Not the Fed Tealbook

The Central Bank of the Republic of Armenia

February 2024

Abstract

"Not the Fed Tealbook" simulates a state-of-the-art macroeconomic analysis and streamlined monetary policy note with limited resources. This provides a simple and accessible application of the Forecasting and Policy Analysis (FPAS) Mark II framework that incorporates uncertainty, nonlinearities, and Alan Greenspan's 2004 formulation of "monetary policy as a risk management exercise." This conceptual and analytical approach is applied to the US, given its importance in the global macroeconomy and the ready accessibility of data and analysis. The analysis features the key aspects of current stage monetary policy discussions, namely important nonlinearities in economic behaviors and the significance of endogenous policy credibility. The report also highlights the importance for central banks to be transparent about how they are effectively managing the inflation-output (employment) tradeoff in calibrating monetary policy.

Authors

Hayk Avetisyan, Vazgen Pogosyan, and Mariam Tchanturia and others*

*Other authors in the production of this working paper series include: Vahe Avagyan, **Sergo Gadelia,** Martin Galstyan, Giorgi Gigineishvili, Haykaz Igityan, Hayk Karapetyan, Asya Kostanyan, Douglas Laxton, Jared Laxton, **Shalva Mkhatrishvili, Ana Nizharadze,** Armen Nurbekyan, Angela Papikyan, **and Tamta Sopromadze**

Forward: What We Have Learned This Round?

Many people ask what exactly is this Forecasting and Policy Analysis System (FPAS) Mark 2 framework and how can it improve upon existing frameworks? To better understand how something works, it is good to see it in action which is one the reasons we have developed the Not the Fed Tealbook series.

The IMF describes the treatment of uncertainty as the frontiers of monetary policy communication which is something that FPAS Mark 2 tries to codify in its framework.[1] We believe the recent policy communication by the Fed is a good illustration where an emphasis on uncertainty could have created a more strategic policy communication in the aftermath of its policy decision.

At the end of the day, our internal Mock Monetary Policy Committee also decided to keep rates unchanged as the actual FOMC. However, we believe the communication strategy would be very different based on our analysis where we go through the FPAS Mark 2 exercise to develop the best cases for why the path of the policy rate would need to be higher or lower than what is currently priced-in financial markets.

Based on this type of analysis where we think about a set of plausible scenarios and in this case present an illustrative scenario where the economy continues to grow above potential with aggregate demand outstripping aggregate supply contributing to demand-driven inflation coupled with the ongoing conflict in the Red Sea that could begin to feed into higher traded goods prices. These types of scenarios also happen to deviate wildly from current market expectations which do not expect an increase in policy rates in the near future.

Subsequently, in its latest policy statement, the Fed removed its more hawkish language around "additional policy firming" being needed at a time when the market was already pricing a very optimistic dovish scenario for the policy path. Essentially, de-emphasizing the inflation risks that would require higher interest rates.

In our version of the monetary policy statement, instead of softening the language around a future where higher interest rates would be needed, we would rather reinforce that language and make it even stronger until those risks have truly dissipated. We believe this communication strategy would reduce the risk of the Fed experiencing what is otherwise known as an "inflation scare" where the entire yield curve shifts up as it did in the 1970/80's in response to inflationary pressures materializing in the economy.

We do this because we also believe the US economy is sitting in a precarious position where both fiscal and financial stability are in questionable states if monetary policy cannot achieve its objectives in a timely manner. We call this predicament the "corridor" for policy and this corridor seems to be narrowing over time and therefore monetary policy likely needs to be more resolute in its communication strategy towards upside risks to inflation.

---

[1] Technical Assistance Handbook, Monetary Policy Frameworks, Central Bank Communications, Prepared by the Monetary and Macroprudential Policies Division (MCMMP): Marco Casiraghi and Leonardo Pio Perez, January 2022

Table of Contents

Monetary Policy as Risk Management Framework

Statement of the Mock Monetary Policy Committee

Monetary Policy Outlook in a Nutshell

Economic Developments and Risk Assessment

Appendix

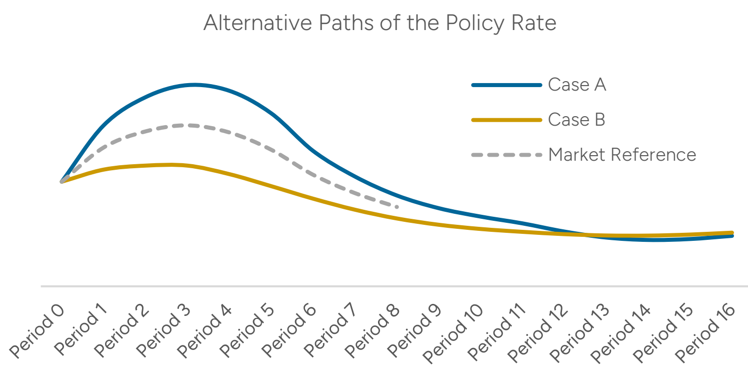
Monetary Policy as Risk Management Framework

Our framework for monetary policy is through a lens of risk management to analyze and communicate the uncertainty surrounding the economic outlook more effectively. Our approach is to consider alternative scenarios for the evolution of the economy that have important implications for monetary policy. Elevated uncertainty is a reality that central banks must manage, and we do this by explicitly incorporating it into our analytical process and communication. We develop and analyze two or more illustrative scenarios that would imply a higher or lower path for interest rates than what is currently priced in financial markets. These scenarios should not be interpreted as pure risk scenarios but are meant to represent plausible paths for policy rate that could be in an individual's baseline scenario.

- **Market Reference** is the expected path of the policy rate that is currently priced in financial markets.

- **Case A** reflects a scenario that incorporates economic and financial developments that would require a higher interest rate path than what is currently priced in financial markets that is consistent with guiding the economy back to its long-run equilibrium.

- **Case B** reflects a scenario that incorporates economic and financial developments that would require a lower interest rate path than what is currently priced in financial markets that is consistent with guiding the economy back to its long-run equilibrium.



Illustrative purposes only

Why a scenario-based approach to risk management?

To conduct monetary policy in a highly uncertain environment, we believe that Board decision making, and communication are more effective when this uncertainty is recognized at the beginning of the process and incorporated throughout, rather than starting with competing baseline forecasts offered by different Board members and attempting to reconcile them to achieve a consensus decision.

Since the primary mechanism for the transmission of monetary policy is through the expected path of the policy rate, our alternative scenarios are constructed around the market reference path. We believe the approach will lead to a more constructive discussion among Board members because they will focus on whether the market interest rate path needs to be nudged in a particular direction to best achieve the objective of price stability. Case A and B scenarios will be plausible but will differ from the scenario underlying the market reference path because they will illustrate the impact of different risks and uncertainties.

These alternative illustrative scenarios will provide a consistent and useful backdrop that will allow Board members to express their views flexibly and qualitatively about the appropriate path for the policy interest rate given the uncertain outlook.

