

## Remarks Prepared for NBER Conference on “Inflation in the Covid Era”

May 17<sup>th</sup>, 2024

Richard Clarida

Lowell Harriss Professor of Economics and International Affairs  
Columbia University  
and  
National Bureau of Economic Research

Sharp and persistent surges in price inflation and the resulting overshoot of central-bank inflation targets were in 2021-22 a distinctive and distressing feature of the post-pandemic global economic landscape (Chart 1 top panel). More recently, underlying inflation in advanced economies appears to have peaked and has now fallen back to “2 point something” in most of them. Central banks that hiked rates aggressively in 2022-23 to get ahead of the aforementioned inflation curve (Chart 1 bottom panel) now judge that these hikes did ultimately push policy into restrictive territory and, given the sharp fall in realized inflation, are signaling that rates cuts later this year will likely be appropriate. Those of us who seek to learn something about cause and effect by studying cross country evidence are tempted to look for common factors to account for these observed correlations. I can think of at least three.

First, there is ample evidence to suggest that the initial surge of inflation across countries in 2021 and 2022 was triggered in part by an adverse shock to aggregate supply ([here](#) and Chart 2). Second, there was substantial (and, in the case of the United States, unprecedented) fiscal and monetary policy support, delivered first in 2020-2021, to cushion the blow to economic activity and employment, and then again in 2022 (especially in Europe), to offset the higher energy and food prices caused by Russia’s invasion of Ukraine (Chart 3).

Across the advanced economies, central banks responded to the COVID-19 shock by deploying various combinations of interest-rate cuts (or keeping rates at the effective lower bound), offering forward guidance, and expanding their balance sheets via large-scale quantitative-easing (QE) programs ([here](#), [here](#), and Chart 4). Also I note that, while correlation is not causation, it bears mentioning that there was much more of a correlation – at least in 2020-2022 – between the cross-country fiscal response to the pandemic and cross-country inflation than there was between cross-country growth in the monetary base and inflation ([here](#) and Chart 5).

A third common factor contributing to the post-pandemic inflation surge was a large and persistent change in sectoral-relative prices, especially the relative prices of goods versus services (Chart 6). Making this argument does not require one to take a stand on how much the initial increase in the relative price of goods versus services reflected demand versus supply. If the equilibrium price of goods goes up for whatever reason, the overall price level will go up unless the central bank wants to engineer a decline in the price of services. If there is some nominal price rigidity in the service sector, the central bank has a choice. It can allow the relative

price increase to pass through and accept a one-time increase in the price level (which in isolation would produce “transitory” inflation). Or, it can hike rates and throw people out of work to reduce the price of services sufficiently to keep the increase in the price index equal to the inflation target. In the event, central banks opted, at least initially, to accommodate the price pressures by not trying to offset the increase in the relative price of goods relative to services.

When considering the monetary-policy response to the 2021-2022 global surge of inflation, it is noteworthy that no advanced-economy central bank in this decade began to hike rates until headline inflation had already exceeded its target rate. Moreover, nearly all advanced-economy central banks - save Switzerland and Norway - delayed rate hikes until core inflation, too, had already exceeded their respective targets (Chart 7).

The question that many have asked is why monetary policies across most advanced economies “fell behind the curve” in this way ( [here](#)). Critics of the US Federal Reserve suggest that a persistent inflation overshoot, and a delay in lifting rates until inflation was already above target, must stem from a failure of the monetary-policy framework then in place, Flexible Average Inflation Targeting FAIT. But by this logic , the post-pandemic record summarized in Chart 7 would indicate a failure not only of FAIT but also of traditional inflation targeting IT as practiced in the Eurozone, the UK, Canada, New Zealand, Australia, and Sweden. And note that in Norway, even though the Norgesbank hiked preemptively once core inflation crossed 1 percent, the most recent readings on both core and headline inflation remain well above target.

