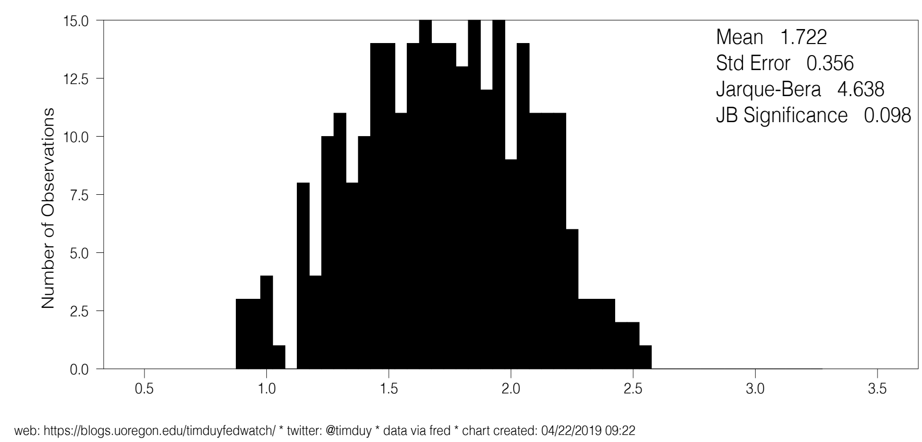
Is the Fed Setting a Dove Trap? Some Thoughts on New Policy Strategies

Introduction

The Federal Reserve quickly switched gears between December 2018 and March 2019 as policy became "patient" and the two rate hikes projected for 2019 fell to zero. The backdrop for the shift was stumbling markets, softer growth data, and falling inflation. Fed officials find the turnaround of inflation particularly worrisome. Since adopting an inflation target in 2012, the Fed, in the words of Chairman Jerome Powell, has not "convincingly achieved our 2 percent mandate in a symmetrical way."

Figure 1: Histogram of Inflation Outcomes

Core PCE 12-month change, monthly data 1995:1-2019:1



The failure of the Fed to meet its self-defined inflation objective yields a number of both short- and long-term negative outcomes. At a most basic level, the continuing suboptimal inflation outcomes suggest policy has been too tight throughout the expansion that followed the Great Recession. Unemployment could have been reduced more quickly and could possibly still be held sustainably lower than current Federal Reserve forecasts anticipate. Another concern is that persistently low inflation is eroding inflation expectations which, though little understood (see Tarullo (2017)), anchor the Fed's inflation forecast. The Fed would need to provide even easier policy should they want to firm up those expectations.

Over the longer-run, policy makers increasingly focus on how they should respond to the next recession. In addition to lower interest rates, quantitative easing, and forward guidance, Fed speakers also increasingly anticipate tweaking the policy framework to make up past inflation shortfalls. A version of such a policy is the temporary price-level targeting scheme suggested by former Federal Reserve Chairman Ben Bernanke.

Taken together, the above suggests a high likelihood that policy will at least err on the dovish side. In reality, I think the Fed should not just err on the dovish side, but should instead pursue an explicitly dovish strategy. Arguably it would be foolish if not downright irresponsible to enter the next recession without at least convincingly anchoring inflation expectations at 2%; an effort to do so might entail not just accepting above 2% inflation ahead of the next recession, but actually targeting a higher level to ensure that average inflation prior to the next recession is 2%.

As I think about these topics ahead of the Fed's much-anticipated Chicago conference on strategy and communications, I become concerned that the Fed won't follow through with their current dovish inclinations. Can they credibly pursue a dovish strategy approach? Optimally, they need to establish such credibility ahead of the next recession, but I wonder if they will get cold feet when push comes to shove. In other words, could the Fed's rhetoric lead us into a dove trap?

