

Policy Panel

Introduction

Peter Blair Henry

In 1984, output per worker in the United States was roughly on par with that of Japan and the group of countries that now form the European Union. At the end of 2024, productivity stood at \$170,000 per worker for the United States, \$120,000 for the European Union, and \$100,000 for Japan.

Against this backdrop, in April of 2025, the Trump administration rejected several of the economic policy priorities first enumerated by James A. Baker III in his October 1985 speech at the meetings of the World Bank and International Monetary Fund. Those priorities drove the relative rise in US prosperity, the absolute rise in global prosperity, and the decline in poverty across what was once called the “Third World” (Chari et al. 2021).

Whether the move, from free trade and the “invisible hand” to record-high tariffs and the “state hand,” is a permanent or temporary change, the uncertainty it has unleashed, and its attendant consequences for asset prices, investment, growth, inflation, and unemployment, are real, if not yet fully manifest. In short, the US and global economies have been hit by a multifaceted supply shock that continues to unfold and has consequences for the leaders charged with formulating monetary policy strategies. We are fortunate to have four of those leaders with us today. Isabel Schnabel of the European Central Bank, Alberto Musalem from the Federal Reserve Bank of St. Louis, Beth Hammack of the Federal Reserve Bank of Cleveland, and Lisa Cook from the Federal Reserve Board of Governors will share their big-picture perspectives on monetary policy frameworks at this moment in history. Accordingly, I encourage the audience to focus their questions on the strategic and

intellectual challenges facing these leaders and to resist the tactical temptation, however veiled it may be, to ask them: What's next for interest rates?

Turning briefly to logistics, each speaker will have twelve minutes. We will then turn to the floor for questions from the audience. I will gather three to four questions at a time before turning to our panelists to respond. Isabel, the floor is yours.

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Keeping a Steady Hand in an Unsteady World

Isabel Schnabel

The standard theory of monetary policy rests on a simple premise: that the relationship between inflation and the output gap is stable. This is the logic behind the New Keynesian Phillips curve, which relates inflation to a measure of economic slack, expected inflation, and supply shocks (Woodford 2003).

The relationship between output and inflation was already under scrutiny well before the onset of the COVID-19 pandemic. Following the Global Financial Crisis of 2008, inflation did not fall nearly as much as had been implied by conventional Phillips curve estimates. And once economies around the world recovered and unemployment fell, the bounce-back in inflation fell short of model predictions. This is why that episode is known as the period of “missing deflation” and “missing inflation” (Hall 2011; Hazell et al. 2022; Ball and Mazumder 2011).

The situation changed fundamentally in the aftermath of the pandemic, when the relationship between inflation and the output gap proved to be much stronger than what would have been expected based on historical estimates. We observed a noticeably steeper Phillips curve across advanced economies, including the euro area (Hobijn et al. 2023).

In my remarks today, I would like to draw lessons from the instability of the Phillips curve over the past twenty years for the optimal conduct of monetary policy. I will argue that the evidence of a reflattening of the Phillips curve after the long period of high inflation suggests that in the euro area, the most appropriate policy response to the potential risks to price stability arising from fiscal expansion and protectionism is to keep a steady hand and maintain rates close to where they are today—that is, firmly in neutral territory.

Monetary Policy and the Slope of the Phillips Curve

The slope of the Phillips curve has first-order implications for the conduct of monetary policy. If the curve is steep, as it appeared to be in recent years, monetary policy is highly effective in reducing inflation, with only a limited impact on growth and employment. The smaller “sacrifice ratio” suggests that central banks should react more forcefully to deviations of inflation from target, even when the economy is hit by a supply shock that pushes inflation up and output down (Karadi et al. 2024). A steep Phillips curve hence improves the trade-off facing central banks, weakening the case for “looking through,” as forceful policy action minimizes the risks of inflation expectations unanchoring and of inflation becoming entrenched (Erceg et al. 2024).

Policy prescriptions differ fundamentally if the Phillips curve is flat. In this case, a large policy impulse is required to move output sufficiently to generate aggregate price effects. It can then be optimal for policy to tolerate moderate deviations of inflation from the target, as the cost of closing a small inflation gap relative to the target may exceed the benefits. This prescription holds in both directions.

When inflation is above the target, a flat Phillips curve would require a sharp rise in policy rates to bring medium-term inflation down, say from 2.3% to 2%. Such a course of action may imply a substantial rise in unemployment and may thus not be welfare-improving for society at large—a trade-off central banks may face during the “last mile” of disinflation (Schnabel 2023b; Erceg et al. 2024).

The experience of the 2010s, when inflation was persistently below the target, demonstrates that the argument also holds in the opposite direction. If bringing inflation up from 1.7% to 2%, for example, requires purchasing a large portion of outstanding government bonds and making potentially time-inconsistent promises about the future path of interest rates, then the central bank must consider carefully whether the benefits outweigh the costs. Such costs could include future losses, market dysfunction, rising wealth inequality, financial instability, and threats to its reputation (Schnabel 2021, 2024b).

The Role of Inflation Expectations

However, the ability to tolerate moderate deviations of inflation from target critically hinges on a firm anchoring of inflation expectations—that is, a low sensitivity of inflation expectations to realized inflation. If inflation expectations are well anchored, policymakers can tolerate moderate deviations from target, as fluctuations in inflation tend to fade away. If, however, inflation expectations are at risk of unanchoring, central banks should act forcefully (Gáti 2023).