I beg to differ. As I argue in a recent NBER Working Paper ( [here](#) ), the post-pandemic record in the US – and, I would argue, in other AEs as well - is better understood as resulting from errors of tactics and execution “in the fog of war”, not per se from the monetary-policy frameworks in place at these central banks at the time of the post pandemic surge in inflation. The Fed’s unanimously approved August 2020 framework Statement of Longer Run Goals and Monetary Policy Strategy – as was also the case for the original framework Statement adopted by the Fed in 2012 – is silent on how the tools of monetary policy are to be deployed to achieve the Fed’s dual mandate goals.<sup>1</sup> At the first FOMC meeting held after the new framework was adopted, the committee at its September 16<sup>th</sup> 2020 meeting approved muscular, threshold based forward guidance which stated that the Fed expected it would delay liftoff until inflation had risen to 2 percent and labor market conditions had returned to levels consistent with maximum employment. While this threshold forward guidance was of course not inconsistent with the Fed’s new framework, it was certainly not compelled by it. Indeed, two members of the FOMC who had voted in favor of the revised Statement of Longer Goals in August 2020 voted against

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<sup>1</sup> The relevant language in the August 2020 framework statement is “The Committee judges that longer-term inflation expectations that are well anchored at 2 percent foster price stability and moderate long-term interest rates and enhance the Committee’s ability to promote maximum employment in the face of significant economic disturbances. In order to anchor longer-term inflation expectations at this level, the Committee seeks to achieve inflation that averages 2 percent over time, and therefore judges that, following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time.’ “ This was not the first time the Fed had offered guidance that it would tolerate when at the ZLB a moderate overshoot of the 2% inflation target. For example in December 2012 the FOMC offered guidance that it would tolerate “inflation between one and two years ahead [that]is projected to be no more than a half percentage point above the Committee’s 2 percent longer-run goal, [as long as] longer-term inflation expectations continue to be well anchored.”

the September 2020 FOMC decision precisely because they felt it went beyond what was sufficient to achieve the goals outlined in the new framework.<sup>2</sup> Finally, I note that the stringent employment and inflation threshold requirements for liftoff that the Fed had agreed to in September 2020 were actually met by December 2021, just months after the liftoff date that a standard inflation targeting Taylor Rule – and also a FAIT consistent “shortfalls” policy rule without threshold requirements - would have signaled (Chart 8 and 9 and [here](#)).<sup>3</sup>

I will close with some brief remarks on the important topic of “lessons learned”. The final judgement on central banks’ policy response to the post pandemic surge in inflation will have to await knowledge of the destination for inflation and inflation expectations in this cycle. If as I fully expect, these central banks will do, if they have not done already, what it takes to return inflation over time to target and to keep inflation expectations anchored at 2 percent, then they will I believe fare pretty well when future monetary histories of the 21<sup>st</sup> century are written. The spike in inflation in 2021-22 will be interpreted as a one time price level shock (Chart 10) that central banks should have better foreseen but that was largely inevitable given the magnitude of the covid - shock to aggregate and sectoral supply, the land war in Europe, and the “all in” response from fiscal and monetary authorities that these shocks triggered which certainly ex post boosted aggregate demand well north of available aggregate supply. The rapid and so far relatively painless disinflation (Chart 11) will, if it continues, be seen as reflecting in part the unwinding and reversal of the adverse supply shocks that contributed to the initial inflation spike in the first place. I also believe, as I’ve argued in these remarks, that future scholars will look back on this period and will conclude that it didn’t reveal very much about inflation targeting versus flexible average inflation targeting frameworks or single mandate versus dual mandate central bank charters. Rather the lessons learned over time will be derived I think from an informed and rigorous assessment of the costs and benefits of the tools of forward guidance and QE as they were deployed this decade in their various and sundry permutations.

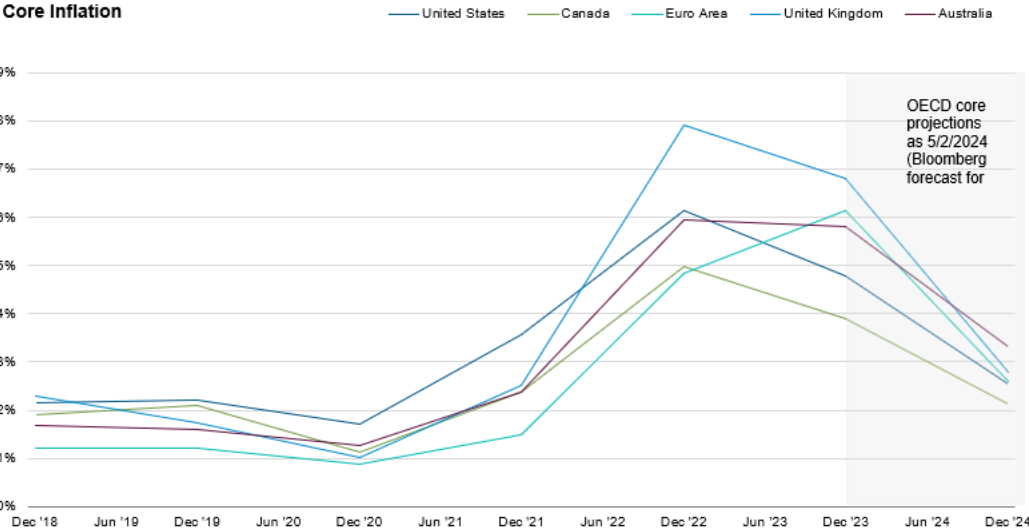
Thank you very much.