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The Fed's Inflation Challenge

A recent speech, "Risk Management and the Credibility of Monetary Policy," by Chicago Federal Reserve President Charles Evans set my mind in motion on this topic. Toward the end of the speech, Evans settles on this theme:

> *I am concerned about this today because over the past ten years actual inflation has consistently underrun our target, and these misses appear to have caused inflation expectations to fall below levels consistent with our 2 percent goal.*

Evans highlights what I think should be taken seriously as an object lesson on hawkish errors in central banking:

> *To succeed, perseverance is crucial. Indeed, the experience of the Bank of Japan (BOJ) presents a counterexample. In the early 2000s, the BOJ initiated aggressive expansionary monetary policies, but pulled back on them before growth and inflation recovered. This may have damaged the credibility of their commitment to follow through on policies undertaken a decade later to fight similar problems, substantially inhibiting the effectiveness of those policies.*

"He that is without sin among you, let him cast the first stone," I thought when I read this. We can make a strong argument that the Fed has followed the path of the Bank of Japan more closely than they want to admit. For example, the dot-plot of interest rate projections has consistently presented a more hawkish view of the likely policy direction than conditions ultimately dictated. The rush to tighten policy pushed the Fed to begin rate hikes in December 2015, only to have to immediately turn around and cancel further expected rate hikes until a year later. Finally, the Fed followed through with last December's rate hike even as markets tumbled and data softened. And, like they did three years earlier, the Fed found themselves having to reverse course.

Looking back over the last decade, I think it is safe to say that the Fed's errors have all been on the hawkish side of the coin. In that sense, they are not unlike the BOJ. And, I think, they already have a credibility problem.

Evan moves in the dovish direction that I think the Fed, at least in rhetoric, heads toward:

> *Goal-oriented monetary policy is the key. Establishing a credible commitment to achieving goals is crucial for success.*
>
> *What about today in the U.S.? While policy has been successful in achieving our maximum employment mandate, it has been less successful with regard to our inflation objective. As I just noted, for most of the recovery, inflation has run stubbornly below our target, and inflation expectations today appear much lower than during earlier periods when inflation was running more symmetrically around 2 percent.*
> *To fix this problem, I think the Fed must be willing to embrace inflation modestly above 2 percent 50 percent of the time. Indeed, I would communicate comfort with core inflation rates of 2-1/2 percent, as long as there is no obvious upward momentum and the path back toward 2 percent can be well managed. Importantly, we should follow these words with actions and implement policies consistent with these communications.*

Evans is hitting on a key point here: To meet its symmetric mandate, the Fed can't just hit 2% inflation. Inflation should be falling above 2% half of the time. Contrast this with Powell, who, at the March 2019 press conference, said he "think[s] inflation that is a little bit below our target." I think that in my head, I have tended to think along the lines of Powell's reasoning. It's just, what, 25 basis points, how hard can that be?

Maybe harder than I realized.

Boston Federal Reserve President Eric Rosengren threw his hat into the strategy ring this week as well, concluding that his:

> *…own preference is for the Federal Reserve to adopt an inflation range that explicitly recognizes the challenge of the effective lower bound. We might be forced to accept below-2- percent inflation during recessions, but we would commit to achieving above-2-percent inflation in good times, so as to provide more policy space to counteract the next recession.*

This is a loosely defined inflation targeting approach. To meet the spirit of this approach, the Fed would not just need to ensure a symmetric outcome around 2%, but, in the wake of a recession, ensure a symmetric outcome around something higher than 2%. Yet if Evans is correct and the Fed let inflation expectations drift downward, they already have a credibility problem with a 2% target. In what world do I believe that the Fed will be willing to target something higher, even temporarily?

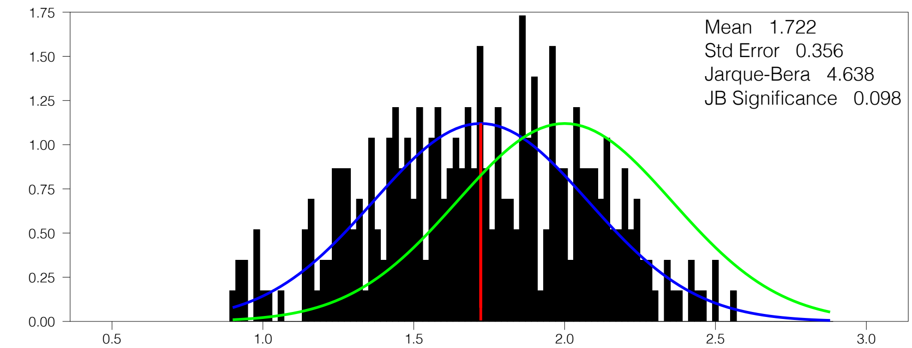
I think there are three questions the Fed needs to answer as they consider their inflation strategy. First, is inflation entrenched below 2% and how hard is it to change? Second, are they willing to pursue the policy necessary to boost inflation? Third, how should they implement such a policy? Thinking thorugh these three questions, leads me to favor an inflation averaging strategy with a commitment mechanism that explicitly forces the Fed to accept above target inflation.

