

Comments by Silvana Tenreyro¹ on “Changing Central Bank Pressures and Inflation,” by Afrouzi, Halac, Rogoff and Yared.

This is a timely paper, studying how economic and political-economy factors can interact to exert inflationary pressures on the economy. The analysis is based on a stylised model of aggregate demand and supply. The model is augmented to reflect central bank preferences that might differ from those of households, as in Rogoff (1985). Using this framework, the paper seeks to illustrate how past economic trends (e.g., globalisation and de-unionisation) have exerted downward inflationary pressures, facilitating the task of achieving central banks’ inflation targets. The analysis leads to a stark warning that a reversal of those trends might pose important challenges to central banks in the future. The key conclusion is that for inflation to remain low and stable, it is vital to maintain, and indeed reinforce, central bank independence and have in place a credible public debt policy.

The paper addresses a hugely important topic for policy makers and academics. It elegantly combines insightful ideas with model and data, leading to a new model narrative that underscores the risks to inflation and to the current monetary policy framework.

My comments zoom in on some aspects of the paper in the hope of clarifying to the broader readership its contribution to the literature and its connection with the practice of central banking.

1. The Model

The paper develops a simple model of aggregate demand and supply to carry out a positive analysis of long-run inflation. How is this model different from models used in central banks? First and foremost, the model is designed to think about political economy pressures that central banks might face in response to changes in the environment; those political pressures are not part of central bank models (rightly so).² However – and this is the risk highlighted by the paper – political pressures, under certain environments, might affect the behaviour of central banks (or, stretching a bit the model, could eventually lead to changes in mandates and policy frameworks

¹ I would like to thank Richard Harrison, Enrico Turri and Iván Werning for helpful exchanges.

² It would be odd if, given their remits and the current institutional setting, central banks were to use a model in which, in some future, the central bank itself aimed off its own objectives or accommodated political pressures.

Conceptually, the model seeks to capture how long-run inflation can be affected by the interaction between economic factors (e.g., the degree of monopoly power in the economy) and central banks' preferences. In the stylised model, those preferences are represented by the size of the labour income share targeted by a central bank, with a higher targeted labour share representing more "dovishness". In practice, this specification can be mapped into the more familiar "weight" that central bankers (or, perhaps more broadly, the monetary policy framework, as reflected in their mandates) place on inflation stabilisation versus a secondary objective of output stabilisation: the more weight a central bank puts on output stabilisation (over inflation), the higher the degree of "dovishness".³

The model in this paper thus sits on a different layer of macroeconomic policy design, one that considers political economy risks. As such, it is distinct in its scope and ambition from models used by central banks; the latter are used for positive analysis to predict macroeconomic outcomes, or for normative analysis to optimise outcomes (e.g., the inflation path), given their mandates, over a finite (short-to-medium-term) time horizon. By design, central bank models would not forecast future changes in inflation generated by political pressures.

To be sure, central banks can and do of course incorporate changing economic trends (e.g., deglobalisation, market power or demographics) in their models. The BoE, for example, adjusted the potential productivity growth trend for the UK economy after the Brexit referendum as a result of the country's expected loss in openness; similarly, most central banks adjusted trend productivity growth after the financial crisis. But central banks' models, by design, do not feature changes in political pressures that might, as the paper argues, lead to changes in long-term inflation.

A second difference between this paper's model and the models used in central banks is its simplicity, which allows for a clear comparative static analysis of the steady state. While a strength for the long-term comparative statics, for the analysis of transitional dynamics, this simplicity might be a bit more costly. The paper's transitional dynamic analysis as well as the interpretation of particular inflationary episodes (such as the recent surge in inflation) could benefit from incorporating some of the features present in richer central bank models. Among other features, those models i) have more realistic lead-lag structures (with the aim of matching impulse responses in the data, including the fact that monetary policy's impacts the economy with a significant lag); ii) encompass a number of additional frictions (e.g., financial and labour

³ The labour share would map into "lambda" in, for example, Carney (2017)'s lambda speech.

market frictions, and in some versions, present bias or other forms of bounded rationality); and iii) allow for investment/capital, and more realistic open-economy dimensions.

The main modelling contribution of the paper lies in the derivation of the long-term aggregate supply (LRAS) and demand (LRAD) curves, rather than the specific shorter-term or transitional dynamics.