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<sup>2</sup> The FOMC in December 2020 also adopted forward guidance pertaining to the conditions under which it would begin to taper its QE asset purchases, stating it would not commence taper “until substantial further progress has been made toward the Committee’s maximum employment and price stability goals.”

<sup>3</sup> The FOMC’s revised Statement on Longer-Run Goals and Monetary Policy Strategy, released in August 2020, refers to ‘shortfalls of employment’ from the Committee’s assessment of its maximum level rather than the ‘deviations of employment’ used in the previous statement. The “balanced approach (shortfalls)” Taylor - type policy rule shown in Chart 9 reflects this change by prescribing policy rates identical to those prescribed by the balanced approach Taylor – type rule at times when the unemployment rate is above its estimated longer-run level as it was until December of 2021.

Chart 1



### Policy Rate Paths

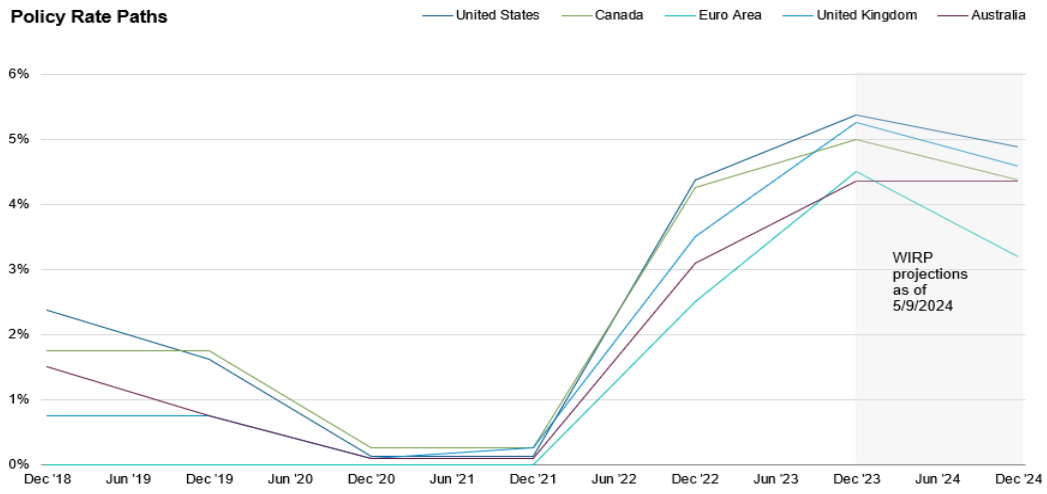
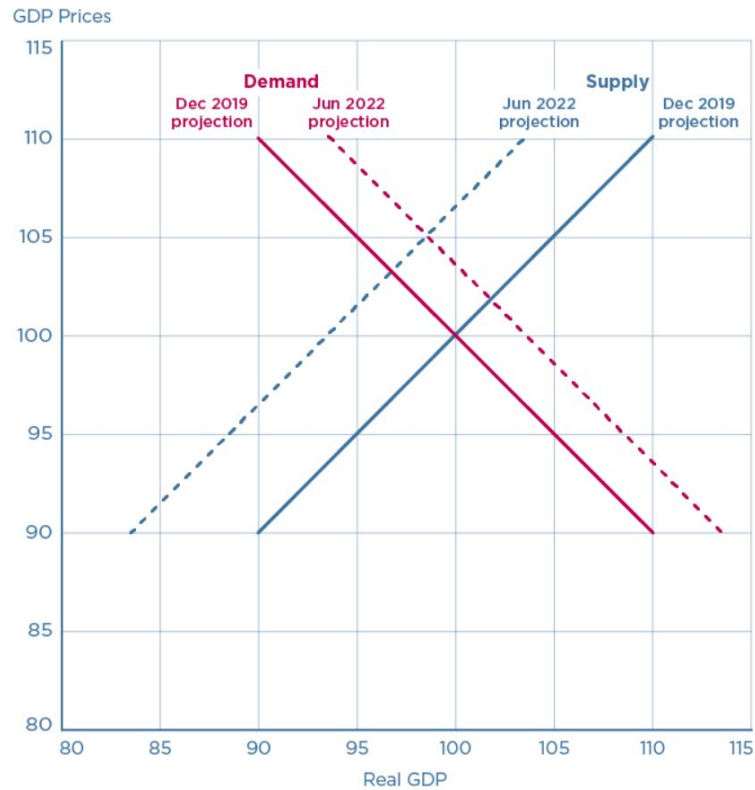