Through the presentation of multiple scenarios relative to the market expectation, the central bank will not only be able to better communicate the uncertainty they are confronting, but also more effectively nudge market rates in the direction of the scenario that better balances these risks and uncertainties.

Statement of the Mock Monetary Policy Committee

The Mock Monetary Policy Committee (MMPC) seeks to achieve an inflation rate of 2 percent over the medium term. In support of this goal, the MMPC decided to maintain the target range of the federal funds rate at 5.25-5.50%. While core PCE inflation declined sharply to 2.9% in December, sticky price inflation remains far more elevated at 4.6%. The MMPC remains concerned about strong economic activity and underlying inflationary pressure posing upside risks to inflation, which outweighed financial instability concerns and bank lending tightness. In the view of the MMPC, we believe given the strength of the real economy that it must take primacy when thinking about monetary policy setting and achieving long-run macroeconomic stability. Giving up on our macroeconomic objectives too soon may present an even greater threat to the financial system if not dealt with in a timely manner. That said, we are cognizant of tighter credit standards that may simply take more time to feed through the system given distortions around household balance sheets, namely excess savings, and real wealth accumulation during COVID.

To be confident that we are on the path towards achieving our objectives of sustainable full employment and inflation target, we need to see a material slowdown in demand. When the MMPC began raising interest rates in March 2022, we were hopeful that by this time we would start to see a material slowdown in broad economic activity and labor market that is consistent with bringing inflation back to 2% i.e. below potential growth. Even though interest rates have clearly impacted sectors such as housing, the economy continues to grow at or above potential, even showing signs of acceleration recently. Considering some time lag involved in the transmission of past interest rate increases to the real economy, the MMPC should be assured that the policy response is sufficient to stabilize demand.

We find it hard to believe that wages can fall without more cooling of the labor market. The labor market remains secularly tight with an unemployment rate of 3.7% in an environment where there are more than 1.4 job vacancies for every unemployed person. Wage inflation continues to be stubbornly high and poses the main challenge for bringing down underlying inflation in the economy that is consistent with the target.

Long-term inflation expectations remain anchored; however, the longer inflation remains elevated the greater the risk of de-anchoring becomes. The disinflationary forces in goods and commodity markets in the second half of 2023 was a strong motivating factor for being optimistic about lower underlying inflation and the belief that the Fed Funds rate was positioned sufficiently tight, however, different measures for underlying inflation have had a more difficult time to disinflate and remain uncomfortably elevated and could require a higher policy rate than what is priced in financial markets.

The MMPC considers a host of different scenarios and that are guided in part by a policy strategy of least regrets that avoids more punitive interest rate increases in the future that would jeopardize our ability to engineer a smooth return of output and inflation back to their long-run objectives. Weighing the risks between inflation becoming entrenched or financial hardness triggering prolonged recession, the MMPC has voted to maintain policy tightness to achieve our objectives sooner rather than later and will re-evaluate policy based on the scenarios presented in this report.

Monetary Policy Outlook in a Nutshell

Preface: Looking at the data today, one can come up with different interpretations to derive plausible scenarios for the economy that move in very different directions, in other words, uncertainty around the future path of policy interest rates required to achieve our objectives remains substantially high. Therefore, the choices and magnitudes behind the different case scenarios are meant to reflect a range of plausible scenarios that different policymakers should consider both in terms of their "most likely" and "most concerned" or risky path of the economy. These two dimensions, likelihood and concerning risks, together comprise the background of the risk management approach with "least regret" as a decision-making model. These scenarios are meant to play a role for managing these different risks in real time depending on which mix of risks materialize. Furthermore, by taking these alternative viewpoints seriously and developing them in a structured way, we hope it will help policymakers and analysts have more productive discussions and help financial markets manage uncertainty more accurately.

Global Economy: The GDP growth outlook is expected to slow as growth prospects in advanced countries remains subdued as energy and productivity shocks stemming from the conflict in Ukraine continues to weigh on growth in 2023, especially in the Euro Area. The ongoing conflict in the Middle East is another factor in this direction. At the same time, although after ending the zero-COVID policy China was projected to apply some upward support to global growth, the unexpected slowdown of economic activity in recent months point towards a more fundamental structural issues in the second-biggest economy in the world, particularly evident in the real estate sector. Indications of further moderation in the global economy are also evident in the PMI indices, notably for the EU and advanced economies in large, however, it is important to exercise caution as survey-based data can be deceptive.

The substantial increase in uncertainty related to the Red Sea crisis has amplified volatility in commodity markets and could reapply pressure on supply-chain related inflation that partially defined the COVID-era period. Furthermore, given that the oil market is relatively balanced, modest changes to demand or supply could easily begin outstripping the other and apply pressure on oil prices in either direction.

Domestic Economy: The economy experienced another robust annualized expansion of 3.3% in 2023Q4 after growing by 4.9% in Q3. Consumer spending, a key driver again, surged by 2.8% exhibiting broad-based growth across various sectors. Concurrently, government spending grew by 3.3% decelerating from 5.8% in the previous quarter. Non-residential and residential investments continued to grow though at a more modest pace. The strong household balance sheet and high wage growth are expected to further support private consumption and domestic demand. The surge in consumption suggests the economy is operating above capacity, while the risks of a recession in the upcoming quarters remain somewhat elevated on the back of tighter financial conditions.

Labor Market: Wage growth has stabilized above 5% YoY over the past several months which if sustained would present a problem for monetary policy to bring inflation back to target as it supports underlying inflation remaining structurally above the 2% target. Furthermore, the high number of job vacancies to each unemployed person makes it reasonable to expect wage inflation could remain elevated until the labor market cools much more than it has either through announced layoffs materializing or tighter credit conditions.

Inflation: There is a major disconnect between different measures of core inflation that can offer a very different perspective on the underlying conditions in the economy. The disinflationary effects originating from commodities are gradually fading away, whereas services inflation demonstrates higher persistence. The major concern at this point continues to come from the labor market, where the higher wages are expected to contribute to elevated sticky price inflation. Meanwhile, recent housing market indicators hint at a continued increase in the median asking rent of new vacant units suggesting a sustained disinflationary outlook for new rent prices might be premature at this stage.

Financial Markets: The market pricing of the Fed Funds rate has encountered considerable volatility, reflecting the challenges faced by markets in balancing the possibility of a stronger-than-expected economy on one side and a potential, perhaps less probable than before, credit crunch on the other. 10-year bond yields have dropped significantly over the last quarter and are hovering around 4.0% currently. Considering certain reasonable assumptions from the pre-COVID era, taking also into consideration the significant increase in government debt burden, rates could decrease even further if the economy achieves a soft landing. Conversely, under a “new regime” where inflation remains persistently high and fiscal policy stays expansionary, coupled with the unwinding of quantitative easing pushing the term premium higher, rates could rebound. Issues connected to the possible tradeoff of whether the financial sector is prepared to deal with a higher interest rate environment while the macroeconomic disbalances continue to jeopardize price stability reflect the policymaker’s main fears. In particular, the analysis around the neutral interest rate needs to be in focus as it will be a defining feature of the uncertainty landscape for years to come as we exit the high inflationary period. Will the neutral rate be what it was prior to the pandemic or has something structurally changed?