There are two challenges to this strategy. One is that the anchoring of inflation expectations is endogenous. Central banks themselves can cause an unanchoring if inaction

in the face of price shocks is perceived as weakening their commitment to securing price stability (Bonomo et al. 2024; Reis 2021).

History shows that it can be costly to reestablish the credibility of the nominal anchor once it has been lost. This is also because inflation expectations are path dependent. Research shows that the experience of high inflation may raise the sensitivity of inflation expectations to new inflation surprises (Malmendier and Nagel 2016).

Another challenge is that different measures of inflation expectations often yield different results. As such, robust trends cannot easily be identified in real time, much like the slope of the Phillips curve. Similarly, gauging inflation expectations from financial market data requires estimating uncertain and time-varying risk premia.

Measures of inflation expectations can even point in opposite directions. Research from the early days of the pandemic showed that most consumers expected the pandemic to raise prices, contrary to the views held by professional forecasters at the time (Dietrich et al. 2022).

Explaining the Steeper Phillips Curve and Postpandemic Inflation Surge

The recent period of high inflation illustrates how sensitive policy conclusions can be to the assessment of the slope of the Phillips curve and to measures of inflation expectations that central banks use in their analysis. Two key theories have been proposed to explain the postpandemic inflation surge (Schnabel 2023a).

The first relates to firms' price-setting behavior. Standard New Keynesian models assume that the probability of firms resetting their prices is constant over time. This is a fair description of aggregate price movements when inflation is low and aggregate shocks are

small. However, the past few years have demonstrated that this linear relationship breaks down in the face of large shocks (Dedola et al. 2024; Bobeica et al. 2025). When marginal costs increase rapidly and threaten to erode profit margins, firms tend to raise their prices more frequently. As a result, the Phillips curve steepens.

This feedback loop is strongly asymmetric (Bunn et al. 2025). It acts as an inflation accelerator when firms face positive demand or adverse cost-push shocks (Blanco et al. 2025). But it does little to firms' pricing strategies in the face of disinflationary shocks due to downward price rigidities.

This helps explain why inflation did not fall much when the pandemic broke out but increased sharply after the reopening of our economies. This interpretation of recent events is fairly robust, as it is based on firms' actual pricing behavior. Inflation expectations play a role only to the extent that they determine the persistence of the nonlinearity.

The second theory relates to the tightness of the labor market. Downward nominal wage rigidity has been a key factor explaining the "missing deflation" in the aftermath of the Global Financial Crisis (Mineyama 2023). If nominal wages do not fall, or fall only very slowly, firms' marginal costs change only moderately. Hence, disinflationary pressures face a natural lower bound, even if slack is large. But when the labor market is tight, wages are more flexible as firms outbid each other to secure their desired workforce.

Benigno and Eggertsson (2023) show that this channel led to a nonlinear inflation surge in the United States whenever the number of job vacancies exceeded the number of unemployed workers. More recent research confirms their findings using regional Phillips curve estimates (Gitti 2025). In the euro area, the threshold was lower, but the curve still exhibited strong signs of nonlinearity.

Rising Near-Term Inflation Expectations May Have Shifted the Phillips Curve Up

New research for the United States, however, suggests that the evidence in favor of the second theory is not very robust. Specifically, the finding of nonlinearity depends critically on which measure is used to control for inflation expectations. Nonlinearity holds when controlling for expectations of professional forecasters, but it disappears once inflation expectations of households and firms are considered (Beaudry et al. 2025).

In other words, it is conceivable that the Phillips curve did not become steeper but rather shifted upwards as inflation expectations rose.¹ Nonlinearity has also been rejected recently using a similar approach based on regional data for the euro area (Beschinn et al. 2025). Moreover, the expectations relevant to such an upward shift are not necessarily the longer-term expectations that central banks typically pay most attention to. These have remained remarkably stable over the past few years. Rather, inflation expectations over the near term, such as the next twelve months, may be more important in driving macroeconomic outcomes.

Bernanke and Blanchard (2025), for example, show that one-year-ahead inflation expectations explain a significant share of the recent marked rise in nominal wages, and hence inflation, in the United States. Similar evidence has been found for the euro area and other advanced economies.²

Again, there appears to be an asymmetry: The risks that the Phillips curve shifts downwards are substantially lower. Research shows that consumers tend to respond more to inflationary than disinflationary news, as households value increases in their purchasing power and pay less attention to inflation when it is low (Baqee 2020).

The Impact of Tariffs on Inflation in the Euro Area

Understanding the reasons behind the recent inflation surge is not only important from a conceptual perspective, it also matters for setting monetary policy today, as we are once again confronted with historically large shocks.

For central banks, this is a difficult environment to navigate. Memories of high inflation are still fresh after a long period of sharply rising prices. And just as during the pandemic, there is considerable uncertainty about how firms and households will respond to shocks that are largely outside the historical empirical range.

Ultimately, the impact of current shocks on prices and wages, and hence the appropriate monetary policy response, will depend on the shape and location of the Phillips curve. Let me illustrate this by looking at the euro area.

Monetary Policy Should Focus on Medium-Term and Underlying Inflation

Given the lags in policy transmission, the relevant horizon for monetary policy is the medium term. The past few years, however, have demonstrated that inflation forecasting at times of large structural shocks is inherently difficult and plagued by considerable uncertainty.

For this reason, the European Central Bank (ECB) and other central banks have increasingly turned to a data-dependent approach to monetary policy, where the observed dynamics of underlying inflation and the strength of monetary transmission are used to cross-check the inflation projections (Schnabel 2024a). This approach remains valid today (Lagarde 2025). But data dependence is not in contrast to being forward-looking.