Chart 2

## 2022 US prices are higher and GDP is lower than anticipated as demand grew and supply shrank

Projections of 2022 US supply and demand



Source: Gagnon (2022) and OECD

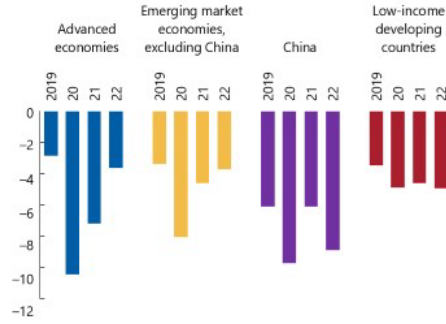
### 2020-22 cumulative deviations from December 2019 projections (percent)

Economy	Real GDP	GDP prices	Demand	Supply
United States	-1.4	5	3.6	-6.5
Euro area	-2.4	3.8	1.4	-6.2
Japan	-3.3	-2.5	-5.8	-0.9
United Kingdom	-2.4	5.9	3.6	-8.3

Sources: Organization for Economic Cooperation and Development, *Economic Outlook* databases (December 2019 and June 2022) and author's calculations.

Chart 3

National Budget Balances by Income Group, 2019–22 (Percent of GDP)

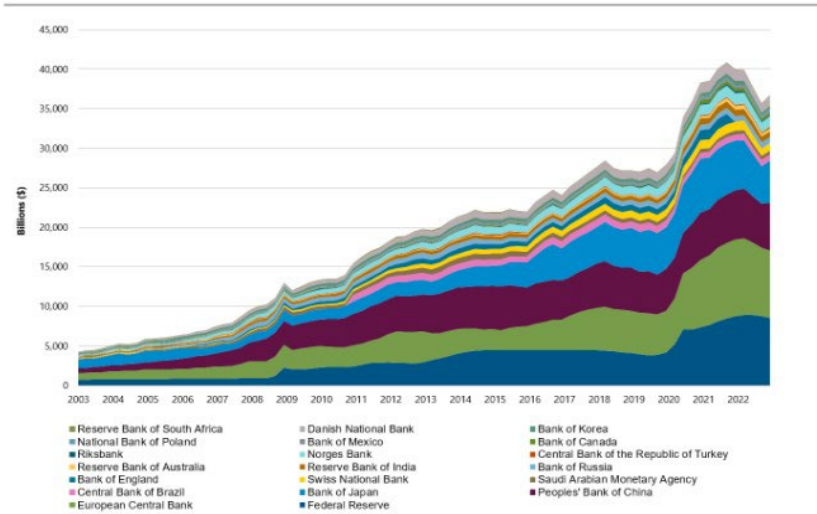


Source: IMF, World Economic Outlook.

