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HIGHLIGHTED IN THIS PUBLICATION:

With inflation and unemployment rates fluctuating from month to month, it can be difficult to assess how well the Fed is achieving its dual objectives of maximum employment and price stability. But a little analysis can go a long way, as EFG chief economist Stefan Gerlach shows in this issue of *Infocus*.

The objective of the Federal Reserve's monetary policy is to achieve the dual goals of maximum employment and price stability. While many central banks have a main objective for price stability and often a secondary goal of smoothing the business cycle, the Federal Reserve Act is unusual in that it provides an explicit goal for maximum employment that, furthermore, is of equal importance to its goal for price stability.[1]

Quantifying the Fed's inflation and unemployment objectives
Interestingly, these goals can be given a numerical definition even though no such definition is provided in the legislation. Every quarter, the members of the Federal Reserve Open Market Committee (FOMC) provide their views of several macroeconomic variables for the next few years and in the "longer run." When the "longer run" is reached is not clear, but one can think of it as when the economy has fully recovered from whatever cyclical situation it is currently experiencing.

Since the Fed can influence inflation, the longer run forecasts indicate what inflation rate FOMC members are aiming for. That longer run rate, which is 2%, is often interpreted as the Fed's inflation target.

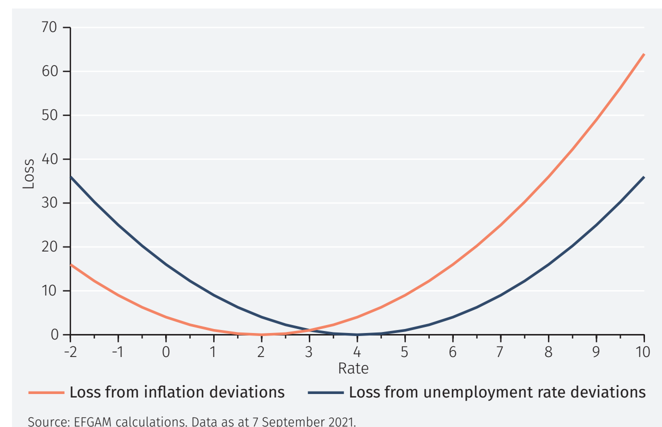
Furthermore, FOMC members also indicate what they think the unemployment rate will be in the longer run. Since experience suggests that monetary policy has no long run effects on real economic variables such as economic growth or employment, the unemployment rate in the longer run can be interpreted as the lowest unemployment rate – which corresponds to the maximum employment rate – that the Fed believes it can achieve and maintain. This is 4%.

The Fed's loss function
In sum, how well the Federal Reserve is achieving its goals can be assessed by looking at the deviation of inflation from 2% and the deviation of unemployment from 4%. Since deviations can be positive or negative and it is often felt that both are equally undesirable, economists often define the loss as equal to the sum of the squared deviation of inflation from target and unemployment from its longer run level:

$$\text{Loss} = (\text{inflation} - 2\%)^2 + (\text{unemployment rate} - 4\%)^2$$

This loss function is illustrated in Figure 1.

1. Losses



Source: EFGAM calculations. Data as at 7 September 2021.

Four aspects of this loss function deserve comment.

First, while it only involves two variables, in practice the Fed is concerned by many more measures of inflation and unemployment. Thus, the loss function and the associated analysis should be seen as a short cut to understanding Fed policy making.

Second, the losses are minimised when inflation and the unemployment rate are at the targeted levels.

Third, the costs of deviating from target rise as the deviations of inflation and unemployment grow larger. That is important for thinking about FOMC members' views about monetary policy in the recent past.

Fourth, too low rates of inflation and unemployment are as costly as too high rates: that is, the loss function is symmetric. While the notion of symmetric losses from inflation deviations is mainstream, the idea that central banks care as much about unemployment being below the long run level as they do about unemployment being above it is debatable.

Indeed, in recent cycles the US unemployment rate has fallen below the level that was previously thought to be consistent with full employment yet that, by itself, did not elicit a policy

[1] See Section 2.A of the Federal Reserve Act www.federalreserve.gov/aboutthefed/section2a.htm

response: rather the Fed concluded that the NAIRU (non-accelerating inflation rate of unemployment) had declined. And in announcing last year the Fed's new policy strategy which emphasises the benefits of a strong labour market, Chairman Powell said that "*our revised statement says that our policy decision will be informed by our 'assessments of the shortfalls of employment from its maximum level' rather than by 'deviations from its maximum level' as in our previous statement.*"[2] While this signalled that a symmetric loss arising from deviations of unemployment from its longer-term level is no longer appropriate for the Fed, the unemployment rate has so rarely been below its long-run level that in practice this distinction may be moot.

Recent US macroeconomic history

Figure 2 shows PCE inflation and the unemployment rate since January 2010. While inflation was close to the 2% target during most of the period, the unemployment rate started the period far above the 4% objective but gradually declined to it, and even fell temporarily below it before Covid-19 struck.