2. Modelling choices

The paper makes two important and realistic assumptions:

i) Non-zero inflation in steady state

A first assumption is that inflation can be non-zero in the steady state. This is a welcome feature of the analysis, consistent with targets of two percent in most advanced economies (and higher in many emerging or developing economies).

The model captures a tradeoff generated by inflation: on the one hand, higher inflation helps offset the distortion from monopolistic pricing, while, on the other hand, it leads to inefficient price dispersion, which causes a misallocation of resources. In highlighting that tradeoff, the paper connects to a literature on optimal inflation, going back to Tobin (1972)'s notion of inflation as the “grease in the wheels”: with downward nominal rigidities, some inflation could be beneficial in helping adjust real wages and relative prices.⁴

The paper emphasises that the slope of the *long-run* aggregate supply curve is positive. This is surprising: while the short-term tradeoff between inflation and the output gap is intuitive, it is less evident how the tradeoff can be sustained in the long run, as forward-looking agents adjust their expectations in response to central banks' actions. In New Keynesian models with rational agents and Calvo-price setting, the long-run Phillips curve is vertical or near vertical to a first-order approximation around a zero-steady-state inflation.⁵

On closer inspection, however, the LRAS formulation in the paper is also vertical or nearly vertical, as I explain next. To see this, note that the LRAS relation is given by the equation:

⁴ See also Adam and Weber, 2023; Adam et al., 2023; Coibion, et al., 2012; Guerrieri et al., 2021; Guerrieri et al., 2023). The model could potentially be extended in the future to carry out normative analysis on the policy framework, including the derivation of optimal targets.

⁵ It is vertical in the limit in which the discount factor goes to 1, corresponding to the parameter ρ in this paper going to zero.

$$\pi = \frac{\lambda(\rho + \lambda - \pi^*)}{\rho - \pi^*} \left[y + \frac{\varphi}{1 + \varphi} \log \mu + \log \frac{\sigma(\tau + 1)}{\sigma - 1} \right],$$

where the LRAS slope is given by $\frac{\lambda(\rho + \lambda - \pi^*)}{\rho - \pi^*}$; λ denotes the frequency of price adjustment; ρ is the household discount factor; and π^* is the long-run value of inflation.

The formula allows for the possibility of an exactly vertical curve or infinite slope. It also permits a backward bending Phillips curve. More generally, for reasonable numerical values, the resulting slope of the LRAS is very large in absolute values. Let us walk through some interesting special cases.