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Chart 4

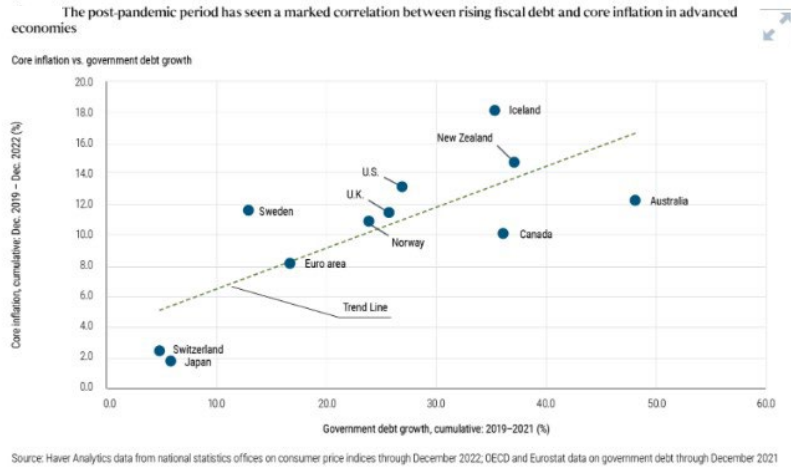
Global Central Bank Balance Sheets



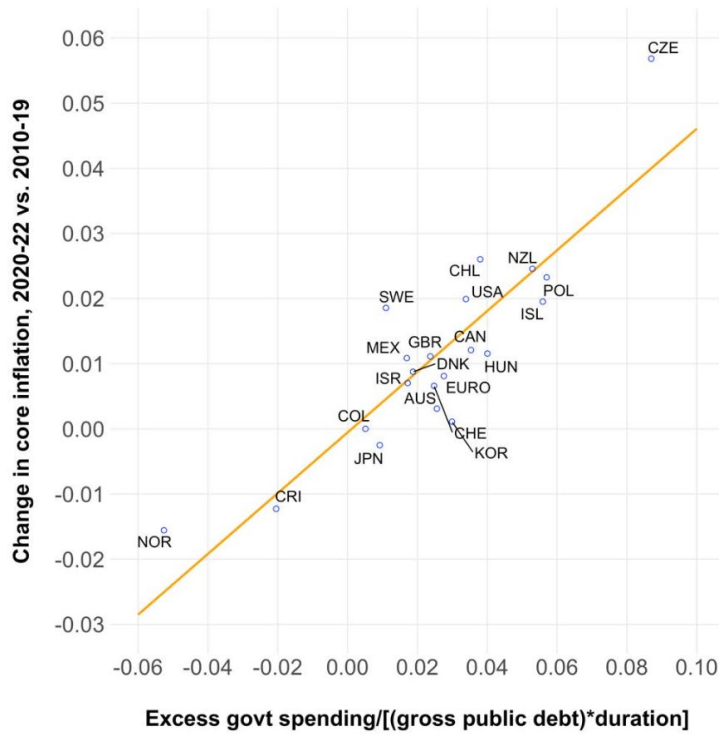
Source: Haver

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Chart 5



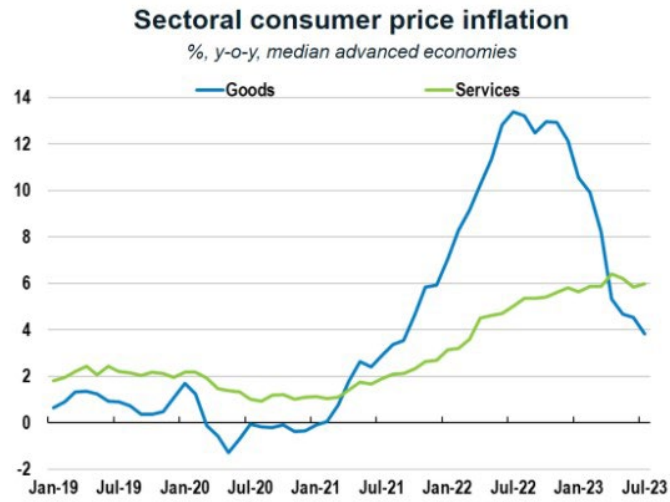
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Sources: Beck-Friis and Clarida (2023); Barro and Bianchi (2023)