The Distribution of Inflation Outcomes

Rosengren provides a histogram of core inflation outcomes that induced me to think a bit differently about meeting the inflation target. I replicated the histogram with monthly data rather than quarterly data and a slightly longer time span (I prefer to think that the current policy epoch began in 1995, not 1999) in figure 1. In figure 2, I converted the frequency histogram to a density histogram so that I could compare the outcome with a normal distribution.

Figure 2: Density Histogram of Inflation Outcomes

Core PCE 12-month change, monthly data 1995:1-2019:1



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The Jarque-Bara test statistic is not significant at $p<0.05$, indicating no rejection of the null hypothesis that the distribution of outcomes is normally distributed. The distribution in blue is a normal distribution with a mean and variance that match the inflation data. The distribution in green has the variance of the sample inflation data but a mean of 2%. In other words, this is the distribution of outcomes one would expect if the Fed were meeting its inflation target in a symmetric fashion (assuming that whatever process generated inflation that met the Fed's inflation target was also normally distributed with the same variance).

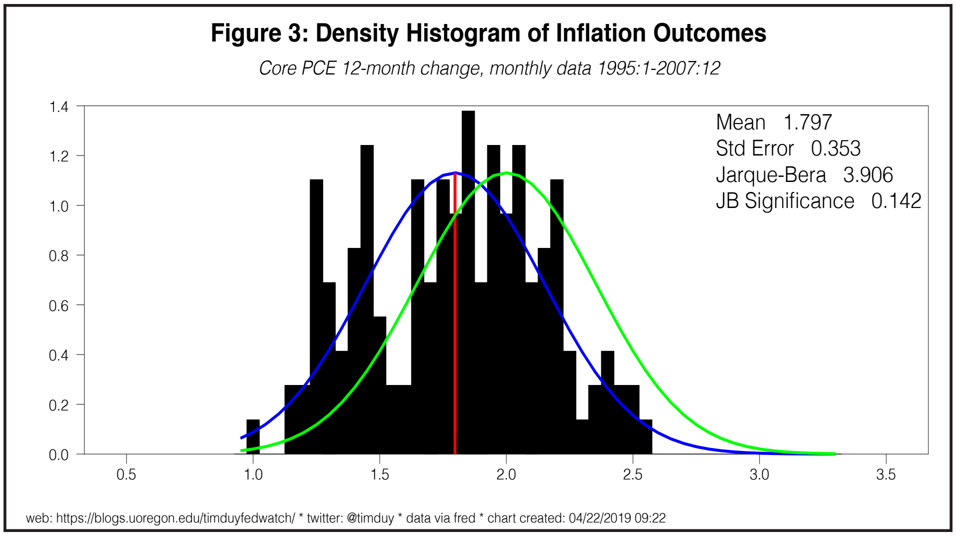
Thinking of the data this way made me realize this is not just about a point estimate of inflation reaching 2% and leads me to a hypothesis about the Fed's inability to reach its inflation target. They have tended to view the brief periods of 2% inflation in this cycle as inflation reaching its target, so they say "job's done, time to tighten." In reality though, nothing in the underlying data generating process has changed. The Fed is simply reacting to few good draws from the right side of the distribution and concluding, erroneously, that the distribution of outcomes has changed. The Fed shouldn't focus on those few good draws; they don't represent a change of inflation outcomes. The Fed's challenge is to shift the entire distribution of inflation outcomes to the right. This is what Evans is saying when he wants to see the truly symmetric inflation outcomes.

