to communicate with the public.

Concluding Observations

The dual mandate in the United States has provided a clear and transparent way to communicate the need for aggressive monetary policy. Our inflation outcomes have been as good as, if not better than, many countries with a single inflation mandate. Furthermore, many central banks with only a single inflation mandate have chosen to expand monetary policy accommodation despite being at or above a 2 percent inflation target.

The general similarity of actions across central banks, despite differing mandates, is illuminating. Again I would suggest that the dual mandate may have made the communication around our actions easier than in single mandate countries. But the historical record shows that even this dual mandate central bank may have been a bit slow to place sufficient emphasis on unemployment deviations. If that is the case, then as countries consider or reconsider their

central banks' mandate, moving to a dual mandate may provide dual benefits: on the communications front, it will make it easier to provide forward guidance that conditions on both inflation and employment outcomes. On the policy action front, a dual mandate may help to ensure that employment gets an appropriate weighting in the central bank's assessment of appropriate policy, particularly during times when employment ranks first in terms of economic woes. Thank you.

¹ See <http://www.federalreserve.gov/monetarypolicy/files/fomcprojtab120130320.pdf>.

² The Euro area, or the Euro zone, includes the 17 European Union members who have adopted the euro: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.

³ It bears noting, parenthetically, that the U.S. differs from the other countries examined in the extent to which international financial flows affect its ability to achieve monetary policy objectives. The U.S. is the classic large semi-open economy, while Sweden is close to a classic small open economy; the U.K. and the larger pre-Euro E.U. countries fall somewhere in between. One would expect monetary expansion in a small open economy to cause a temporary increase in measured inflation due to exchange rate depreciation (as the prices of tradables increase) even when unemployment is above the natural rate (although the inflation increase would be small if there is limited exchange rate pass-through).

⁴ A quadratic loss function.

⁵ The target inflation series is constructed by running a Hodrick-Prescott filter with smoothing parameter 1,600,000 over the core PCE inflation rate from 1959 to the present. The filtered estimate reaches a maximum of 5% in 1978, and declines gradually to 2% in 2005:Q1, at which point the inflation target is set to 2% from that period onward.