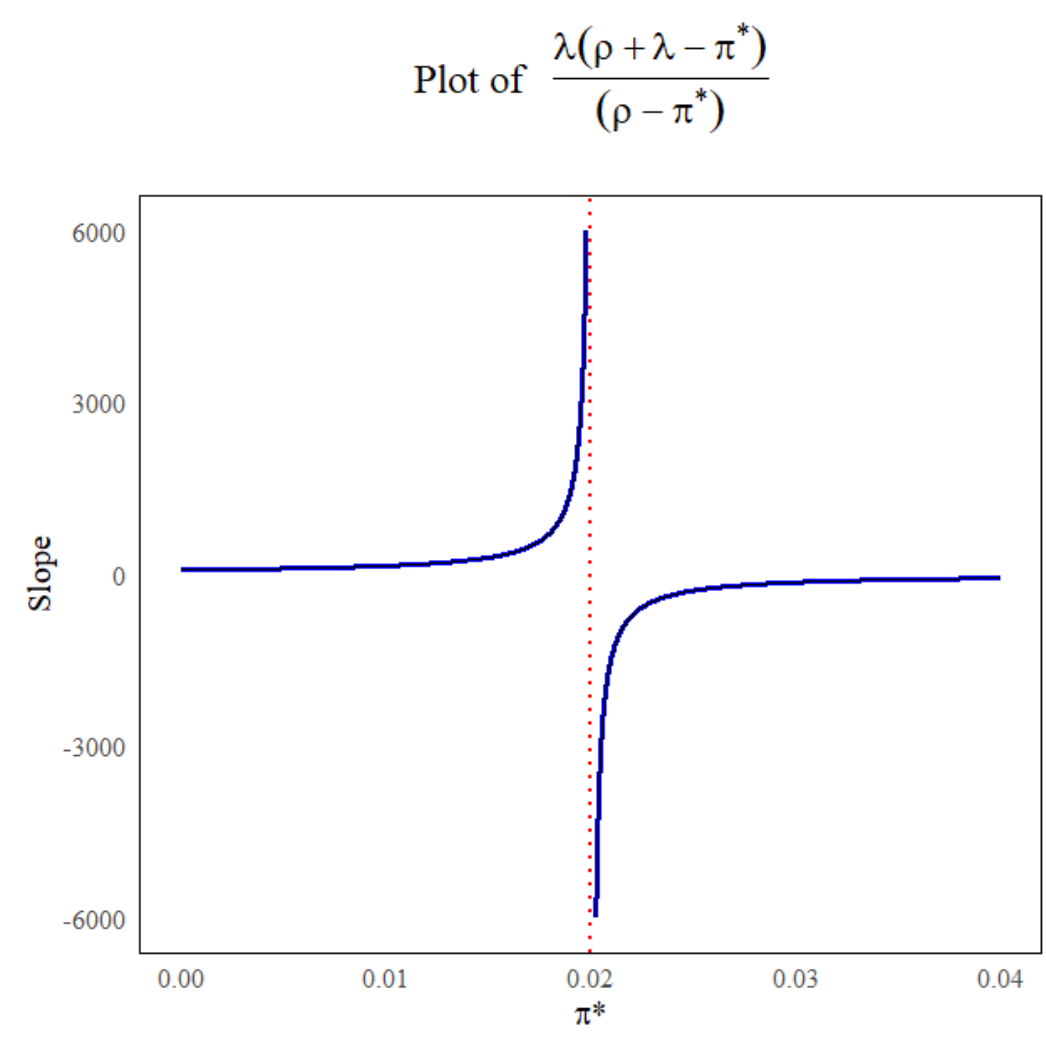
When $\pi^* = 0$, we have the more familiar expression for the long-term LRAS or structural Phillips curve slope, $\frac{\lambda(\rho + \lambda)}{\rho}$, which converges to infinity as $\rho \rightarrow 0$. For a positive steady-state inflation, $\pi^* > 0$, the LRAS becomes vertical as $\rho \rightarrow \pi^*$. The LRAS slope turns negative when both $\rho < \pi^*$ and $\lambda > \rho - \pi^*$.

More concretely, for a calibration of $\lambda = 1.2$ (as in the paper) and a discount rate of $\rho = 2\%$ (which seems reasonable), the LRAS slope becomes vertical at $\pi^* = 2\%$ and negative for $\pi^* > 2\%$, as illustrated in Figure 1.

The figure, however, masks what happens away from $\pi^* = 2\%$. Even before becoming infinite, the values of the LRAS slope are also very high, as shown in Table 1 for a range of selected π^* values and the same calibration of the other parameters as above. This implies that, in practice, the long-term tradeoffs are not, in a quantitative sense, feasible, as the LRAS is practically inelastic. (Note that given that as the LRAS variables are expressed in log deviations from their steady states, the slope corresponds to the inverse of the LRAS supply elasticity, implying a near-zero long-run supply elasticity.)

Varying ρ changes the point at which the LRAS becomes exactly vertical, so the calibration of this parameter is important. However, as before, the slope of the LRAS is still very high in absolute values even when away from the asymptote. For example, for $\rho = 4\%$, which is the value preferred by the authors, the LRAS is decidedly inelastic even at lower values of π^* , as illustrated in Table 1.

Figure 1. Slope of the LRAS as a function of steady-state inflation π^*



Note: The figure shows the slope of the LRAS for $\lambda = 1.2$ and $\rho = 2\%$ as a function of the steady state value of inflation, π^* . The slope passes to infinity at $\pi^* = 2\%$.

Table 1. Slope of the LRAS as a function of steady-state inflation π^*

π^*	LRAS slope	
	$\rho=2\%$	$\rho=4\%$
0.00%	73.2	37.2
1.00%	145.2	49.2
2.00%	∞	73.2
3.00%	-142.8	145.2
4.00%	-70.8	∞
5.00%	-46.8	-142.8
6.00%	-34.8	-70.8

Note: The table shows the slope of the LRAS curve for $\lambda = 1.2$ and $\rho = 2\%$ and $\rho = 4\%$ for selected values of steady state inflation, π^* .