In the current situation, the high level of economic uncertainty, together with the sharp fall in energy prices and a stronger euro exchange rate, will likely dampen headline inflation in the short run, potentially pushing it below our 2% target. The question is whether these developments provide meaningful signals about the net impact of current shocks on medium-term inflation.

During the pandemic, for example, a strong appreciation of the euro against the US dollar, by nearly 14% over seven months, and a marked decline in energy prices were followed by a historic inflation surge. Data dependency, hence, requires examining the potential channels through which current shocks could affect underlying inflation over the medium term. In the euro area, two main forces could have the size and persistence to pull underlying inflation sustainably away from our 2% medium-term target.

One is fiscal policy, which is set to expand on a scale unseen outside periods of deep economic contraction. Germany has eased its constitutional debt brake for defense-related spending and has committed to spending €500 billion, or more than 10% of GDP, on infrastructure and the green transition over the next twelve years. In addition, the European Commission has invited member states to activate the national escape clause to accommodate increased defense expenditure across the European Union (EU).

The impact of these measures on inflation will depend on how they are implemented, especially their impact on the supply side of the economy. But on balance, the fiscal impulse is likely to put upward pressure on underlying inflation over the medium term. Global fragmentation is the second force that could have a lasting impact on prices and wages.

As we speak, the scale and scope of tariffs, the extent of retaliation, and how financial markets respond to these developments all remain highly uncertain. Ongoing

negotiations are a sign that mutually beneficial agreements may still be reached. An ideal outcome, the “zero-for-zero” tariff agreement advocated by the European Commission, could even boost growth and employment on both sides of the Atlantic.

However, should these negotiations fail, the euro area will simultaneously face adverse supply and demand shocks, as the EU has announced that it will retaliate against higher tariffs.

Similar to the pandemic situation, assessing the relative strength of these forces is inherently difficult. Overall, however, there are risks that a lasting and meaningful increase in tariffs will reinforce the upward pressure on underlying inflation arising from higher fiscal spending over the medium term. To understand this, it is useful to look at the factors driving the macroeconomic propagation of tariffs.

Euro Area Foreign Demand May Prove Resilient, Limiting the Inflation Effect

The severity of the negative demand shock will depend on two factors. One is the hit to economic activity in the United States and global demand resulting from raising tariffs across the board. Under the tariff rates announced on April 2, 2025, the United States will face a supply shock of historic proportions. Inflation is poised to rise, real incomes are expected to fall, and unemployment could increase. Retaliatory tariffs would further weaken the economy.

So even in the absence of demand reallocation, foreign demand can be expected to decline if there is a broad increase in tariffs. The depth and persistence of this decline will also depend on other policies, such as tax and spending cuts and deregulation. And it will

crucially depend on the outcome of tariff negotiations, which is likely to be less severe than the April 2 announcement.

The second factor affecting the severity of the demand shock relates to the degree of demand reallocation, which is related to the elasticity of substitution between foreign and domestic products. This elasticity is highly uncertain and varies across industries, products, and countries (Bajzik et al. 2020). However, a robust finding in the literature is that products that are more differentiated tend to be relatively price inelastic, as they are more difficult to substitute. This has great relevance for the euro area, where the bulk of exports to the United States comprise pharmaceuticals, machinery, vehicles, and chemicals. These goods are typically highly differentiated.

For instance, the supply of machines for producing semiconductors is basically monopolized by one Dutch company. Similarly, banknotes in the United States are overwhelmingly printed using machinery from a single German manufacturer. These and other machines are not easily replaced in the short run, giving euro area exporters leverage to pass higher costs on to foreign importers and limiting the hit to foreign demand.

In addition, trade diversion may benefit euro area exports. Should prohibitive tariffs on Chinese imports remain in place, they would measurably improve the euro area's price competitiveness in the United States market. This can be expected to stimulate demand for euro area goods if there are no alternatives in the United States itself, especially as the number of industries in which both Chinese and euro area firms have comparative advantages has increased measurably over the past two decades (Schnabel 2024c).

New research corroborates this view (Kalemli-Özcan et al. 2025). It finds that the euro area stands to win in relative terms from a global trade war, as its net exports to the

world will rise rather than fall as global demand is reallocated across the global network, offsetting the hit to domestic consumption.³

In other words, as long as tariffs are not prohibitive to trade and the uncertainty paralyzing activity fades, aggregate euro area foreign demand may prove relatively resilient under a range of potential tariff outcomes.

The recent appreciation of the euro does not refute this view. The euro has gone through two distinct phases since the United States presidential election in November 2024. It first depreciated in nominal effective terms by 3% until mid-February 2025, before starting to appreciate. So in net terms, the euro is trading just 2.6% above last year's average. In addition, as most exports to the United States are invoiced in US dollars, the pass-through of changes in the exchange rate to import prices tends to be moderate, according to recent estimates, at just about one-fifth (Cavallo et al. 2021). Potential losses in price competitiveness in countries other than the US are, in part, compensated for by lower import costs, as euro area exports have, on average, a large import content.

This price inelasticity is also reflected in recent surveys, with manufacturing firms reporting an expansion in output for the first time in more than two years. Also, fewer firms are reporting falling export orders. Even if part of these developments may reflect frontloading by firms, it is remarkable how resilient sentiment has remained in the face of the extraordinary increase in economic uncertainty.

