Should the Fed Target the Inflation Rate or the Price Level?

Idea for Future Research

By James Sly

A debate has been developing within monetary policy circles about whether the Federal Reserve should be targeting a specific inflation rate or an overall price level. The basic difference is that targeting an inflation rate would try and keep inflation growing about 2% each year, but if inflation went too low or too high in the past then the Federal Reserve would still target a 2% inflation rate. Targeting a price level tries to achieve an average inflation rate of 2% over a long period of time, but over the short term, if inflation falls below 2%, then the Federal Reserve might try and target an inflation rate above 2% to make up the difference, or if inflation rises above 2%, then the Federal Reserve might target an inflation rate below 2% to offset that deviation as well. Price level targeting tries to ensure that prices grow at an average of 2% a year over the long term, even if they might target a slightly different rate in any particular year, where targeting the inflation rate strives to hit a 2% inflation rate every single year and let the long term trends develop over time based only on how well those short term targets are met.

Understanding the different dynamics for each type of target can be difficult to get your mind around, but fortunately this topic has been studied in great detail in the engineering department. Back when I first started my undergraduate education my plan was to become an engineer, and during that time I studied enough engineering in general and enough control theory in particular in order to be awarded a Bachelor's of Science degree in Electrical Engineering as well as a Bachelor's of Arts in Public Policy. When studying control theory one of the first things you learned about is PID control, which stands for proportional (P), integral (I), and derivative (D) control. In the context of economics, targeting the inflation rate is considered proportional control since the strength of the policy response depends proportionally on how much the actual variable deviates from the target in the immediate present. Targeting the price level in this context is considered integral control, because the strength of the response depends on the total amount that the actual variable deviates from target over the entire past, which can be found by integrating the deviation from the inflation target over time. Derivative control determines the strength of the policy response by how fast the inflation rate is changing.

When trying to design a system of optimal control, the first step is to use proportional control to try and get the actual variable close to the target over the short term. Then a control engineer might add in integral control if they wanted to get the control variable to precisely follow the target over the long term, since past errors are offset after they are incurred which means the long term deviation from a 2% growth in inflation eventually gets driven to zero. One difference between targeting the inflation rate versus targeting the price level is that targeting the inflation rate has less deviation from target over the short term, but targeting the price level has smaller deviations from target over the long term. One downside to targeting the price level is that this decreases the stability of the system. To see how this works, let us assume the economy is overshooting the 2% target by a lot, where the inflation rate has

risen to 5%. If you target the inflation rate, the Federal Reserve would try and achieve 2% inflation in the immediate future and ignore the past error in inflation, where if the price level was targeted the Federal Reserve might try and achieve a -1% inflation rate to offset the inflation that went above target in the previous year. As a result, this causes the inflation rate to fluctuate more wildly and if certain conditions are met then the system could go unstable and the inflation rate would swing completely out of control. That is why control engineers often add a derivative control to keep the inflation rate from swinging wildly back and forth, which reduces the risk that a system of will go unstable.

What this tells us about the debate within economics is that policymakers are being presented with a false choice between targeting the inflation rate ***or*** targeting the price level. What the engineering department might tell us is that the Federal Reserve should first target the inflation rate, and then also target the price level ***in addition*** to targeting the inflation rate. This would work in much the same way the existing dual mandate works for the Federal Reserve in the US, where the Federal Reserve is supposed to achieve full employment ***and*** price stability as much as possible. You can also see this in the Taylor Rule where the recommended federal funds rate depends on both the amount that inflation deviates from target but also on how much output falls below potential. The question in this particular case would then not be whether to target the inflation rate or the price level, but instead how much weight to put on each possible variable.

Some economists argue that the Federal Reserve should put a lot of weight on the price level because inflation expectations are forward looking and so the economy might perform better in a downturn knowing the Federal Reserve will use more stimulus in the immediate aftermath of a recession. I do not think inflation expectations are forward looking and even if they were it would be a long and difficult task to establish the credibility that the Federal Reserve will implement the policy and achieve the desired change in inflation that might be able to improve economic performance in a downturn. As a result, I would put more weight on targeting the inflation rate and put a smaller weight on targeting the price level, since this might get you inflation closer to target over the long term without getting wild swings in inflation over the short term. Perhaps the Federal Reserve could target a 2% inflation rate over the short term as well as an average 2% target over the span of 5 years, so if in one year the inflation rose 1% above target, the Federal Reserve would target inflation of 1.8% for the following 5 years until inflation over that 5 year time period reached an average of 2%.

Obviously, the Federal Reserve has bigger problems on its hand right now due to the pandemic and the economic difficulties that developed as a result, but when thinking about how to guide policy over the long term, I think the insights from the engineering department do provide policymakers with some guidance on how to deal with the price level targeting debate. The change proposed here would be relatively minor, but could perhaps improve performance over the long term while causing little risk over the short term, so might be an incremental improvement to the overall monetary policy framework in the US.