Monetary Policy: The recent signs and risks of an acceleration in inflationary pressure underscored by surging consumption and a tight labor market would necessitate keeping tighter monetary conditions for a longer horizon (Case A-type scenarios). However, when looking at core PCE inflation and considering potential output could be structurally higher with a lower NAIRU could mean the real economy is closer to its long-run equilibrium and this would imply a faster return of the policy rate to its neutral level (Case B-type scenarios).

Despite high uncertainty about the possible scenarios how most of the discussed factors would evolve in the future, monetary policy should emphasize the importance of prioritizing the real economy for long-term macroeconomic stability, while also acknowledging the need for tools to address financial stability.

Domestic Output

Higher Inflation Considerations

Expansionary Demand: Consumer demand remains strong and fiscal spending remains expansionary.

Contractionary Supply: Oil prices and traded goods inflation could be negatively affected by the ongoing conflicts in the Middle East.

Lower Inflation Considerations

Contractionary Demand: The rise in the net percentage of banks tightening credit standards may lead to a sizable credit crunch that would have recessionary effects.

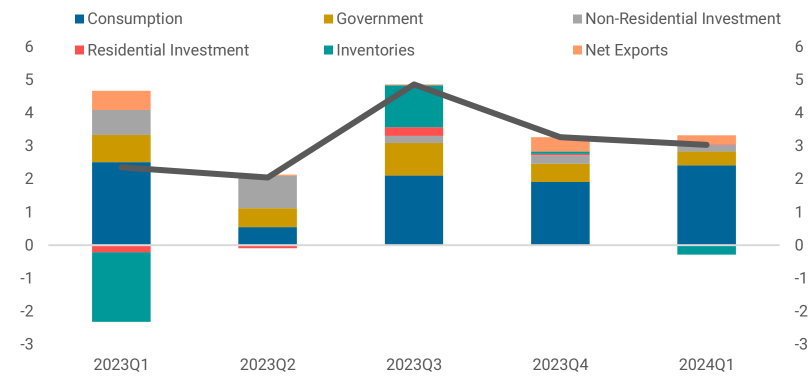
Expansionary Supply: Manufacturing production ramping up again after a year of decline as the goods sector normalizes post-COVID.

Real GDP

GDPNow has consistently been expecting above potential growth and this looks to continue in 2024Q1 with most sectors contributing positively to output. In particular, consumption remaining strong could jeopardize the recent disinflation story and contribute to upward demand pressures.

There are a variety of reasons why the economy could continue growing rapidly that are both inflationary (excess savings, wealth accumulation, high wage growth) and disinflationary (mainly a sustained increase in productivity).

Figure 4: GDPNow Estimates 2024Q1 GDP Growth to Remain Strong at 3% as We Ended 2023 on a High Note, Well Above Estimates of Potential Output

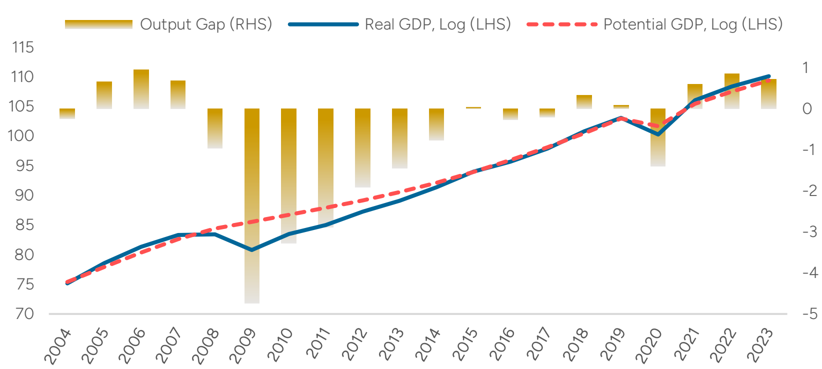


Source: FRED, Atlanta Fed GDPNow

Output Gap

The economy remains in a relatively hot position with aggregate demand continuing to outstrip aggregate supply. However, the fact that we have seen inflation fall rapidly in certain parts of the economy despite growth remaining well above potential suggests that we may want to revise our real-time estimates of potential higher to reflect a stronger underlying and more productive economy. One reason for this could be the potential impact from the broader adoption of artificial intelligence evident in the increase in usage of data centers.

Figure 5: The Output Gap is Estimated to be Positive as Long as Growth Remains at or Above 2%



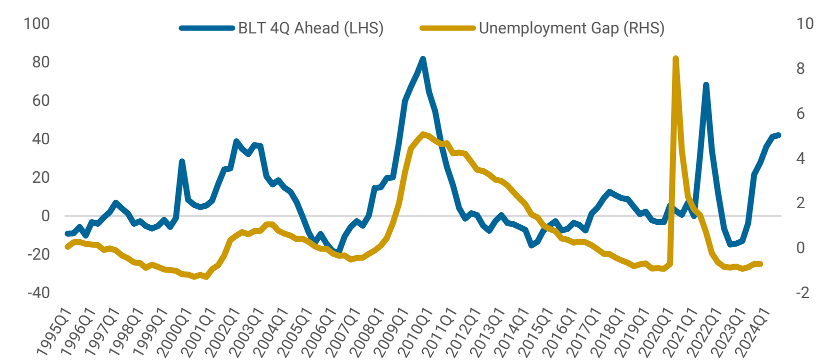
Source: Staff estimates

Bank Lending Tightness

A contraction in demand will broadly revolve around how tighter bank lending conditions will feed into slower economic growth which has yet to materialize on a broad scale.

The Bank Lending Tightness index, which has been a reliable leading indicator of economic downturns would suggest that we should have seen some slowdown or deterioration in the real economy in 2023Q4. However, this has yet to be realized but we would be hesitant to say the risks of a recession have diminished markedly.

Figure 6: The Bank Lending Tightness Indicator Still Suggests Bank Lending Conditions Are Tight



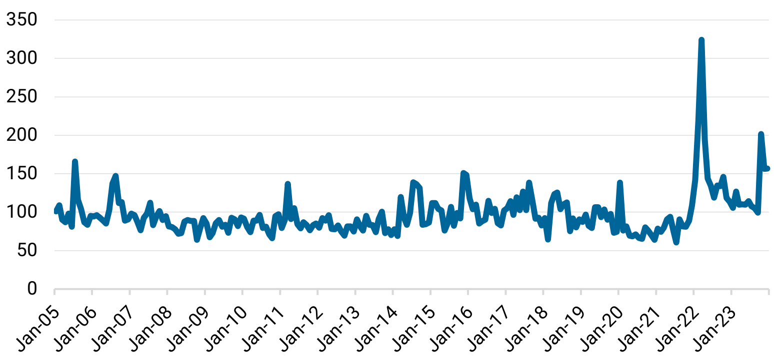
Source: Staff estimates

Box 1: Case X Scenario, The Red Sea Crisis

Geopolitical Risk

Risks for escalation rise as potentially more and more regional countries enter the conflict. Geopolitical risk, especially in areas that threaten global trade, has the potential to push the global economy back into a high inflation environment when there is ongoing generalized excess demand conditions.