Supply Shock Puts Upward Pressure on Inflation

The downward effects on inflation caused by lower demand are likely to be offset, partly or even fully, by the supply shock hitting the euro area through retaliatory tariffs imposed by the EU and other economies. The strength of this supply shock also depends on two factors.

One is the extent to which firms pass higher tariffs on to consumers. In the United States, evidence from the 2018 tariff increase suggests that, in most cases, the pass-through to import prices was de facto complete (Amiti et al. 2020; Cavallo et al. 2021). At the same time, many firms chose to absorb part of the increase in import prices in their profit margins, thereby limiting the increase in consumer price inflation, at least in the short run (Amiti et al. 2019). Whether firms will respond similarly to a renewed rise in tariffs in the current environment is uncertain.

On the one hand, the recent appreciation of the euro, if persistent, provides some margin for euro area firms to buffer cost increases from retaliatory tariffs. On the other hand, profit margins have already been squeezed by high wage growth and a sluggish economy, and the postpandemic inflation surge may have lowered the bar for firms to pass higher costs on to consumers.

Overall, recent surveys of companies in the United States and the euro area suggest that they plan to gradually pass higher tariffs on to consumers over the coming years.⁴ In addition, to compensate for the hit to input costs, firms also tend to raise the prices of goods not directly affected by tariffs. There is evidence that retailers broadly adjust price markups even if only a subset of wholesale prices change (Cole and Eckel 2018).

The second, and related, factor determining the strength of the supply shock relates to global value chains. Unlike during the wave of protectionism in the 1930s, today the dominant share of international trade, about 70%, reflects multinational firms distributing

production across countries and along the value chain to minimize costs. In this process, parts and components often cross borders many times.

Prohibitive tariffs between the United States and China are already disrupting supply chains. Shipments of goods are declining, potentially leading to future shortages of critical intermediate goods that could reverberate across the world.

While current conditions are very different from those seen during the pandemic, when supply chain disruptions were a main factor driving the surge in inflation, the impact of tariffs is likely to be amplified as the increase in firms' marginal costs propagates through the production network. ECB staff analysis shows that even if the EU does not retaliate, higher production costs transmitted through global value chains could more than offset the disinflationary pressure coming from lower foreign demand, making tariffs inflationary overall.⁵

These effects will become stronger with full retaliation, including intermediate goods. So far, the EU's retaliatory measures have disproportionately targeted final consumer goods, such as beverages, food, and home appliances, precisely to avoid broader cost effects being transmitted through value chains. But if the trade conflict intensifies, the scale of retaliation will widen and increasingly include intermediate goods, as these account for nearly 70% of the euro area's imports from the United States.

In other words, retaliatory tariffs on intermediate goods would constitute a much broader cost-push shock for euro area firms, reminiscent of the postpandemic supply chain disruptions (Bank of Canada 2025). It is possible that these effects will be mitigated by China redirecting goods originally destined for the United States toward the euro area and other economies at a discount.

In practice, however, this mitigation channel is likely to be contained. India, for example, has already raised temporary tariffs on China to curb a surge in imports. Similarly, the European Commission has repeatedly clarified that it intends to protect euro area firms against dumping prices should imports from China rise significantly in response to the evolving trade conflict with the United States (European Commission 2025). How, then, should the ECB respond to the current shocks?

Policy Implications

The lessons from the postpandemic surge in inflation suggest that, from today's perspective, the appropriate course of action is to keep rates close to where they are today—that is, firmly in neutral territory. A “steady hand” policy provides the best insurance against a wide range of potential outcomes. In other words, it is robust to many contingencies.

Specifically, it avoids overreacting to volatility in headline inflation at a time when domestic inflation remains sticky and new forces are putting upward pressure on underlying inflation over the medium term. Given lags in policy transmission, an accommodative policy stance could amplify risks to medium-term price stability. This steady-hand policy also avoids overreacting to concerns that tariffs may destabilize inflation expectations once again.

In recent months, households' short-term inflation expectations have reversed and started rising again. According to the ECB's Consumer Expectations Survey, expectations for inflation one year ahead increased to 2.9% in March from their trough of 2.4% in September 2024. Qualitative inflation expectations, as measured by the European Commission, even rose to levels last seen in late 2022. Currently, there are no indications that this rise is persistent or that inflation expectations are at risk of unanchoring.

Hence, we can afford to look through the rise in short-term inflation expectations. This could change if we see clear signs of a strong and front-loaded pass-through of potential tariff increases, something that could bring us back to the steep part of the Phillips curve. So far, however, evidence suggests that firms have notably slowed the frequency with which they revise their prices.

A steady-hand policy also addresses risks of a more substantial decline in aggregate demand in response to the trade conflict. If tight labor markets were the main culprit for the recent steepening of the Phillips curve, risks of a sharp decline in inflation caused by a rise in unemployment are much more moderate today. The reason for this is that in both the United States and the euro area, the vacancy-to-unemployment ratio has fallen markedly and is now at a level that suggests labor markets are much more balanced. We are thus likely to be operating close to, or at, the flat part of the Phillips curve, where a change in unemployment has only limited effects on underlying inflation, in stark contrast to the high-inflation period (Eser et al. 2020).

We would need to react more forcefully to the tariff shock only if we observed a sharp deterioration in labor market conditions or the unanchoring of inflation expectations to the downside. Both seem unlikely at the current juncture. Despite the decline in the number of vacancies, the euro area labor market has proven resilient, with unemployment at a record low. And most measures of medium-term inflation expectations remain tilted to the upside, including those of professional forecasters.

Conclusion

My main message today, and with this I would like to conclude, is therefore simple: Now is the time to keep a steady hand.