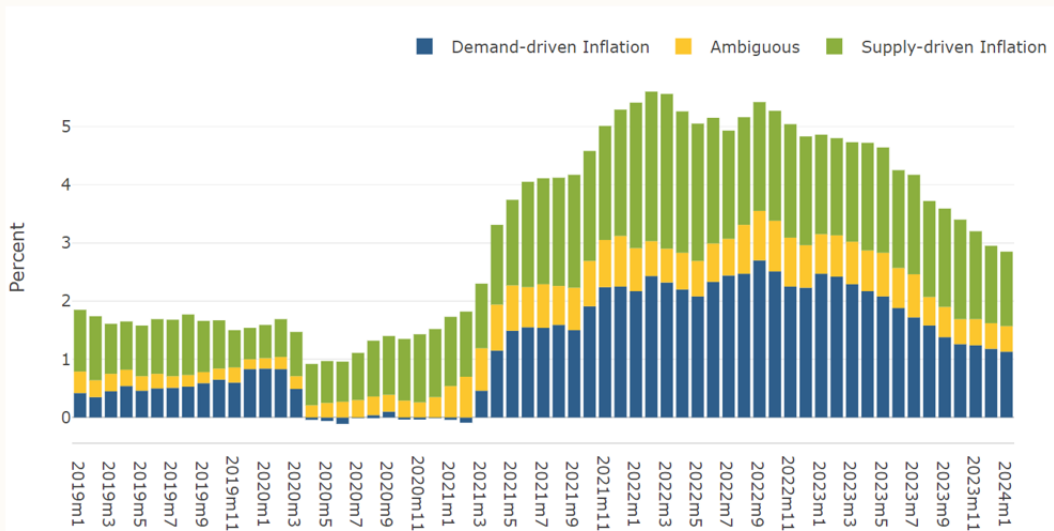
Chart 6



Source: OECD

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Supply- and Demand-Driven Contributions to Year-over-Year Core PCE Inflation