Perhaps it is fitting to address a misconception regarding New Keynesian models. In general, these models do not automatically generate a zero-inflation steady state; there is nothing in the model that ensures convergence to a zero-inflation (or, two-percent-inflation) steady state: on the contrary, if the “wrong” policies are taken, inflation would end up above or below the two-percent target in the long term.⁶

Though the paper deviates from the zero-inflation steady state, it follows closely other assumptions made in the simple New Keynesian model. In that setting, any price dispersion is inefficient, following the assumptions of symmetric preferences, concave utility over varieties, and similar technology (and common shocks) across varieties. In a richer setting with multiple sectors subject to different shocks and different degrees of price rigidities across sectors, the concept of price dispersion and its implication of efficiency is more nuanced. To be concrete, when an uneven shock (say, to gas prices) hits sectors differently (e.g., restaurants are far more affected than grocery shops), one might expect an increase in price dispersion, reflecting the uneven impact of the gas price shock. The change in price dispersion in this case can be efficient – it is the outcome of the price system doing its job. (An optimising social planner would not want to fully stop those price signals, which facilitate the reallocation of resources in the face of shocks). The pandemic and the energy price shocks, are examples in which changes in relative prices (and dispersion) can be the efficient outcome (unlike in the simpler New Keynesian models); when combined with downward nominal rigidities, this can justify a temporary higher level of inflation.⁷

ii) Lack of commitment

A second assumption in the paper is lack of commitment. The word commitment has different meanings amongst academics and practitioners. In the jargon of the academic literature, commitment means that the central bank decides at time “0” a precise state-contingent policy

⁶ Another way to characterise this is that the model requires the specification of monetary policy behaviour (the monetary policy “rule”) to be consistent with the desired long-run inflation rate. Put differently, it is the monetary policy rule that determines inflation in the long run.

⁷ See Guerrieri et al (2021) and Guerrieri et al (2023).

path for the infinite set of future periods and states of the world. In the context of central banking, departing from the literature's definition of commitment is a realistic assumption, given that, in practice, central banks can only commit to their mandate and optimize outcomes over finite policy horizons. One could say that there is effectively discretion or rather "limited commitment" over a rolling period of, e.g., 3 to 5 years. Why not longer? Because current monetary policy board members cannot commit the decisions or votes of future board members.⁸ A perhaps more fitting description is Bernanke (2003)'s notion of "constrained discretion," which entails a middle-ground between the academic extremes of full discretion and commitment. This notion still requires a commitment by central bankers, both through words and actions to price stability (however defined in their mandates).

In discussing commitment with a broader audience, it is hence important to emphasise the distinction between the meaning in the literature (commitment to an infinite state-contingent policy path) and the common understanding by market participants and other practitioners for which the term commitment is typically reserved for the mandate: are central banks committed to their mandates? This commitment to the mandate in practice is still consistent with the optimal "discretion" outcome in the literature, as long as central bankers have realistic expectations of the output potential of the economy – more on this later. Importantly, as pointed out by Giannoni (2020), the period-by-period optimisation (or discretion) of a loss function (characterising the mandate) leads to a strict Taylor-type rule (which practitioners outside academia might call "commitment").

1. Central bank objectives

The paper assumes that the central banker in charge of policy seeks to optimise a social welfare function that considers all (possibly changing) distortions in the economy. In practice, central banks have much narrower mandates. Hence, a natural question is: can or do central banks aim off their narrow targets to improve social welfare?

⁸ One could regard some announcements by central banks as trying to commit future members' policy actions. The key question is whether such announcements are credible, given that different decision makers may be in charge when the time comes to make good on the promise. There is an intermediate equilibrium concept of "loose commitment" (in which the policymaker operates under commitment but with a constant per-period probability that previous commitments are abandoned). That may approximate central bank behaviour somewhat better in certain cases. In a more complex model with endogenous state variables, the "discretionary" policymaker at date t realises that their decisions can affect the state of the economy inherited by the date $t+1$ policymaker and therefore takes this into account. Since the same logic holds for the policymaker at $t+1$, the discretionary policy problem becomes dynamic and intertemporal. However, the policymaker at t cannot directly control policy actions in future periods and can only influence those policies via the effects on the endogenous state variables.