Figure 1a: Geopolitical Risk Rising as of December 2023 Based on the Share of Articles Discussing Adverse Geopolitical Events



Source: Caldara, Dario and Matteo Iacoviello (2022), index normalized to 100

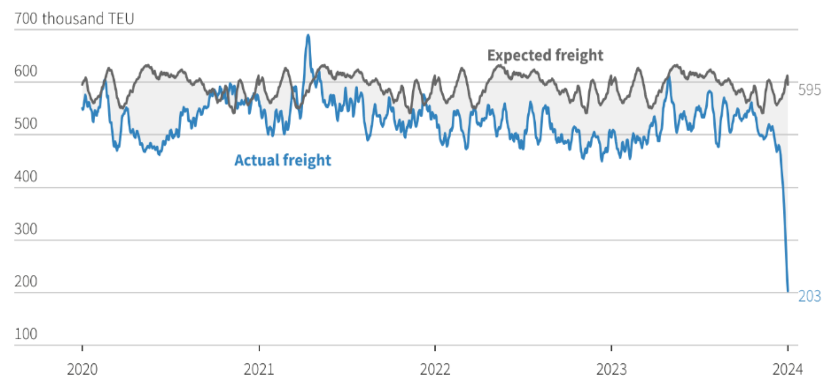
Global Supply Chain Disruptions

If the Red Sea conflict were to escalate or persist then we would continue to experience global supply-chain disruptions and costs would begin to feed into traded goods prices.

The Red Sea handles over 10% of all goods (and ≈30% of global container traffic). However, since the Houthis began launching missiles, its shipping volumes have dropped to just 30% of normal levels.

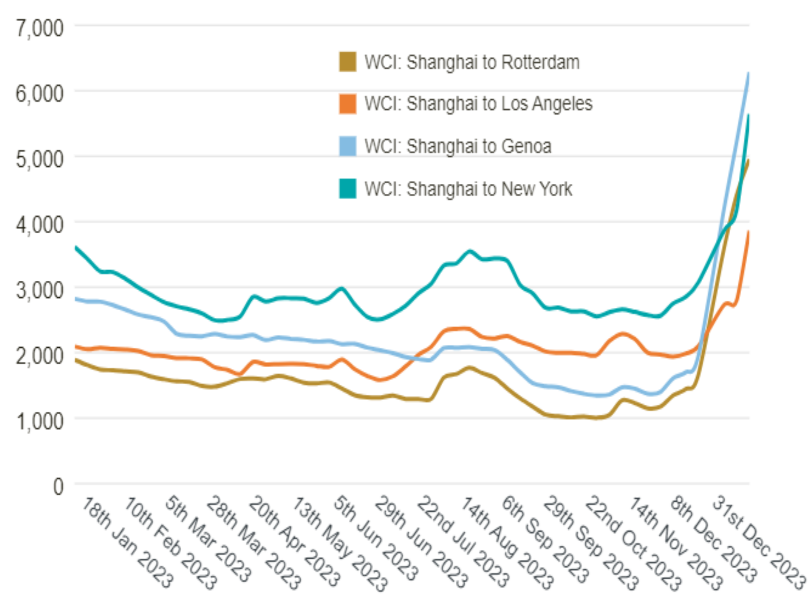
We have already seen a noticeable increase in delivery times & transportation costs. Based on a recent study by the IMF (Ostry) Disinflation in traded goods has been the driving factor of the overall disinflation story in 2023 while service inflation has remained elevated. If traded goods inflation were to start rising again monetary policy may need to respond more aggressively than it normally would if underlying inflation in the non-tradeable sector was better anchored to the target.

Figure 1b: Red Sea, Container-freight Capacity, TEUs, 000s



Source: Kiel Institute

Figure 1c: Drewry WCI: Trade Routes from Shanghai (US$/40ft



Source: Drewry Supply Chain Advisors

Box 1: Case X Scenario, The Red Sea Crisis

A Stagflationary Scenario Based on Continued Disruptions in the Red Sea

We prepared a special scenario that would help steer a monetary policy strategy if the conflict along the Red Sea were to persist.

The scenario serves as a way for the central bank to help communicate to financial markets the risks of monetary policy ahead of time and present a contingency plan if these risks are realized.

Scenario Description: Traded goods inflation begins to accelerate. The economy is in a state of general excess demand and therefore, non-traded sticky price inflation stays around current levels that are well above target. Overall inflationary pressure is moving towards 4%.

Under these conditions, to get ahead of the inflation curve once and for all, interest rates must rise more aggressively from another price shock since the risks of higher inflation becoming embedded in the economy are much greater at this point it time.

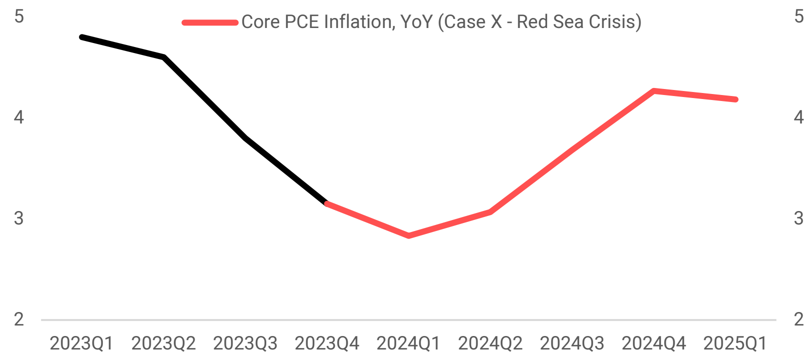
A Corridor for Achieving the Inflation Objective without Threatening Fiscal or Financial Stability

We want to make it very clear that in response to any new price shock, the central bank is prepared to raise short-term interest rates high enough to anchor inflation to 2%. Getting the economy back to its long-run equilibrium in a timely manner is our best option to support fiscal and financial stability.

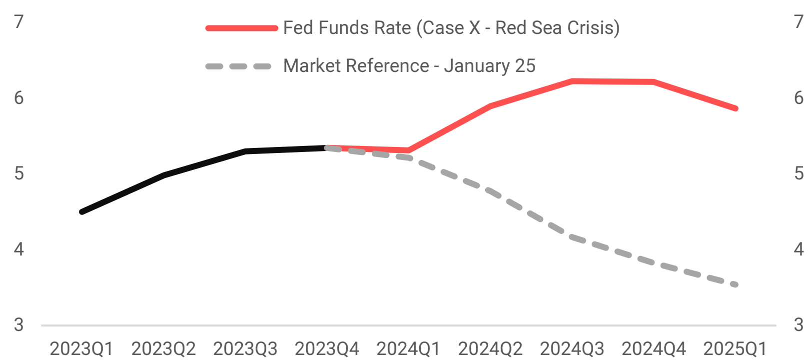
This corridor strategy intends to avoid an inflation scare at all costs where the yield curve shifts higher due to a higher inflation premium getting priced in. Therefore, it is important that financial markets understand our commitment to respond faster to higher inflationary forces than normal given the current position of the economy.