In the current environment of elevated volatility, the ECB needs to remain focused on the medium term. Given long and variable transmission lags, reacting to short-term developments could result in the peak impact of our policy unfolding only when the current disinflationary forces have passed.

Over the medium term, risks to euro area inflation are likely tilted to the upside, reflecting both the increase in fiscal spending and the risks of renewed cost-push shocks from tariffs propagating through global value chains. Therefore, from today's perspective, an accommodative monetary policy stance would be inappropriate, also because recent inflation data suggest that past shocks may unwind more slowly than previously anticipated.

By keeping interest rates near their current levels, we can be confident that monetary policy is neither excessively hindering growth and employment nor stimulating it. We are thus in a good place to evaluate the likely future evolution of the economy and to take action if risks materialize that threaten price stability.

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¹ This is similar to the findings by Hazell et al. (2022). They showed that the remarkable disinflation of the 1980s under Paul Volcker was not the result of a steeper Phillips curve, as was commonly assumed, but rather the result of a change in long-term inflation expectations.

- ² Arce et al. (2023) and Bernanke and Blanchard (2024) also show that the impact of short-term inflation expectations on wages is generally significantly larger than that of consumers trying to recover their lost purchasing power due to past unexpected inflation.
- ³ The analysis takes the April 2, 2025, tariff announcement by the US administration and assumes a symmetric retaliation. The results also hold in the case of no retaliation.
- ⁴ A Federal Reserve Bank of Boston survey of small and medium-sized businesses shows that firms expect it to take about two years for the increase in tariffs to be fully passed through to consumers. See Andrade et al. 2025). A survey by the Federal Reserve Bank of Dallas found that 76% of manufacturing firms intend to pass cost increases from higher tariffs on to consumers. Similar evidence has been found for the euro area (de Bondt et al. 2025).
- ⁵ Related research by Mao and Görg (2020) finds that, if the United States were to increase tariffs on Chinese imports to 100%, the effective tariff rate facing firms in the electronics sector in the EU, which relies heavily on imported intermediate goods, would increase by nearly 5%.

23

US Economy Scenarios and Monetary Policy Response

Alberto G. Musalem

Good afternoon, everyone. I would like to thank the conference organizers, Michael Bordo and John Cochrane, for the opportunity to participate in this panel with distinguished colleagues and policymakers. Conferences at the intersection of research and policymaking provide an invaluable opportunity to enrich both worlds. I'll share my personal views, which do not necessarily reflect those of my Federal Open Market Committee (FOMC) colleagues.

Let me begin by reviewing my perspectives on the current state of the US economy. Activity has moderated. Business and consumer sentiment have declined. Financial conditions have tightened somewhat but remain broadly supportive of the real economy. The labor market has been cooling but remains resilient and near full employment. Inflation has declined toward our 2% target since 2022 but remains above target, and progress has been slow since mid-2024. Inflation expectations have been mixed. Near-term expectations have risen while most measures of long-term inflation expectations have remained stable.

Monetary policy is currently modestly restrictive, and I believe appropriately so for an economy at full employment, with inflation above target, and with some measures of inflation expectations moving higher.

Consequential trade, immigration, fiscal, and regulatory policies are being implemented. They are intended, and have the potential, to substantially change the flow of goods, services, capital, and people across and within countries, including the United States. They are also likely to change the taxation of, and the incentives for, consumption, savings, and production. Without judging or evaluating the merits, I am focused on the net total effect of these policies on the US economy, in the short and long run and through demand and supply channels.

In this context, I believe an effective monetary policy can successfully navigate toward our congressionally mandated goals of maximum employment and price stability.

Trade policy changes from the beginning of April are likely to move employment and inflation in opposite directions. Monetary policy can manage the resulting trade-off by weighing the size and persistence of inflation's deviation from target and that of the employment shortfall. An implication of this balanced approach is that some short-term tolerance of higher inflation will lessen the cost of an employment shortfall, provided that medium- to long-term inflation expectations remain anchored (FOMC 2012).

In fact, a balanced approach requires anchored inflation expectations. Because price stability is necessary for maximum employment, I believe policy must prioritize inflation if expectations threaten to become unanchored. The experience of the 1970s showed that sustaining maximum employment and a durable economic expansion is difficult when inflation is elevated and volatile, and when the public expects it to remain so. If inflation expectations are not well anchored, history tells us that restoring price stability is more costly in terms of foregone employment and economic activity.

To date, announced tariffs are higher and broader and have prompted stronger retaliation than many had expected. If a cycle of high tariffs and retaliation is sustained, economic activity and employment are likely to be meaningfully dampened. The impact on prices and the persistence of inflation will be determined by the relative size and persistence of opposing demand and supply factors.¹

I expect direct one-off effects on the prices of imported final goods, indirect effects on the prices of domestically produced goods and services, and possibly second-round effects on inflation. In the other direction, reduced economic activity will likely have some dampening effect on inflation.

After an initial uptick in inflation, I perceive two equally likely inflation scenarios ahead. It is possible that higher inflation will be short-lived and mostly concentrated in the second half of 2025, as businesses run down inventories and pass on tariffs for new goods purchased to consumers as one-off price increases. It is equally likely that inflation could prove to be more persistent.

The risks of higher and more persistent inflation are currently elevated because:

- the pretariff starting point for inflation is above target;
- the recent period of elevated inflation has likely raised the public's sensitivity to it;
- some measures of inflation expectations have risen; and
- tariffs apply broadly to intermediate inputs, prompting supply chains' rearrangement.