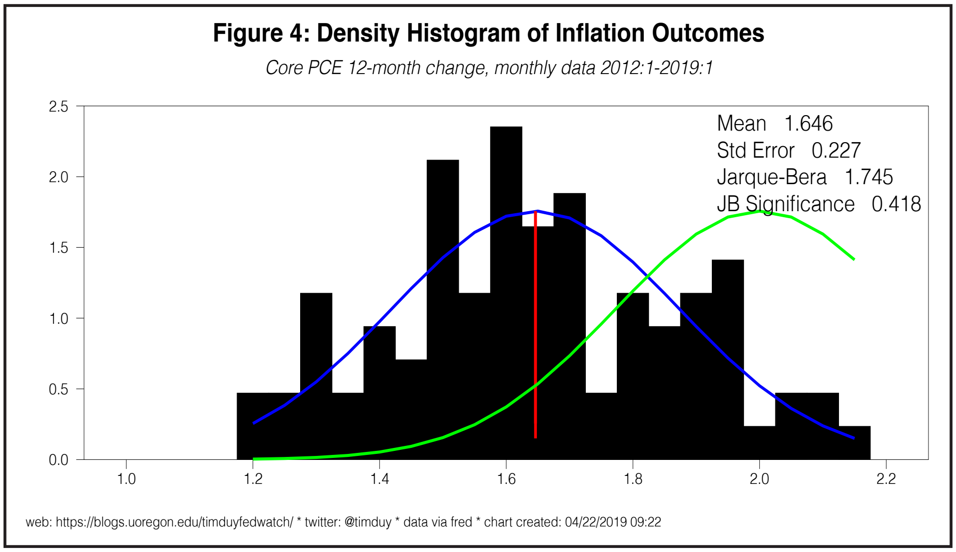
Can the Fed easily push the distribution of inflation higher? Experience so far says shifting the inflation dynamic is not easy. After all, the Fed has pursued what they believe is a very accommodative policy stance for years and yet has failed to meet its target. In the context of the Fed's framework, the distribution of inflation outcomes suggests that inflation expectations have settled in below 2% at the same time the responsiveness of inflation to labor conditions has diminished. From a recent speech by Federal Reserve Vice Chair Richard Clarida:

> *Another key development in recent decades is that inflation appears less responsive to resource slack. That is, the short-run Phillips curve appears to have flattened, implying a change in the dynamic relationship between inflation and employment. A flatter Phillips curve is, in a sense, a proverbial double-edged sword. It permits the Federal Reserve to support employment more aggressively during downturnsas was the case during and after the Great Recession--because a sustained inflation breakout is less likely when the Phillips curve is flatter. However, a flatter Phillips curve also increases the cost, in terms of economic output, of reversing unwelcome increases in longer-run inflation expectations. Thus, a flatter Phillips curve makes it all the more important that longer-run inflation expectations remain anchored at levels consistent with our 2 percent inflation objective.*

If, as recent inflation behavior suggests, inflation expectations are very sticky, this combined with the lack of responsiveness to labor conditions implies then that the Fed needs to pursue a much more aggressive policy to overcome and eventually change inflation expectations and shift the distribution of outcomes to the right.

This probably understates the Fed's problem. The Fed decided on its inflation target only recently, January 2012. Prior to that, there was no official target, but the stated preference among FOMC participants only turned toward 2% after the Great Recession. Prior to then, Adam Shapiro and Daniel Wilson of the San Francisco Federal Reserve document, an "overwhelming" preference for a 1.5% target. Considering the difference in preferred versus actual inflation targets before and after the Greater Recession, it seems appropriate to split the sample accordingly. Figure 3 reveals the distribution of inflation outcomes prior to the Great Recession has a slightly higher inflation rate relative to the entire sample. Compare then figure 3 to figure 4, the distribution in the era of the inflation target. The mean of the process has shifted to the *left*, from 1.80% to 1.65%. Counter-intuitively, the distribution of inflation outcomes shifted to the left in the era of official inflation targeting, even as policy makers adopted a target that was higher than the stated preference prior to the Great Recession.





In other words, inflation outcomes have not just undershot the target, but the distribution of those outcomes moved in entirely the opposite direction from the Fed's stated intentions. This is also true of inflation expectations as well. Figures 5 and 6 repeat this exercise with the five-year inflation expectation from the University of Michigan Survey of Consumers. The mean of the distribution also shifts to the left, from 2.91% prior to the Great Recession to 2.67% in the inflation targeting era.

Arguably, a 24 basis point shift in expectations is not meaningful, especially compared to the variability of inflation and inflation expectations in the 1970s. Still, in an era where the zero bound is a persistent threat, eaven small shifts in expectations in the wrong direction may substantially impede the ability of the Fed to respond to the next recession.

Is the Fed Committed to Its Target?