The other part concerns the implications of prolonged higher interest rates where the real interest rate exceeded the real growth rate. This sentiment was echoed by Chair Powell's 60 minutes interview that it was time we had an "adult conversation" about fiscal sustainability.

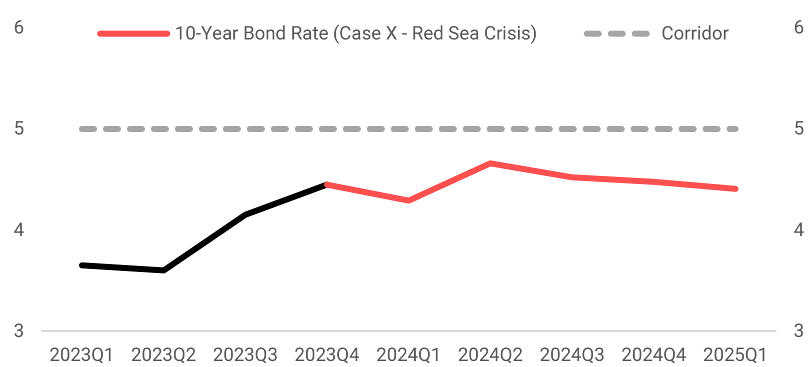
Core PCE Inflation Rises Based on a Sustained Conflict on the Red Sea



Given Generalized Demand Conditions, Another Stagflationary Shock Needs to be Responded to in a Timely Fashion otherwise we Risk Higher Inflation Becoming Embedded



However, we Must be Cognizant of Existing Vulnerabilities of Higher Interest Rates on Fiscal and Financial Stability. Can the Economy Absorb Higher Long-term Rates Near 5% for Too Long?



Labor Market

Higher Inflation Considerations

Expansionary Demand: A tight labor market persists, and wage inflation remains elevated especially among the lower income quartile whose excess savings have become depleted.

Contractionary Supply: Bottlenecks persist especially among the lower income half of the wage distribution keeping upward pressure on wage growth. The UAW strike was an example.

Lower Inflation Considerations

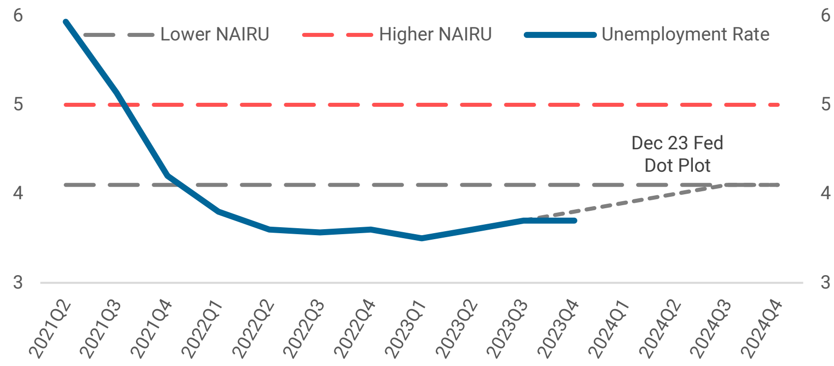
Contractionary Demand: Unemployment rises rapidly. The WARN act layoff announcements are realized.

Expansionary Supply: Beveridge curve shifts back to its pre-pandemic position suggesting a lower estimate for NAIRU than what is currently assumed.

Unemployment Rate

The unemployment rate remained low at 3.7% through December 2023. Regardless of one's estimate of the NAIRU, the current unemployment rate remains below most estimates. Currently the Fed estimates NAIRU at 4.1% however, this poses a substantial risk for policymakers if the NAIRU is in fact much higher than currently judged. In this scenario, the disinflation in the goods market would dissipate and broad-based inflation would reassert itself going forward consistent with an exceptionally tight labor market.

Figure 7: The Future Unemployment Rate is Dependent on Where the NAIRU is Which is Highly Uncertain

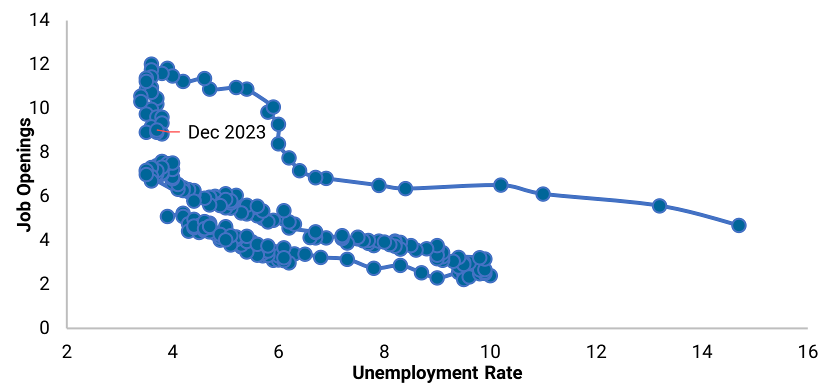


Source: FRED, Staff projections

Beveridge Curve

The case for a higher NAIRU reflects developments in the ratio of job openings and unemployed. A noticeable outward shift occurred during the COVID-pandemic. Although it is known that Beveridge Curve's shift out during recovery phases, we also know that they can become stuck which would be associated with a higher NAIRU and unemployment to bring the economy to equilibrium. At the moment, it looks as though the curve has largely shifted back to its pre-pandemic position suggesting estimates of the NAIRU based on the Beveridge curve is lower.

Figure 8: The Beveridge Curve Inching Closer to Its Pre-pandemic Position Could Give Credence to a Lower Estimate of the NAIRU

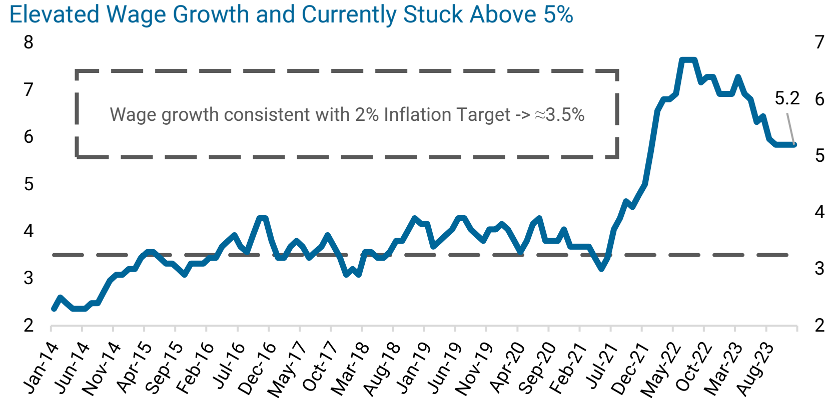


Source: FRED

Wages

We have had elevated wage inflation for several months now and the question is whether wage inflation will continue to moderate where we can be confident that the labor market is consistent with the inflation target? Since September, wage inflation has been stuck above 5% which suggests the labor market needs to soften somewhat more to improve the chances of bringing inflation back to the target in a more sustainable way.