Thus far, I have focused on a scenario in which high and broad-based tariffs are sustained along with retaliation. It is also possible that fruitful trade negotiations and de-escalation will lead to a resumption of global trade flows and a modest reconfiguration of supply chains. If this scenario were to happen soon, the US economy could remain close to the path that it was on, one with a resilient labor market and ongoing convergence of inflation to the target rate.

Appropriate monetary policy will differ according to which scenario comes to pass. It could be appropriate to look through inflation and potentially ease policy if tariffs are sustained, but inflation is short-lived, inflation expectations remain well anchored, and economic activity is meaningfully slower. Otherwise, I will be focused on a policy path to ensure that a tariff-related adjustment in prices does not turn into persistently higher inflation, and that inflation expectations remain well anchored. If, instead, there's a de-escalation of trade tensions soon, the current policy stance will remain appropriate. That stance is focused on further progress toward 2% inflation, within the context of a full-employment labor market.

Committing now to looking through the inflation impact of tariffs or to an easing of policy runs the risk of underestimating the level and persistence of inflation.² Implementing a corrective policy switch to lean against inflation is a classic issue in central banking.³ Real-time parsing of direct price-level effects from indirect and second-round inflation effects is difficult. Mistiming the policy switch can be costly for the public in terms of inflation and employment outcomes, especially if inflation expectations were to rise further. The difficulty would be further compounded because trade policy does not happen in a vacuum. Beyond

tariffs, I'm also focused on the net total impact of evolving fiscal, immigration, and regulatory policies on the outlook.

To conclude, I consider it prudent to navigate according to two key principles. First, I continuously update my outlook for the US economy and my assessment of the balance of risks based on incoming information to discern the most likely scenario and appropriate monetary policy. Second, prioritizing well-anchored inflation expectations is crucial to ensure that a policy approach that responds to both inflation deviation from target and to employment shortfalls remains feasible.

I believe the FOMC's current policy stance aligns with these principles and is best positioned to deliver stable prices and maximum employment for the people we serve. Thank you, and I look forward to engaging in the discussion.

But before leaving, and finally, I would also like to take a moment to thank John Taylor for all his contributions, which were celebrated yesterday, especially for arming central bankers like me with a framework, a benchmark, and a principle against which to stress-test their policy thinking daily. On a personal note, I, like many others, was exposed to John Taylor's work in the early 1990s, while I was a graduate student. I immediately fell in love with the simplicity of the Taylor rule and its applications. Ten years later, I got to meet John Taylor and Kristen Forbes when John was in government at the US Treasury. Of course, I was dying to talk about the Taylor rule, but at that time, he was interested in sovereign debt restructuring, and I was involved in emerging market debt. And they were the Treasury, I was not the Treasury. So we ended up talking about sovereign debt restructuring. Thank you, John.

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¹ Bergin and Corsetti (2023) show that a tariff shock is different from both efficient (productivity) and inefficient (cost-push) supply shocks. For example, a tariff shock can have a demand component—the decline in global demand—in the case of retaliation.

² The rationale for looking through the inflationary effects of temporary negative supply shocks is well understood. With long and variable lags, a policy tightening would affect inflation only after the effects of the temporary increases in prices have dissipated. Silvana Tenreyro’s speech at the 2023 ECB Forum on Central Banking provides details and caveats (see Bandera et al. 2023).

³ See Beaudry et al. (2023) for a discussion of risks and costs of a threshold strategy that switches from looking through to leaning against inflation.

The Outlook for the Economy and Monetary Policy

Beth M. Hammack

My thanks to the Hoover Institution for inviting me to speak on this esteemed panel. It's great to be back at my alma mater. I am especially grateful to have joined in the celebration in honor of John Taylor yesterday.

When we experience uncertain economic times with a wide range of possible paths for the economy, simple policy rules provide a good starting point for assessing how monetary policy may wish to respond in different scenarios. The Cleveland Fed's website has a section that looks at federal funds rate projections based on seven simple policy rules and multiple forecasts, including the rule published by John Taylor the year I graduated from Stanford University (Knotek et al. 2016). I combine this information with a variety of economic and financial data, forecasts, and anecdotes from business and community contacts as I think about the appropriate path for monetary policy.

Recently, the economic signals have been decidedly mixed. By many measures, the backward-looking data have been encouraging, but heightened uncertainty surrounding government policies is clouding the outlook and raising the risks of higher inflation, slower growth, and softening in the labor market. So let me briefly share my current view on finishing the job amid new challenges in the economy. As always, the views I present today

are my own and not necessarily those of the Federal Reserve System or my colleagues on the Federal Open Market Committee.¹

Economic Outlook

The economy entered this year with solid momentum, as real gross domestic product increased at a 2.75% annualized rate during the second half of 2024. Based on the first estimate, GDP declined in the first quarter. Behind this weak headline number, consumer spending and business fixed investment both grew at solid rates. A key question is whether this will continue, as national survey measures of consumer and business sentiment have declined, with many respondents citing policy uncertainty.

At the Cleveland Fed, we compile feedback from regional business and community leaders into our Survey of Regional Conditions and Expectations (SORCE) indexes, which capture recent and expected trends in the Fourth District's economy. In general, our contacts report subdued economic activity. In their comments to us, many contacts indicate that they have paused some spending in light of increased uncertainty surrounding government policies, including tariffs, immigration, federal spending, and employment. A growing share of contacts expect their nonlabor costs to rise in the coming months, with many noting higher tariffs as a key factor.