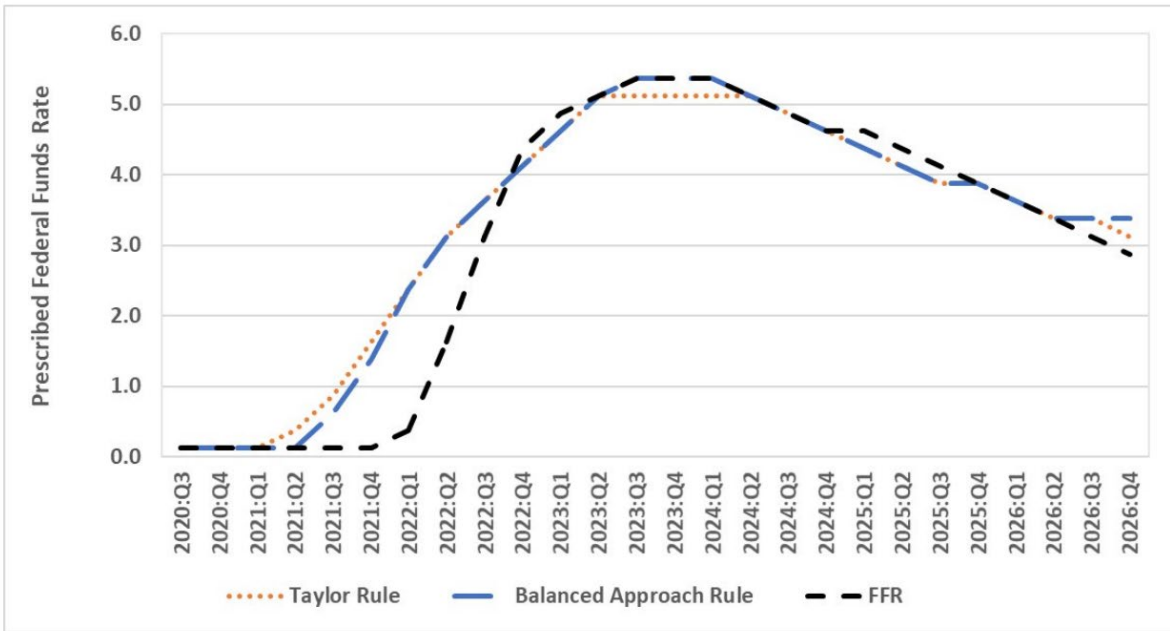
Source: San Francisco Fed

Chart 7

Country	Core CPI measure name	Reference rate name	Date of first rate hike post-pandemic	Core inflation print before first rate hike, %	First month core inflation above 2% + stayed	Headline inflation before first rate hike, %	Most recent core inflation (as of 5/9/2024), %	Most recent headline inflation (as of 5/9/2024), %
USD	Personal Consumption Expenditure Core Price Index YoY SA	Federal Funds Target Rate - Upper Bound	3/16/2022	5.57	3/31/2021	7.9	2.82	3.50
CAD	Bank of Canada Core Inflation Trimmed Mean YoY	Bank of Canada Overnight Lending Rate	3/3/2022	4.50	3/31/2021	5.70	3.10	2.90
NZD	RBNZ New Zealand CPI Sectoral Factor Model Tradable Core YoY%	Reserve Bank of New Zealand Official Cash Rate	10/6/2021	2.50	9/30/2021	4.90	1.70	4.00
NOK	Norway CPI Underlying (CPI-ATE) YoY NSA	Norway Deposit Rate Norges Bank Announcement Rate	9/23/2021	1.00	2/28/2022	3.40	4.40	3.60
EUR	Eurostat Eurozone Core MUICP YoY NSA	ECB Main Refinancing Operations Announcement Rate	7/21/2022	3.70	11/30/2021	8.60	2.70	2.40
CHF	Switzerland Core CPI YoY	Switzerland National Bank Policy Rate	6/16/2022	1.70	1/31/2023	2.90	1.20	1.40
AUD	Australia CPI Measures Trimmed Mean YoY SA	Australia RBA Cash Rate Target	5/3/2022	3.80	9/30/2021	5.10	4.00	3.60
GBP	UK CPI Ex Energy Food Alcohol & Tobacco YoY	UK Bank of England Official Bank Rate	12/16/2021	4.00	8/31/2021	5.10	4.20	3.20
SEK	Sweden Underlying Inflation Rate CPIF excluding Energy YoY%	Sweden Repo Rate (Decision Rate)	4/28/2022	4.10	1/31/2022	5.97	2.90	4.06

Source: Author calculation and Bloomberg

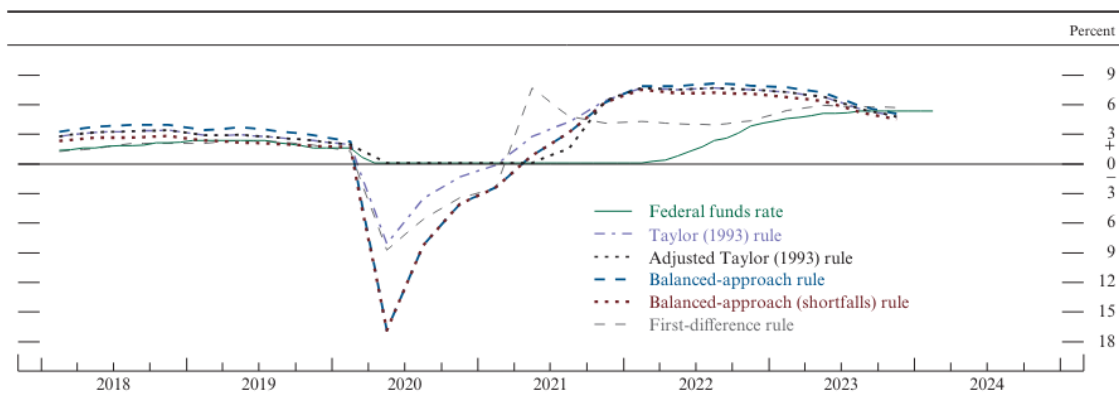
Chart 8



Source: Inertial real time Fed policy rules from Papell and Prodan (2024)

Chart 9

Historical federal funds rate prescriptions from simple policy rules



NOTE: The rules use historical values of core personal consumption expenditures inflation, the unemployment rate, and, where applicable, historical values of the midpoint of the target range for the federal funds rate. Quarterly projections of longer-run values for the federal funds rate, the unemployment rate, and inflation used in the computation of the rules' prescriptions are interpolations to quarterly values of projections from the Survey of Primary Dealers. The rules' prescriptions are quarterly, and the federal funds rate data are the monthly average of the daily midpoint of the target range for the federal funds rate and extend through February 2024.

SOURCE: Federal Reserve Bank of Philadelphia; Federal Reserve Bank of New York, Survey of Primary Dealers; Federal Reserve Board staff estimates.

