Panel on Monetary Policy in an Uneven Economy: Averaging and Anchoring: Is there an Inflation Dilemma?

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My presentation is about inflation, especially about its "averaging" and "anchoring." Is there an inflation dilemma between averaging and anchoring? Let me start with averaging, and then I will talk about the anchoring, and finally about the interaction between averaging and anchoring.

Averaging Inflation

The big question about averaging is over how many periods to take the average. Should we average over one year, two years, five years? What should the length of the averaging window be? What should guide this decision? Traditionally, we measure inflation at an annualized level. If we measure inflation one year, then one smooths out annual seasonal effects due to the harvests, holidays, vacation periods, etc.

However, once we move flexible average inflation targeting over a longer horizon, we have to answer the question about the optimal horizon. As usual, different theories give different answers. Depending on which theory one ascribes to, one can develop objective criteria for the optimal lengths of the "averaging window." Let me zoom into two different theories. One is the predominant New Keynesian framework. Its main friction are price and wage rigidities. The answer then depends on how long prices and wages are sticky. The macro-finance

perspective, the second theory, focuses on financial frictions. The key input to determine the length of the averaging window is the duration of private debt and whether the interest on debt is floating or fixed.

Let me dive into more details and start with the price stickiness perspective. If you take a very plain vanilla Woodfordian, New Keynesian framework, without a zero lower bound for interest rates, then the Taylor rule just depends on the current inflation deviation and output gap. There is no missing past inflation term, i.e., no term that indicates one would like to catch up with an inflation deficit accumulated from past periods.

Next, let's consider a two-sector model, say sector A and B–similar to Veronica (Guerrieri's) earlier presentation. There are two goods: one core and one non-core inflation good. Think of clothes and food. The price of the core good is more rigid, while the price of the non-core good is more flexible.

Aggregate demand shocks (e.g., due to monetary policy errors) affect prices, but also the relative price between clothes and food change, as their price stickiness differs. Let's first consider the simple extreme case in which cloth prices steadily increase each year by 2%. In contrast, the food prices are flexible and are impacted by any aggregate demand shock. The optimal monetary policy should aim to keep the relative prices between cloth and food in balance. Hence, if one part of the economy has non-flexible prices steadily increasing by 2%, you would like to have the price of the other part of the economy also to increase by 2%. Within an average inflation targeting framework, one should take the average over the infinite past. No past inflation misses are bygones to keep the relative price between cloth and food in balance. Taking the average over an "averaging window" of infinite length, essentially translates into price level targeting.

Next, let's now suppose that the prices of clothes are steadily increasing at 2% for x periods. Every x periods the prices freely adjust. As before, the price of food is totally flexible. In this case, the optimal averaging window is x years. Only inflation misses in the past x years count and prior inflation misses are bygones. Of course, the analysis is more complicated for a fully-fledged New Keynesian model with

staggered crisis and other elements, but the basic guiding principle should remain: if prices are rigid for a longer time, then the inflation averaging window should be longer. In short, the price and wage stickiness should determine the inflation averaging window in a New Keynesian model.

The second theory takes a macro-financial perspective and emphasizes financial frictions in models with heterogeneous agents. Inflation misses can lead ex post to redistributional effects. For example, inflation unexpectedly undershoots its target for a long time, wealth is redistributed from borrowers to savers. Debt overhang problems might become more severe. As an example, let's contrast two economies, one in which the debt contract is set for two years and another one in which debt is rolled over every year at the then prevailing nominal interest rate. In the first economy with two-year contracts, an inflation miss in the first year is best made up for in the second year in order to be closer to the initially agreed upon real interest rate over both years. In contrast, in the second economy with a one-year debt contract, one does not have the need to catch up with the inflation misses. Having a one-year inflation target would be fine.

Ex ante, financial frictions and uncertain inflation lead to planning uncertainty if one does not know whether inflation misses will be caught up to or not. To see this, consider a setting in which debt contracts have a maturity of five years with a fixed nominal interest rate. If inflation deviates from its target and is not made up subsequently, the borrower and lender face some planning uncertainty. They have to bear some extra risk. An average inflation target framework would reduce this risk. In this model the "averaging window" should be governed by the average debt duration of debt contracts. Duration measures not only the interest rate sensitivity of a debt value, but also the average time it takes to pay back the debt over time, taking all interest and principal payments into account.

Strictly speaking, duration and not maturity is the variable to use as guiding north star for the "averaging window." In addition, it matters whether interest rates on the debt contracts are fixed or floating interest rates. If the interest rate is floating the averaging window should

be shorter. In sum, from a macro-finance perspective the averaging window depends on the duration of the debt.

So far, we ignored that in the real world not all debt contracts have the same duration. There will be people who have to pay off a 30-year mortgage, and others will have very short-term debt contracts. In addition, there will be staggered contracts. To capture these features, one needs a significantly more complicated analysis, which goes beyond the scope of this presentation. Nevertheless, the guiding principle remains, the averaging window should be guided by the average debt duration in the economy.

In addition, there is another challenge. Suppose the central bank undershoots in the first year its inflation target, of say three years. Should the central bank make up for it right away, in the second year, or should you smooth it out between the second and the third year? This might lead to destabilizing inflation cycles instead of a smooth inflation regime.