Looking at our maximum employment goal, the US labor market has been healthy. The unemployment rate was 4.2% in April, a relatively low level and similar to readings over the last twelve months, with solid job gains on average through the first four months of this year.

Regarding our inflation objective, we have made good progress, but there is still more work to do to return the economy to price stability. Headline personal consumption expenditures (PCE) inflation was 2.3% through March. Core PCE inflation, which excludes the volatile food and energy sectors, was somewhat higher. The Cleveland Fed calculates several alternative inflation measures that focus on price changes in the center of the distribution to limit the influence of outliers and capture the inflation trend, including the median Consumer Price Index (CPI), trimmed-mean CPI, and median PCE inflation. These measures have also come down from their highs but are running above headline inflation and our 2% objective. While the recent inflation data have been encouraging, they are backward-looking and do not capture very recent developments.

On net, the tariffs that have been put in place constitute a substantive change in trade policy. It will take some time for the overall economic effects of these recently enacted and other proposed changes to government policies to become clearer in the hard data.

In this dynamic environment, I am considering a variety of data to inform my view on progress toward our dual-mandate goals of maximum employment and price stability. Beyond the usual monthly and quarterly indicators on growth, inflation, and the labor market, I am looking at higher-frequency data on evolving conditions. In these times, I find that anecdotal reports from business, community, and financial market contacts are especially helpful because they provide timely information and additional context to complement the hard data. Staff at the Cleveland Fed produce and update novel data series to help shed light on current conditions. One recent project uses natural language processing to quantify the sentiment of the Federal Reserve's Beige Book entries as a predictor of recessions (Filippou et al. 2024). In a second project, Cleveland Fed researchers compile

data from advance layoff notices filed under the Worker Adjustment and Retraining Notification Act, or WARN Act, which serve as a leading indicator for layoffs (Krolikowski and Lunsford 2022).

I also monitor financial conditions to assess their impact on households and businesses. In recent weeks, financial conditions have been volatile as markets have incorporated new information into asset prices. In response to tariff announcements in early April, financial conditions tightened on net, as major equity indices declined, credit spreads widened, and long-term interest rates increased. At the same time, the dollar weakened against a basket of foreign currencies. This pattern differed from recent “risk-off” episodes in which equity prices declined, credit spreads widened, the dollar appreciated, and US Treasury yields fell as domestic and international investors sought the safety of US government bonds. More recently, as tariff policy has shifted, some of these measures have largely retraced their initial moves. Markets respond to data and announcements at a high frequency. My job as a policymaker is to separate the signal from the noise in financial market fluctuations. Doing so allows me to incorporate market trends that are likely to affect the real economy into my outlook and recognize that volatility on its own can have a dampening effect on spending and investment.

Monetary Policy

A common theme from talking with business, community, and financial market contacts is that uncertainty is elevated. I see risks around both legs of our dual mandate that could lead to higher inflation outcomes and to lower growth and employment outcomes in the near to medium term. This is a difficult set of risks for monetary policy to navigate.

Given the economy's starting point, with inflation still elevated and both sides of our mandate expected to be under pressure, there is a strong case to hold monetary policy steady at its current modestly restrictive setting. I am usually inclined to take action, but in this case, taking no action may be the best choice to balance the risks coming from further elevated inflation and a slowing labor market. If this scenario comes to pass, it will be important to ensure inflation expectations remain well anchored while assessing the likely magnitude and persistence of the misses to each side of our dual-mandate goals. In terms of inflation, it is certainly possible that increases in tariffs could have only a short-lived effect. But in their coming after an extended period of elevated inflation, consumers and businesses may respond differently to this event than might otherwise have been the case. When clarity is hard to come by, waiting for additional data will help inform the path ahead.

But other scenarios are certainly possible, and instead of focusing on a modal outlook, I am considering a range of possible outcomes. If the economy should falter and inflation decline, then it may be appropriate to ease policy by lowering the federal funds rate from its current level, perhaps even quickly. If the labor market remains healthy and inflation moves up persistently, then monetary policy may need to follow a more restrictive trajectory.

We will simply have to see how events unfold. I would rather be slow and move in the right direction than move quickly in the wrong direction. Fortunately, with policy at its current modestly restrictive level, I believe we are in a position to assess the incoming data, the risks to the outlook, and the appropriate policy response to achieve our longer-term objectives.

Concluding Topics

Let me conclude with three sets of big-picture topics that I have noted in other venues and that are worth repeating here.

The first topic is r^* , or the natural or neutral rate of interest. There is considerable uncertainty over a fundamental concept for policymakers: how restrictive or accommodative monetary policy is (Hammack 2024). My view that monetary policy is only modestly restrictive is based on my assessment that the economy has been resilient, the labor market has been healthy, and inflation has come down only slowly under the current setting. Figuring out the neutral rate is always complicated. There is evidence that the neutral rate changes over time, with some models and estimates pointing to long-running structural factors, while others capture a role for shorter-term forces. Fiscal deficits, productivity growth, and the structure of the Fed's balance sheet are just a few such factors. Recent and prospective changes in government policies could also affect r^* . This is a topic that bears watching.