Source: Federal Reserve Monetary Policy Report (March, 2024)

The FOMC's revised Statement on Longer-Run Goals and Monetary Policy Strategy, released in August 2020, refers to 'shortfalls of employment' from the Committee's assessment of its maximum level rather than the 'deviations of employment' used in the previous statement. The "balanced approach (shortfalls)" rule reflects this change by prescribing policy rates identical to those prescribed by the balanced approach rule at times when the unemployment rate is above its estimated longer-run level. However, when the unemployment rate is below that level, the balanced-approach (shortfalls) rule is more accommodative than the balanced approach rule because it does not call for the policy rate to rise as the unemployment rate drops further.

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Chart 10

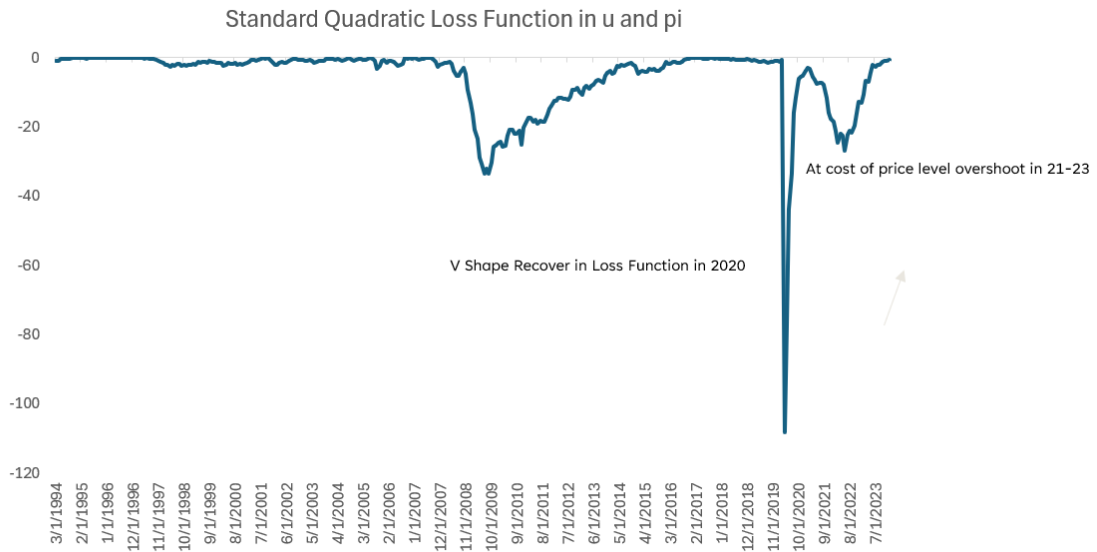


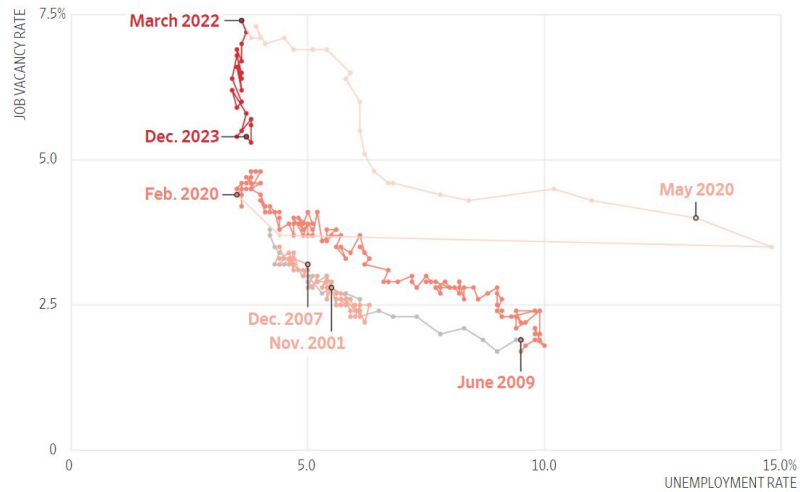
Chart 11

US Beveridge Curve

A Shifting Curve

Usually, the unemployment rate rises when the vacancy rate falls, and vice versa. The current cycle has been unusual.

The Beveridge curve



Source: Labor Department

Source: Wall Street Journal