Regarding feasibility, while it is true that objectives of full-employment or output potential are not as precisely defined as inflation targets, there are two important lessons from central bank practice and theory, in particular from contributions of Barro and Gordon (1983) and Rogoff (1985), that can tackle the imprecision. The first is that central bank independence is a necessary condition for a sound conduct of monetary policy; the second is that central banks should target realistic estimates of the non-inflationary (or inflation-target consistent) output potential. A central bank aiming for a higher level of activity than what would be consistent with inflation at target is bound to fail in fulfilling its inflation remit. This is well understood within the central bank community today.

In the simplest version of the New Keynesian model, it is typically assumed that the fiscal authority can correct the monopoly distortion with a labour subsidy, so that the “flexible-price equilibrium level of output” is efficient. (See Gali, 2015, for a discussion of the efficient versus the distorted steady state.) But, realistically, absent the fiscal correction, central banks can only aim for the flexible-price equilibrium level of output, whether or not it is efficient. If a central bank aims to stimulate the economy beyond the inflation-target-consistent level of output (trying to offset distortionary markups, for example), that will lead to an inflationary bias and a persistent deviation from target.⁹

The threat of an inflationary bias is the reason why there is a big effort in central banks to estimate the target-consistent output potential.¹⁰ The inflationary bias is probably also why most central bank mandates give primacy to the inflation target over full employment, with some short-term flexibility in the face of temporary (supply) shocks.¹¹

A different question is whether it pays for central bankers to deviate from their narrow targets and attempt to offset distortions, improving welfare. In advanced economies at least, deviations from targets today are costly for central bankers. Their performance is constantly scrutinised by media, parliamentary bodies, market participants, academics, etc. And there is a body of expertise ready to detect attempts at deviations.¹²

⁹ And it is not obvious that the estimation errors should be one sided (always estimating output potential above the true level); central banks can make mistakes, but over time, as the estimation model’s performance is confronted with inflation outturns (and other outcomes), estimation and judgment would lead to convergence to the true values.

¹⁰ In the jargon of the literature, the target-consistent level of output corresponds to the flexible-price equilibrium level of output.

¹¹ The logic to that short-term flexibility is that, given lags in transmission, monetary policy cannot offset the shock immediately (and if short-lived, the shock might disappear before policy has full effect).

¹² Some would argue that it is much easier to detect and be penalised for missing the inflation target (vis a vis other objectives). given that inflation is easier to measure than abstract concepts like the output gap or full employment. Given how much people dislike inflation, this would be a deterrent even to the most populist leaders;

2. Changing environment

Of course, the main point of the paper is that the status quo could change. Political pressures may outweigh the pressure from public scrutiny and lead central bankers to aim for output above potential (in the model, a higher labour share) or a change in remits; or, perhaps, the changing environment might cause governments to remove or diminish central bank independence. This is the key question and challenge posed by the paper.

The paper is concerned specifically with changes in economic trends. It argues that globalisation and the fall in union power made lives easier for central banks, effectively lessening the tradeoffs between activity and inflation. In addition, lower indebtedness in the recent past (compared to now, and, most notably amongst emerging economies) meant that there was less of an incentive to inflate away the debt.

I would also note that in the 90s and early 2000s there were no big negative supply shocks, a very different scenario from the 70s and 80s.¹³ And certainly different from the early 2020s, which in a space of less than three years have witnessed a most remarkable concentration of rare events (particularly in Europe and the UK, where the energy-price increase alone, triggered by the Russian invasion of Ukraine, represented a shock comparable to, if not bigger than, the oil shock of the 70s.

Despite this, central banks around the world have been focused on returning inflation to target. In the UK, Consumption today is 2 percent below what it was before the pandemic. In the euro area, consumption is just above its pre-Covid level. The US economy is an exception, with consumption 11 percent above the pre-pandemic level, though still below pre-pandemic trends. There is no sign that central banks in advanced economies, or indeed in many emerging and developing countries, have tried to push consumption or output higher.

It is important in the discussion to distinguish between changes in trends (that eventually can be foreseen) and unexpected (trade-off inducing) shocks. In the first case, central banks would need to change estimates of potential (as they eventually did post-financial crisis or post-Brexit); the question in the paper is: will they? As for unexpected shocks, if it is an isolated event, the orthodox response would be to accommodate in part, making sure that inflation

markets might also penalise sooner or later such a move, making it costly for politicians to attempt to change remits or institutional frameworks.