Figure 9: 3-Month Moving Average of Median Wage Growth, Several Months of Elevated Wage Growth and Currently Stuck Above 5%



Source: Atlanta Fed Wage Tracker

Inflation

Higher Inflation Considerations

Wage-price spiral: past wage inflation feeds back into consumer prices, especially for services and we have an old-fashioned wage-price spiral.

Higher underlying inflation: without further tightening in credit conditions, underlying inflation will converge to the ATL Fed's measures for sticky price or wage inflation.

Lower Inflation Considerations

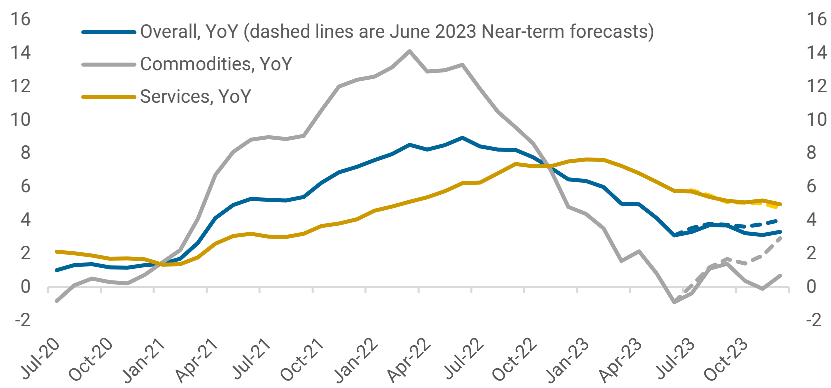
The disinflation process is smooth: concerns about higher underlying inflation are misplaced. Recent core PCE inflation reflects a system that is well anchored to the 2% target. The risk is actually undershooting of inflation in an environment when monetary policy remains overly restrictive.

Overall Inflation

Consumer price inflation continues to remain significantly elevated and has been following the rebounding trajectory of our near-term forecasts. The disinflationary impact stemming from commodities has continued, but due to the ongoing conflict in the Red Sea, this could be ending.

Although the economy continues to disinflate, because of a strong labor market and elevated service and wage inflation makes the economy vulnerable to upward shocks to inflation.

Figure 10: YoY Inflation Decomposition Shows Service Inflation Has Been Stubbornly Slow to Disinflate

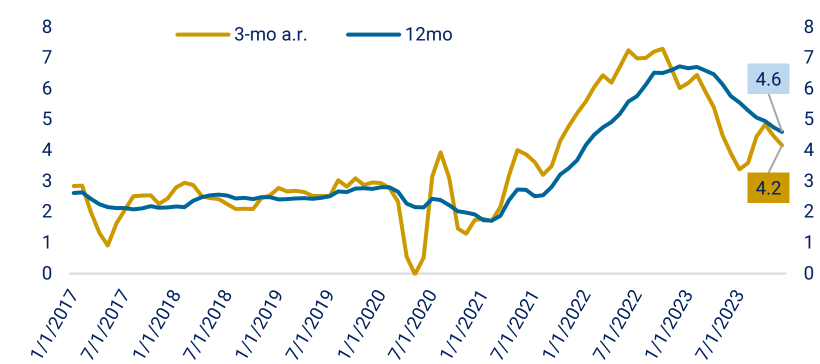


Source: FRED, Illustrative staff projections

Sticky Price Inflation

Sticky prices are changed infrequently and therefore must consider some expectation about where prices may be headed when those prices are changed. These types of prices help us better understand in real-time the inflation mentality pervasive in the economy that contributes to a wage and price spiral forming and inflation becoming entrenched. These prices continue to remain significantly elevated even showing some signs of acceleration over recent months.

Figure 11: Sticky Price Inflation Has Remained Elevated and Perhaps We Have Not Made as Much Progress as When Looking at Other Measures of Core Inflation



Source: FRED

Underlying Inflation

There is no clear consensus around what underlying inflation is and how to measure it. This uncertainty needs to be incorporated into how we view our different scenarios for what "restrictive" policy means to achieve the central bank's objectives.

The estimates range from 2.0 to 4.2%. Conceptually, we prefer both the Atlanta Fed's measures for sticky prices and wage tracker that deals with important compositional and seasonal issues with wages. Both happen to be on the upper end of the distribution and feature prominently in our risk assessment for inflation.

Figure 12: Where is Underlying Inflation?

Price Data	Wage Data	Survey Data
Core PCE 2.0%	Average Hourly Earnings 3.6%	Cleveland Fed, 1Y 2.7%
Core CPI 3.2%	Employment Cost Index 2.9%	
Sticky Price 4.2%	Atlanta Wage Tracker 3.8%	Michigan Survey 1Y 2.9%

Source: Core PCE inflation equivalent removed from wage data to get the underlying measure

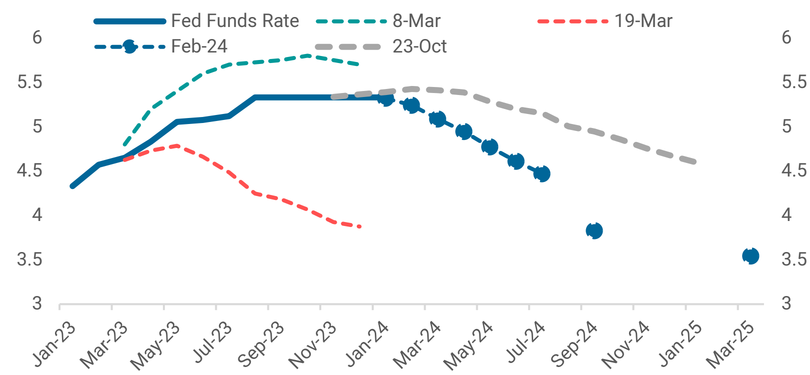
Financial Markets

Fed Funds Path

The market pricing of the Fed Funds rate has moved substantially lower in recent months reflecting optimism that underlying inflation is approaching the Fed's 2% target and therefore expects the Fed to begin normalizing the policy rate soon.

Our scenarios try to reflect these different regimes depending on how the data evolve to develop a comprehensive strategy for dealing with extreme uncertainty presented by these competing underlying forces.

Figure 13: The Market Pricing of the Fed Funds Rate. Large Downard Revision in the Expected Path. Too Optimistic?



Source: FRED, CME Futures

Bond Market

Long-term interest rates have also dropped substantially since the previous forecast, moving from a peak of 5.0% in the conservative case to around 4.0%. Large volatility in the bond market reflects some plausible assumptions that could on the one hand bring rates substantially down if the economy achieves a soft landing. On the other hand, some equally plausible assumptions could see rates move even higher under a new regime where inflation remains persistently higher and fiscal policy remains expansionary and unwinding of quantitative easing moves the term premium higher.