It is thus clear why many observers think the Fed is not truly committed to its inflation target. It's a matter of revealed preference. Since the end of the Great Recession, central bankers have appeared as yearning to tighten policy despite the distribution of inflation outcomes moving in entirely the wrong direction. It is fairly evident that the Fed is not meeting it's inflation target, yet Fed officials, such as Evans above, behave as if hitting the target requires a policy shift. Why is it necessary for Evans to explicitly lay out the meaning of a symmetric policy around a 2% target if such a target is already the objective? Why is this even a question at this point? If you need to convince your colleagues to actually pursue their stated objective, was that really their true objective?

Those impressions aside, I do not believe anything nefarious is afoot. I think forecasting error is the primary reason the Fed has continually missed its inflation target. In some combination, the Fed has overestimated the sensitivity of inflation to the output gap, underestimated the size of potential output (equivalent to overestimating potential unemployment), overestimated the flexibility of inflation expectations. As a result of these errors, the Fed has been unwilling to allow inflation to drift above 2%. In my framework above, they have repeatedly confused lucky draws from the right-hand side of the distribution of inflation outcomes with an increase in the mean of the distribution.

Even if one accepts that the Fed did not intentionly disregard its target, it is reasonable to believe the null hypothesis should be that the Fed's doesn't intend to reach its inflation target in any symmetric fashion. At this point, the burden of proof is on the Fed to establish its commitment to its inflation target. Until proven otherwise, market participants should not take such commitment at face value.

Policy Strategy to Achieve the Target

Fed officials understand tthe challenge of credibly committing to an inflation target. Williams and Merton (2019) explore different policy strategies to meet the Fed's target and conclude with:

Each of these alternative policy strategies works through its effects on expectations of future interest rates, the output gap, and inflation. In addition, each requires a commitment to take future policy actions that a future policymaker would prefer not to follow. Moreover, for inflation-targeting and temporary price-level targeting policies to be successful in anchoring inflation expectations at the desired level requires knowledge of the effects of the lower bound on the economy. Therefore, for any of these frameworks to work as well in practice as they do in theory requires clear communication and consistent execution of the policy and a belief by the public that the policy is credible.

Figure 5: Density Histogram of Inflation Expectation Outcomes

UMich 5-year expected inflation, monthly data 1995:1-2007:12

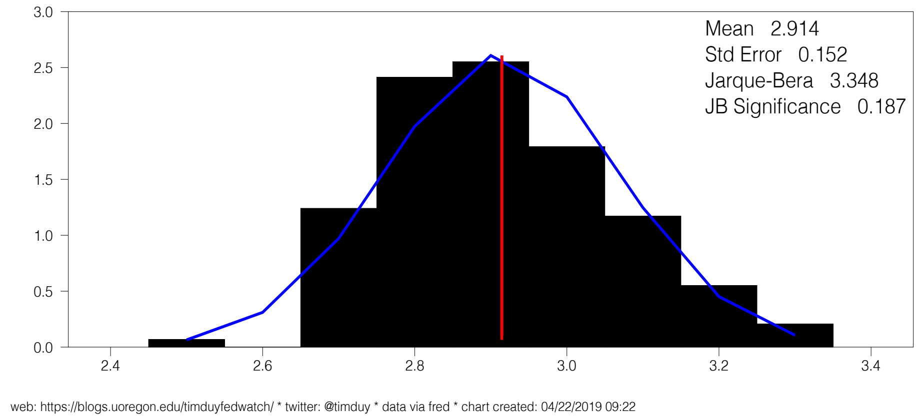
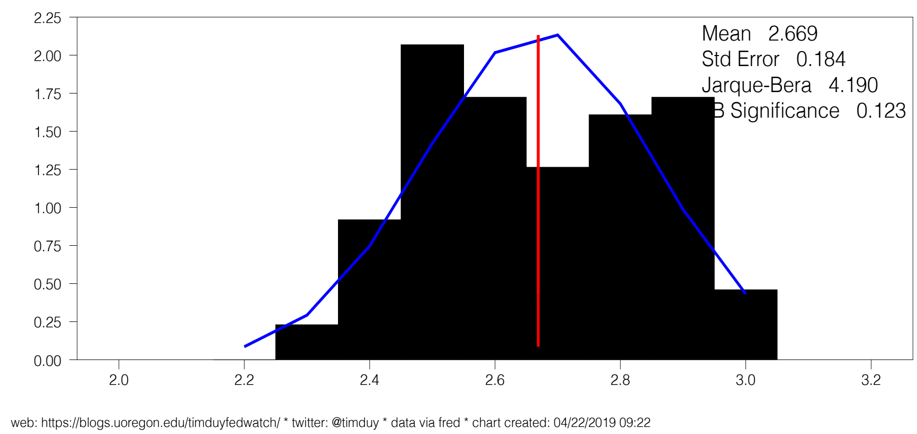