2. Inflation and unemployment in the US

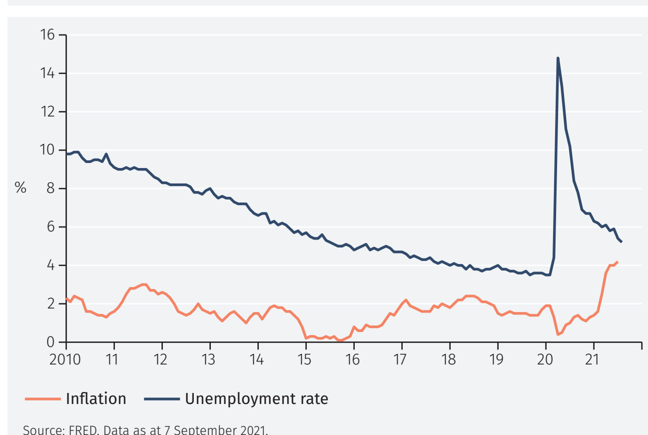
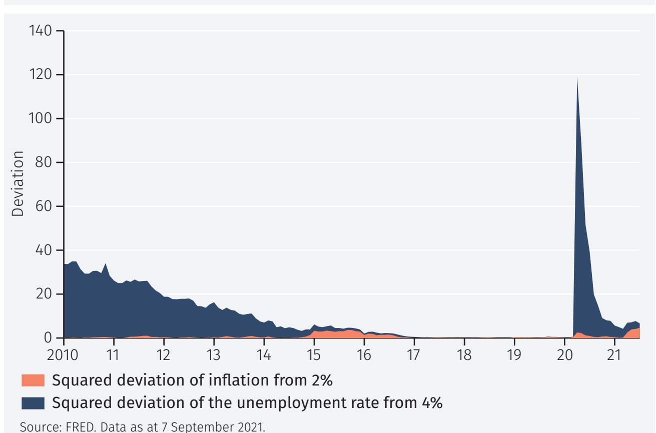


Figure 3 shows the squared deviations of inflation from 2% and the unemployment rate from 4%, individually, and their sum. The figure shows how well the Fed is achieving its objectives. Importantly, the figure indicates to what extent the losses stem from inflation or the unemployment rate deviating from target.

The figure illustrates two important points. First, deviations of unemployment from target have been much more important as a source of losses than deviations of inflation from target. That helps explain why the Federal Reserve since the onset of the Covid pandemic appears to have been more preoccupied by the high unemployment rate than the high inflation rate.

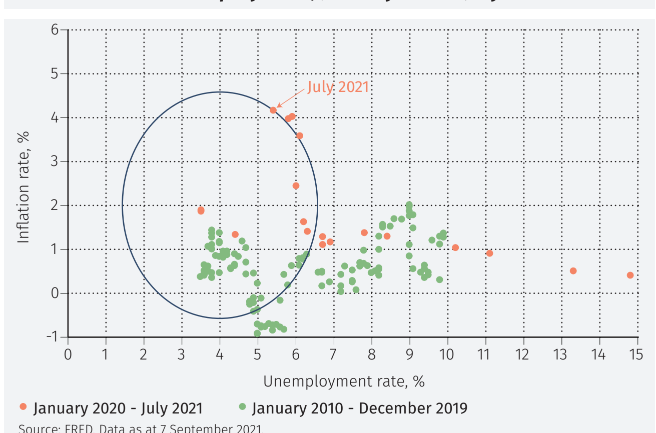
3. Deviations in inflation and unemployment



Second, following the rapid rise in inflation since May, inflation deviations are now more important than unemployment deviations, suggesting that the FOMC's focus could shift. However, since the Fed believes that the rise in inflation is temporary, it seems likely to continue to concentrate on the high unemployment rate.

Another way to view the Fed's loss function is presented in Figure 4, which shows inflation and the unemployment rate, together with a circle centred at a point given by inflation and unemployment equal to target, which sometimes is referred to as the Fed's "bliss point." The circle is drawn to pass through the July 2021 data point, with inflation of 4.2% and an unemployment rate of 5.3%. The radius of the circle measures the value of the loss function.[3]

4. Inflation and unemployment, January 2010 - July 2021



The figure indicates again that while fluctuations in unemployment have been a greater source of movements of the economy away from the Fed's bliss point than inflation,

[2] See https://www.federalreserve.gov/newsevents/speech/powell20200827a.htm
[3] To be precise, it measures the square root of the loss. Amusingly, the radius of the circle is obtained by applying Pythagoras' theorem to the loss function, indicating that high school mathematics is not a waste of time.

in the last few months it is the sharp rise in inflation that is the main explanation for the worsening macroeconomic outcomes as experienced by the Fed.

Conclusions

How well the Fed has achieved its objectives can be assessed using a formal loss-functional analysis. Such an investigation shows that deviations of unemployment from its long-run level, which can be thought of as the Fed's target, have been much more important as a source of concern than deviations of inflation from the 2% target.

In turn, that observation helps in explaining why the Fed has not been quick to announce tapering of bond purchases at the current juncture, in which unemployment is only gradually declining towards target but inflation has surged.

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