¹³ While the financial crisis entailed a sharp loss in productivity, demand adjusted significantly, leading on net to a period of low inflation.

returns to target; but if shocks become so frequent that they change the trend in potential output, we are back to the first case – and the same question posed by the paper.

I turn now to the question of changing trends and the impact on inflation.

3. Globalisation and Markups

While the partial equilibrium effect of globalisation might be intuitive, the general equilibrium effects are less obvious. A standard conceptualization of globalisation, highlighted by Goodhart and Pradhan (2020), is that globalisation lowered the prices of imported goods, and to the extent that the process was gradual, it led to lower imported goods price inflation. However, in general equilibrium, this improvement in terms of trade also increased real incomes, rising private demand and pushing up services inflation. The impact on inflation is not a priori obvious.¹⁴ De-globalisation, conversely, should reduce real incomes and eventually demand, lowering domestic inflationary pressures. Indeed, globalisation peaked in 2008, but we had not seen a reversal on inflationary pressures during the 2008-2019 period. On the contrary, inflation kept undershooting targets and central banks did not need to raise rates.

The paper conceptualises de-globalisation as an increase in the level of markups, as the economy becomes less competitive. This leads to a contraction in supply, an intuitive partial equilibrium effect. Going beyond the partial equilibrium effect, in practice, this redistribution away from workers may lead to a reduction in aggregate demand if profits accrue to low marginal-propensity-to-consume agents. It is not a priori obvious that the net effect of these forces would be inflationary.¹⁵ But if as in the model, the central bank tries to keep the labour share constant (equivalent to trying to stimulate the economy over the new, lower potential level of output), that would be inflationary. The point to stress is that it is not about inflationary pressures from the trends themselves, which could be muted in general equilibrium by private demand responses – it is instead a matter of lower output and real incomes, which might lead central banks (or governments) to push for more stimulus. Though the distinction might sound academic, the key challenge is the political pressure stemming from lower potential growth.

4. Political pressures and the role of research

¹⁴ See Ambrosino et al (2024), who show the impact of deglobalisation depends on how demand responds to lower real incomes caused by higher import prices.

¹⁵ Sbordone (2007) studies the link between globalisation, markups and inflation. She shows how key theoretical channels cancel out, leading to a muted impact on inflation; her theoretical result is matched by limited inflationary effects found in the numerous empirical studies she discusses.

The risk in a context of low growth potential is that governments will put pressures on central banks to stimulate output.¹⁶ (An alternative motivation, not developed in the model, but mentioned in the paper, is that the pressure to inflate comes because of higher levels of indebtedness.) The pressure could materialise in different forms. Governments might undermine or take away central bank independence; or they could persuade central banks to aim off their inflation targets to stimulate the economy and/or inflate away the debt.¹⁷ Another manifestation of the pressure could be directly through a change in remit.

On the first possibility, there is probably near consensus amongst economists that undermining or taking away independence, or attempting to manipulate central banks would be a disastrous outcome. On the second option, there is a debate still unsettled on the optimal inflation target (e.g., Blanchard, FT Nov 2022); more generally, in a flexible inflation targeting regime, more debate is needed on how to stipulate the mandate in the face of unexpected supply shocks. This paper offers a useful model to frame that debate. More generally, there is a big role for academic and policy institutions (like Brookings) to play in this debate. After all, the academic literature (e.g., Barro and Gordon, 1983; Rogoff 1985; Alesina and Summers, 1993) was hugely influential in leading to central bank independence.

Concluding Remark

Let me conclude by emphasising that this is an important paper, underscoring a risk to central bank independence that we all need to take seriously. I hope the paper, and the risk it highlights, will be an important input in the exchange between academics and policy makers.

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¹⁶ See Drechsel (2023) for an empirical study of political pressures on the Federal Reserve Bank.

¹⁷ It is far from obvious that with so much knowledge accumulated over the years, central banks themselves would try to systematically aim off the level of output consistent with inflation at the new chosen target. But if, hypothetically, a political appointee reveals with words or actions that there is a new output objective inconsistent with the stated inflation target, that would likely trigger sharp market reactions, which would be costly to the government (especially a highly indebted one). So it becomes important to think about the sequencing that will make "turning dovish" a politically appealing option here is Julio Rotemberg's (2013) theory of "penitence" to consider: after the recent inflation overshoot and people's dissatisfaction with high inflation, the political bias will turn to run in the opposite direction.

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