Figure 6: Density Histogram of Inflation Expectation Outcomes

UMich 5-year expected inflation, monthly data 2012:1-2019:3



There is a three-part strategy problem, clear communication, consistent execution, and policy credibility. On the communications side, I think the Fed should not only continue to reiterate that its inflation target is symmetric, but also they need to avoid statements suggestive of a subliminal intention to not treat the target as symmetric. For example, revisit the Clarida quote above and focus on this sentence:

However, a flatter Phillips curve also increases the cost, in terms of economic output, of reversing unwelcome increases in longer-run inflation expectations.

This is particularly revealing of the Fed's subliminal leanings as it misses the spirit of the current challenge the Fed faces. The concerns are not about an increase of inflation expectations, but a decrease. Compare the difference of tone with this change:

*However, a flatter Phillips curve also increases the **benefit**, in terms of economic output, of reversing unwelcome **decreases** in longer-run inflation expectations.*

From my perspective, I am challenged to believe the Fed has a symmetric inflation target in part because they do not appear to have symmetric concerns with regard to inflation expectations. To be sure, policy makers grow increasingly concerned about the possibility that inflation expectations have fallen. This, for example, from the minutes of the March 2019 FOMC meeting:

Several participants suggested that longer-term inflation expectations could be at levels somewhat below those consistent with the Committee's 2 percent inflation objective and that this might make it more difficult to achieve that objective on a sustained basis.

My sense is that they entertain such thoughts unwillingly. Even though faltering inflation expectations would increase the policy challenges of the next recession, I don't think central bankers view this as the real threat they face. At a fundamental level, good central bankers view rising inflation expectations as the primary threat. If the situation were reversed and policymakers suspected that inflation expectations were rising, I am fairly confident we would see an asymmetric policy response from the Fed. They would more likely risk a recession to prevent a rise in inflation expectations than risk a boom to prevent a fall.

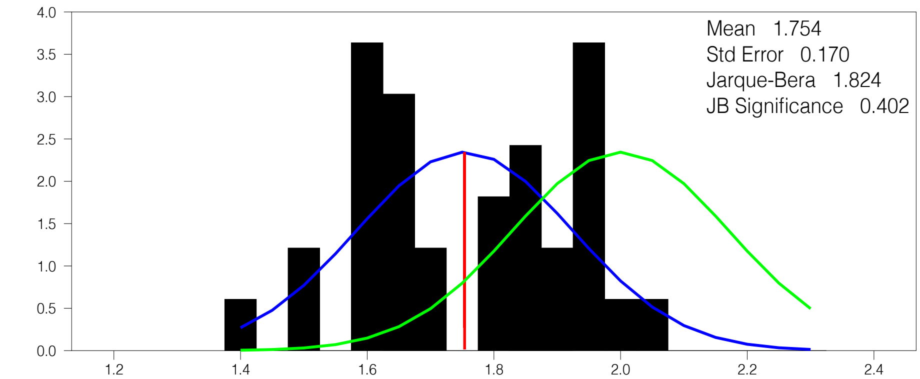
Hence, I don't think it is enough that they communicate that the inflation target is symmetric, but also that they have symmetric concerns about inflation expectations. I think from a communications perspective the latter is a prerequisite to establishing credibility on the former.

Assuming the Fed can effectively communicate the inflation objective, the Fed must then consistently execute policy to meet that objective. The Fed has arguably not done so this cycle. I believe that Evans moves in the right direction by acknowledging that inflation should be above target 50% of the time. He, however, still reveals creates too much wiggle room for the Fed:

> *I would communicate comfort with core inflation rates of 2-1/2 percent, as long as there is no obvious upward momentum and the path back toward 2 percent can be well managed.*

Figure 7: Density Histogram of Inflation Outcomes

Core PCE 12-month change, monthly data 2016:5-2019:1



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What is "obvious upward momentum"? I suspect that without an additional commitment mechanism, the Fed will still confuse good draws on the right-hand side of inflation distributions with persistent increases in the mean of that distribution. Hence, particularly with the economy operating near estimates of full employment, the Fed will tend to view any increase of inflation above target as "obvious upward momentum."