Finally, the average inflation targeting regime also impacts which debt contracts citizens enter. If the "averaging window" is longer, people might enter debt contracts with longer maturity. In other words, the duration of debt contracts will endogenously respond to the average inflation target regime. The fact that currently the average maturity of debt contracts varies a lot across countries as well as across time supports this claim. Especially mortgage debt contracts differ from country to country. In some countries mortgages are long-term with fixed interest rates, while in other countries they are floating. Similarly, the debt maturity varies over time. For example, during the euro crisis, debt maturity in certain European countries shrank significantly. In the United States, the interest on most debt is floating. If one looks at auto loans, credit cards, C&I loans, they are all floating. That is, the duration of most loans is very short term. The only exceptions are mortgages, which are floating in one direction and fixed in the other direction.

Another question to ask is whether one should consider primarily the duration of private debt or of the sum of both government and private debt. In other words, should the maturity of U.S. Treasury

debt also enter the calculation about the optimal "averaging win-
dow"? One argument not to include government debt is that the gov-
ernment can determine its maturity. In addition, the government can
redistribute wealth by other means, e.g., via tax policy. For example,
it might be possible to fix debt overhang problems by other means
and not necessarily by catching up with inflation.

Anchoring Inflation

Averaging is backward-looking, catching up what one has missed.
Anchoring is about expectations. It is forward-looking. If inflation
expectations are well anchored, then monetary policy has more room
to maneuver to manage shocks. Losing the inflation anchor limits
the policy space of monetary policy.

This raises the questions, what is an inflation anchor and how can
one strengthen it? Inflation anchor is about expectations and belief
coordination. Inflation is anchored if most citizens of a country and
investors abroad agree about the intermediate-term inflation out-
look. Ideally, they have the same, i.e., mutual, beliefs about inflation,
and also agree about what others' belief the inflation will be. That is,
higher order beliefs are also coordinated. If all first order, second or-
der, etc. beliefs are coordinated then inflation expectations are com-
mon knowledge (Aumann 1976). In the words of philosopher David
Lewis (1969) it is a convention. If there is uncertainty about others'
beliefs, the inflation anchor is weakened. Higher order uncertainty
hurts. Pure disagreement, but everyone knows exactly what the oth-
ers' belief might be less damaging.

To strengthen the inflation anchor it is crucial to have a clear focal
point, say a 2% inflation target. Not having an alternative focal point
also strengthens the current inflation anchor. If there were for example
a clear second focal point at 3%, then the current anchor is weaker
compared to a setting in which there is large disagreement and uncer-
tainty where the new anchor should be. Hence, it is better to confuse
people and create uncertainty about other potential focal points.

The new flexible average inflation targeting framework poses at
least four challenges related to maintain a clear inflation anchor.
First, introducing a new framework in the middle of the COVID

crisis causes particular challenges to credibly communicate the new framework. The world is loaded with uncertainty and it is difficult to disentangle whether certain inflation shocks are due to fundamental shocks or due to the new framework. Second, average inflation targeting is likely to lead to asymmetry: inflation misses will be undone subsequently, but inflation excesses will not be undone. It is not credible to push the economy in a recession only to correct the long average. Hence, overall inflation will be higher. A one-sided credibility issue emerges. Third, average inflation targeting grants more discretion, more freedom while still adhering to the rule. For example, with a three-year average inflation target, the central bank can still stimulate the economy before elections, and cool it off afterward. Hence, the typical time-inconsistency problem is more pronounced compared with simple inflation targeting framework. Fourth, this problem is even more severe if the "averaging window" is not clearly defined or communicated, as is the case at the moment. This gives the Federal Reserve even more discretion. This creates additional uncertainty and undermines any focal point.

The inflation anchor depends on the inflation regime, and that raises the question, what is a regime? Is it all about central bank communications or does it go deeper in the structure? Do societal inflation experiences affect the anchor? I would indeed argue that one has to go beyond pure communications and cultural and societal experiences have to be taken into account as well. For example, Ulrike Malmendier and Stefan Nagel (2016) document that inflation experiences impact the formation of expectations significantly. It surely makes a difference that many young people (and policymakers) have never experienced inflation. Many can't even imagine what inflation really means for people. Does this strengthen the inflation anchor, or weaken the inflation anchor? It might strengthen the anchor for a while, but the anchor might snap suddenly if inflation reaches new heights. In addition, there are large inflation swings, as we have experienced with the onset of the COVID pandemic. An inflation whipsaw emerged. First inflation dropped drastically and bounced back significantly. Such inflation whipsaws do not strengthen the anchor.

Finally, the inflation anchor depends on the governance structure, in particular on the institutional setup that helps to manage the time-inconsistency problem. Since the 1980s, we have followed Rogoff's (1985) prescription that we should appoint conservative central bankers. Delegating the task to technocrats with the right preferences helps to overcome the time-inconsistency problem. Now, with the flexible average inflation targeting, should we appoint "smooth" central bankers? Smooth central bankers smooth out inflation swings. One might even want to set the length of a central bank appointment according to the "averaging window," since it is difficult to commit to an average inflation targeting framework, if the person in charge may be out of the office soon.

In conclusion, average inflation targeting raises many challenges, which require further clarifications. Averaging is backward-looking, while anchoring is forward-looking. But both are interlinked. An inflation anchor requires a clear focal point and time-inconsistency problem calls for clearly communicated rules. Average inflation targeting grants more discretion. Before elections, you can boost inflation, bring it down, later on, but still satisfying your "average" target. As long the "averaging window" is not specified, there exists no clear anchor and discretion is excessive. The average, over how many periods you take the average over, depends on the underlying theory, and how they interact. Seasonal effects, the degree of price rigidities, and debt duration, if one emphasizes financial frictions, should the key variable to guide the new framework.

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