It is these higher inflationary scenarios that we as a central bank want to assure financial markets that we are committed to returning inflation to 2%. We want to avoid the scenario where the yield curve shifts higher because of risks associated with central bank objectives (expected inflation and term premium). This is where we can do our part to ensure fiscal and financial stability.

Figure 14: Where Long-term Interest Rates Go from Here is Subject to High Uncertainty Around All Three Components that Make Up the 10-Year Rate

	The Case for Lower Interest Rates	The Case for Higher Interest Rates **(Conservative)**	The Case for **Much** Higher Interest Rates
Expected Inflation	2% CPI inflation reflects the PCE inflation target on average	2.5% Slightly higher (2.3%) than the CPI inflation rate that is consistent with a 2% PCE target	3% Structurally higher inflation scenario (green transition, IT regime)
Neutral Real Interest Rate	0.5% Fed working assumption in the Dot plots (range skewed higher)	1.5% Higher fiscal deficits crowd out private sector	2% Higher fiscal deficits crowd out private sector
Term Premium	0% Post-GFC average	0.75% Pre-GFC, pre-QE term premium averaged between 0.75-1%	1% Higher end of the pre-GFC, pre-QE term premium
10-Year Bond	**2.5%**	**4.75%**	**6%**

Monetary Policy

Monetary Policy Outlook

The Case A scenario presented here depends on real growth staying at or above potential in the near term, mainly driven by strong consumer demand in part fueled by excess savings and real wealth accumulation. Underlying inflation is closer to 3-4% and as a result, core inflation remains stubbornly high and labor market conditions do not materially cool and remain inconsistent with the inflation objective. This mix would require a higher path for interest rates to ensure policy gets ahead of inflation once and for all. This type of scenario also considers a higher NAIRU of 5% and lower potential output of 1.8-2% suggesting aggregate demand is outstripping aggregate supply.

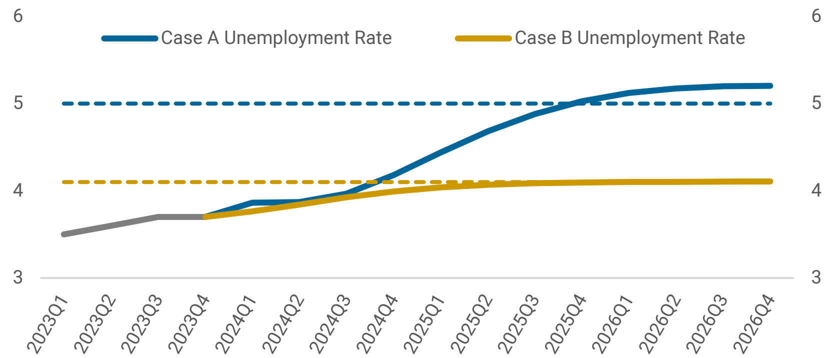
The Case B scenario presented here reflects tighter credit conditions that begin to feed through into the real economy generating a slowdown in activity that helps accelerate the disinflation process back to the 2% target. This will be accompanied by material adjustments in the stock and bond markets reflecting the entrenched fears about the future of economic growth. If those risks were to materialize, then they would likely require an abrupt switch in the policy stance as monetary policy has done enough to tighten financial conditions and it must manage an orderly landing of the economy with steeper declines in the policy rate.

Due to the uniqueness of the economy today and the juxtaposition of a potentially strong underlying economy and financial instability, uncertainty is undoubtedly heightened.

Monetary Policy Strategy

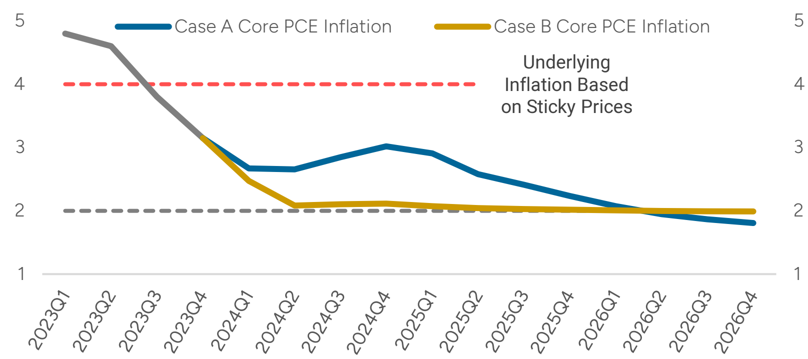
There is more asymmetry than normal in the policy paths presented in this round because we have never lowered the possibility of raising interest rates further based on the latest economic data. However, over the past several months, the market has moved toward a very sanguine scenario for the policy path while we believe the upside risks to both output and inflation have remained if not materialized in recent months. It is important for policy to reiterate this perspective or else we risk financial markets getting ahead of themselves and therefore also risk bringing inflation sustainably to the target. The higher inflation scenario serves as an important communication tool to reinforce the concern of upward surprises to inflation and what the reaction of policy would be under these circumstances.

Figure 16: Perspectives on the NAIRU can Vary Widely with Steep Consequences for Underlying Inflation and Position of the Economy and therefore Monetary Policy



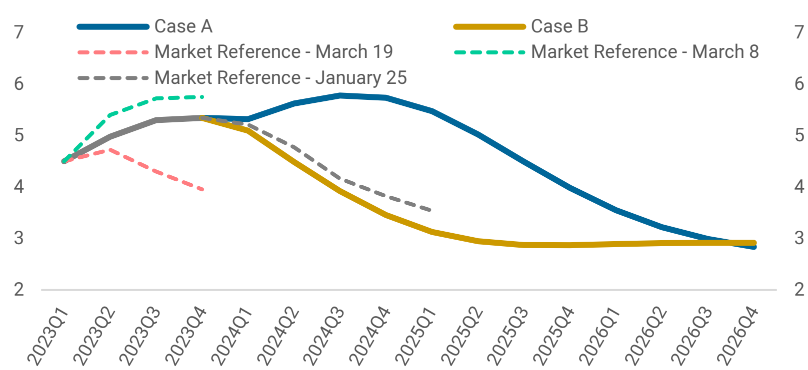
Source: Staff projections, ENDOCRED US October 2023

Figure 17: Core PCE Inflation, YoY. Core Inflation Remains Elevated from Tighter Labor Market Conditions or Disinflation Continues as Real Economy Drag Takes Hold



Source: Staff projections, ENDOCRED US October 2023

Figure 18: The Endogenous Interest Rate Path for Both Case A and Case B Scenarios Relative to Market Pricing



Source: Staff projections, ENDOCRED US October 2023

References

Avagyan V., H. Avetisyan, M. Galstyan, E. Hovhannisyan, H. Igityan, H. Karapetyan, A. Kostanyan, D. Laxton, J. Laxton, A. Nurbekyan, A. Papikyan, and N. Yeritsyan, 2022a, "FPAS Mark II Monetary-Policy-Relevant Output Gaps, December 2022," CBA Working Paper 2022/08, December 2022.