Evans provides a potential way out of this problem when he says inflation should be above 2% "50 percent of the time." To help ensure a commitment to the policy, the Fed needs define the time frame. Presumably, the appropriate time horizon is the medium run, three to five years. Also recognize as Rosengren does the need to average inflation outcomes over the choosen time horizon.

Combining Evans and Rosengren together yields a twist on an average inflation targeting (see Nessén and Vestin (2005)) framework: Consider a five-year policy window with the current time as the center of that window. Suppose the Fed's operational metric is that they will meet their target if within that window *the actual and expected distribution of inflation* outcomes be centered around 2%. Hence, if inflation outcomes in the past two and a half years are distributed below 2%, then Fed should target above 2% outcomes over the next two and a half years. This would effectively force the Fed to allow for persistently above target inflation outcomes. Looking backwards on any five-year period, the Fed will have met its mandate if the distribution of inflation outcome is distributed around 2%.

This approach is like a price-level target set within an inflation targeting framework. Adding the focus on the symmetry of expected outcomes is to help ensure the Fed does not confuse occasional draws at target with a shift in the inflation distribution. Reaching the inflation target once is not sufficient to claim victory on their mandate; they actually need to see above target draws 50% of the time.

Why not a price level target? Operationally, I believe Bernanke is correct in this assessment of price-level targeting:

> *In particular, switching from the inflation concept to the price-level concept might require considerable education and explanation by policymakers.*

In addition, as Bernanke notes, price-level targeting means the Fed needs to compensate for supply-side shocks, but in practice this problem would be mitigated by a focus on core inflation. Finally, I think it would be helpful to include a wrap-around policy that while the inflation target is 2%, it is 2% within an expected range of 1.5-2.5% such that policymakers are not forced into extreme policy positions to make up for any lost ground.

How would the Fed clearly communicate this type of policy? One suggestion:

> *The Federal Open Market Committee reaffirms its symmetric inflation target of 2%. In practice, the FOMC believes that it will have met its target if over the past five years the distribution of inflation outcomes is evenly distributed around 2%. Operationally, if the distribution of outcomes during the past two and a half years falls below 2%, the FOMC will adopt a policy stance intended to generate offsetting inflation outcomes over the next two and a half years to achieve its 2% target. The normal range of inflation outcomes is expected to be 1.5-2.5%.*

Perhaps a touch more moral suasion should be added:

> *If the FOMC has not met its mandate, the Chair of the Federal Reserve will explain why the mandate was not met and how it intends to meet its mandate in the future in the semi-annual report on monetary policy to*

Congress.

As far as the credibility is concerned, I suspect that clearly communicating a symmetric inflation target and symmetric concerns about inflation expectations backed with a policy strategy that establishes a commitment mechanism to achieve the target over an explicitly defined time frame will yield outcomes that establish the Fed's policy credibility. In other words, the Fed will have to earn its credibility.

Concluding Thoughts and the Dove Trap

The Fed is raising expectations of a policy shift; it is reasonable to conclude that the shift will be dovish in nature. The persistent undershooting of the inflation target since the Great Recession and the need to prepare policy to respond to the next recession lead to no other conclusion. This leaves me concerned though that the Fed is setting a dove trap by luring market participants to think future policy will be more dovish than policy makers are willing to accept in the future. In short, it's the time-consistency problem that the Fed needs to address.

In order to establish policy credibility ahead of the next recession, the Fed needs to take seriously now meeting its inflation target. The distribution of core inflation (figure 7) outcomes over the last 2 and a half years was 1.75%. Under my proposed policy approach, the Fed would need to target a distribution of outcomes are 2.25% over the next two and a half years, 50 basis points higher than that experienced in the past two and a half years. This requires allowing for a series of inflation outcomes in excess of 2.0%, half of which would need to be above 2.25%, at a time when the economy operates close to the Fed's estimate of full employment.

I simply am not yet confident that the Fed will allow such persistent overshooting of its target in this economic environment. Hence, they may consider any strategy changes as something to be implemented only in the event of the next recession. Consequently, any discussion of new policy strategy will have little near term impact on policy and the Fed may more easily revert to a more hawkish policy stance in the near future than I currently anticipate. Moreover, they will leave themselves ill-prepared for the next recession. If they can't meet their inflation target now, why should we expect them to at some point in the future?

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