Avagyan V., _____, 2022b, "FPAS Mark II Financial-Cycle Gaps, December 2022," CBA Working Paper 2022/10, December 2022.

Avagyan, V., _____, 2023a, "FPAS Mark II: Better Work-Life Balance Issues, January 2023," CBA Working Paper 2023/01, January 2023.

Avagyan, V., _____, 2023b, "FPAS Mark II: Armenia Shadow Projection, January 2023," Forthcoming CBA Working Paper 2023/02, January 2023.

Avagyan, V., _____, 2023c, "FPAS Mark II Monetary-Policy-Relevant Output Gaps, January 2023," CBA Working Paper 2023/03, January 2023.

Avagyan, V., _____, 2023d, "FPAS Mark II Financial-Cycle Gaps, January 2023," CBA Working Paper 2023/04, January 2023.

Avagyan, V., ______, 2023e, "FPAS Mark II Credit Gaps, January 2023," CBA Working Paper 2023/05, January 2023.

Avagyan, V., _____, 2023f, "FPAS Mark II: Better Work-Life Balance Issues, April 2023," Forthcoming CBA Working Paper, April 2023.

Avagyan, V., _____, 2023g, "FPAS Mark II: Armenia Shadow Projection, April 2023," Forthcoming CBA Working Paper, April 2023.

Avagyan, V., _____, 2023h, "FPAS Mark II Monetary-Policy-Relevant Output Gaps, April 2023," Forthcoming CBA Working Paper, April 2023.

Avagyan, V., _____, 2023i, "FPAS Mark II Financial-Cycle Gaps, April 2023," Forthcoming CBA Working Paper, April 2023.

Avagyan, V., ______, 2023j, "FPAS Mark II Credit Gaps, April 2023," Forthcoming CBA Working Paper, April 2023.

Avagyan, V., _____, 2023k, "FPAS Mark II: Better Work-Life Balance Issues, July 2023," Forthcoming CBA Working Paper, July 2023.

Avagyan, V., _____, 2023l, "FPAS Mark II: Armenia Shadow Projection, July 2023," Forthcoming CBA Working Paper, July 2023.

Avagyan, V., _____, 2023m, "FPAS Mark II Monetary-Policy-Relevant Output Gaps, July 2023," Forthcoming CBA Working Paper, July 2023.

Avagyan, V., _____, 2023n, "FPAS Mark II Financial-Cycle Gaps, July 2023," Forthcoming CBA Working Paper, July 2023.

Avagyan, V., ______, 2023o, "FPAS Mark II Credit Gaps, July 2023," Forthcoming CBA Working Paper, July 2023.

Avagyan, V., _____, 2023p, "FPAS Mark II: Better Work-Life Balance Issues, October 2023," Forthcoming CBA Working Paper, October 2023.

Avagyan, V., _____, 2023q, "FPAS Mark II: Armenia Shadow Projection, October 2023," Forthcoming CBA Working Paper, October 2023.

Avagyan, V., _____, 2023r, "FPAS Mark II Monetary-Policy-Relevant Output Gaps, October 2023," Forthcoming CBA Working Paper, October 2023.

Avagyan, V., _____, 2023s, "FPAS Mark II Financial-Cycle Gaps, October 2023," Forthcoming CBA Working Paper, October 2023.

Avagyan, V., ______, 2023t, "FPAS Mark II Credit Gaps, October 2023," Forthcoming CBA Working Paper, October 2023.

References

Caldara, Dario, and Matteo Iacoviello. 2022. "Measuring Geopolitical Risk." *American Economic Review*, 112 (4): 1194-1225**.**

Carrière-Swallow, Yan Pragyan Deb, Davide Furceri, Daniel Jiménez, Jonathan D. Ostry, Shipping costs and inflation, Journal of International Money and Finance, Volume 130, 2023, 102771, ISSN 0261-5606, https://doi.org/10.1016/j.jimonfin.2022.102771.

Kostanyan A., D. Laxton, J. Romero, V. Avagyan, H. Avetisyan, M. Galstyan, E. Hovhannisyan, H. Igityan, H. Karapetyan, J. Laxton, A. Nurbekyan, A. Papikyan, and N. Yeritsyan, 2022a, "FPAS Mark I Central Bank Transparency and Credibility Measures," CBA Working Paper 2022/05.

Kostanyan A., A. Matinyan, A. Papikyan, V. Avagyan, H. Avetisyan, M. Galstyan, E. Hovhannisyan, H. Igityan, H. Karapetyan, D. Laxton, J. Laxton, A. Nurbekyan, and N. Yeritsyan, 2022b, "Getting FIT with Imperfect Policy Credibility. DYNARE/JULIA Workshops with an Application for the US Economy," CBA Working Paper 2022/04.

Kostanyan A., _____, 2022c, "Getting FIT with Imperfect Policy Credibility. DYNARE/JULIA Workshops with an Application for a Small Open Economy," CBA Working Paper 2022/07.

Kostanyan A., D. Laxton, J. Romero, V. Avagyan, H. Avetisyan, M. Galstyan, E. Hovhannisyan, H. Igityan, H. Karapetyan, J. Laxton, A. Manukyan, A. Nurbekyan, A. Papikyan and N. Yeritsyan, 2023a, "FPAS Mark II Central Bank Transparency and Credibility Measures, January 2023" CBA Working Paper 2023/06, January 2023.

Kostanyan A., _____, 2023b, "FPAS Mark II Central Bank Transparency and Credibility Measures, October 2023" Forthcoming CBA Working Paper, October 2023.

Kostanyan A. and D. Laxton, 2020, "Time to Change the Bank of Canada's Mandate," London School of Economics and Political Science.

Papikyan, A., V. Avagyan, H. Avetisyan, M. Galstyan, E. Hovhannisyan, H. Igityan, H. Karapetyan, A. Kostanyan, D. Laxton, J. Laxton, A. Nurbekyan, and N. Yeritsyan, 2022a, "Not the Fed Tealbook, October 2022" CBA Working Paper 2022/06.

Papikyan A., _____, 2022b, "Not the Fed Tealbook, December 2022" CBA Working Paper 2022/09, December 2022.

Papikyan A., _____, 2023a, "Not the Fed Tealbook, January 2023" CBA Working Paper 2023/07, January 2023.

Papikyan A., _____, 2023b, "Not the Fed Tealbook, March 2023" CBA Working Paper 2023/08, March 2023.

Papikyan A., _____, 2023d, "Not the Fed Tealbook, May 2023" CBA Working Paper, May 2023.

Papikyan A., _____, 2023e, "Not the Fed Tealbook, July 2023" CBA Working Paper, July 2023.

Papikyan A., _____, 2023f, "Not the Fed Tealbook, September 2023" CBA Working Paper, September 2023.

Papikyan A., _____, 2023g, "Not the Fed Tealbook, October 2023" CBA Working Paper, October 2023.

Papikyan A., _____, 2023h, "Not the Fed Tealbook, December 2023" CBA Working Paper, December 2023.