My second topic is the Federal Reserve's plan for the balance sheet (Hammack 2025a). Tools, trade-offs, and assessments of the level of ample reserves will all be relevant in the near to medium term, but we also need to think over a longer horizon. What does a "neutral" balance sheet look like, especially on the asset side? Should we align assets and liabilities, and if so, how? How much volatility should we be willing to accept in overnight markets? Ultimately, there may be trade-offs between the variability in short rates and the size of the balance sheet. Could there be benefits from separating market-functioning balance sheet actions from all other actions? I see these questions about the steady state for the balance sheet as worthy of discussion by the FOMC. My takeaway is that rapidly

expanding the balance sheet is easy, but shrinking it with minimal market impact is harder and takes more time, especially after purchasing a lot of long-dated assets.

My final topic is the growth of the private credit market (Hammack 2025b). This market fills a financing gap for relatively higher-risk, middle-market borrowers. There are some financial stability benefits of the growth in this market, but there are also some risks. Some of these risks include the market's relative opacity, the growing exposure of pension funds and life insurers, and interconnections between private credit and the banking system. As the rapid growth in private credit investments compresses returns, these funds may employ more leverage. In fact, while the level of private credit fund leverage appears moderate, it has been notably increasing over the past several years, particularly at business development companies. As a Federal Reserve policymaker, I am attuned to the potential financial stability risks this fast-growing market could pose.

And with that, I thank you for your attention. I look forward to the upcoming discussion.

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¹ I am grateful to Edward Knotek for assistance with these remarks.

25

Opening Remarks on Productivity Dynamics

Lisa D. Cook

Good afternoon. Thank you for moderating, Peter [Blair Henry]. It is an honor to be with you today, and it is always great to be back at Stanford University and at Hoover. I spent several formative years of my career here, including as a national fellow, and I always enjoy returning. It is a privilege to share the panel with Dr. [Isabel] Schnabel, and Presidents [Alberto] Musalem and [Beth M.] Hammack. I look forward to our discussion.

Before that, I would like to briefly discuss a topic I see as critical to the future path of the economy: productivity growth. Productivity growth has been surprisingly strong in recent years, and this has influenced my view of the appropriate stance of monetary policy. I will also explore two ongoing developments that are likely to influence productivity growth in the future: changes to trade policy and the wider adoption of artificial intelligence (AI).

Productivity dynamics are something I have studied closely for a long time and will continue to pay careful attention to as I consider the appropriate stance of monetary policy. It is helpful to start by looking back to the middle of 2022. At that point, the global economy had largely reopened after pandemic closures, a historic amount of federal support had been deployed, and unemployment was falling toward a half-century low. But supply disruptions

persisted, and the twelve-month inflation rate reached its peak at over 7%. The challenge for Federal Reserve policymakers was clear: move inflation back toward its 2% target while maintaining the health of the labor market. The Federal Open Market Committee (FOMC), which I joined that year, began to raise the federal funds rate from near zero, ultimately reaching just above 5% by mid-2023. Many forecasters predicted that a recession in 2023 was more likely than not. And yet, one did not materialize. Instead, inflation came down considerably, while unemployment remained low. How did this unusual and welcome outcome happen?

Two notable factors were the unwinding of pandemic-era conditions that previously constrained the supply of both goods and labor, in conjunction with restrictive monetary policy that contributed to a moderation in aggregate demand. Today, I would like to call attention to a third factor: a greater-than-usual increase in productivity during the pandemic recovery.

Prior to the pandemic, from 2007 to 2019, productivity growth in the business sector averaged 1.5% annually. In the past five years, productivity growth accelerated to 2%. While some of the productivity gains may reflect situations unique to the reopening of the economy, it is notable that the level of productivity, as measured by output per hour, remained above trend throughout 2023 and 2024 (Federal Reserve Board 2025). This increase in productivity was partially driven by pandemic labor shortages themselves. When it became difficult to find employees, as many Americans retired or left the labor force, many businesses innovated. For example, restaurants adopted online ordering apps and retailers accelerated the implementation of self-checkout systems (Goolsbee et al. 2025).

These changes improved efficiency and contributed to an expansion in potential GDP. As a result, price pressures eased from their peak while demand remained strong.

Improved productivity is widely beneficial to the economy. It allows workers to receive pay raises without companies needing to further increase prices, and it helps ensure consumers have access to the products and services they demand. Furthermore, and particularly relevant to me as a monetary policymaker, a rise in potential output lessens the need to use monetary policy to slow demand. This effect is good for the obvious reason that it allows for increasing economic growth without higher inflation. But importantly, it also lowers the risk of a policy overshoot that could cause the unemployment rate to rise.

Now that I have reviewed the role that productivity growth played in the postpandemic recovery, I would like to focus on two countervailing forces on productivity that I am currently studying. These are changes to trade policy and the growth of AI.

I expect to see a drag on productivity in the near term stemming from the recent changes to trade policy and the related uncertainty, for several reasons. First, uncertainty around trade policy is likely to reduce business investment going forward. At this time, firms do not know the ultimate level and incidence of tariffs or their duration. Firms contemplating large investments might observe conditions that could hold under the paradox of thrift, wondering whether they could get a better deal if they just wait. Higher costs of imported materials and components could also cause firms to delay or scale back their investment plans. This reduction in capital formation can lead to slower technological innovation and adoption and decreased overall efficiency in production processes. Second, protectionist trade policies, while intended to support domestic industries, may inadvertently lead to a less competitive environment if they prop up less efficient firms. And third, any supply chain

disruptions resulting from the policy changes would make production slower and less efficient. These disruptions can lead to inventory mismatches, production delays, and increased costs as firms scramble to find alternative suppliers or redesign their products to accommodate new input constraints. This set of disruptions could pose a particular challenge for monetary policymakers. A reduction in potential GDP means less slack in the economy, which, in turn, means greater inflationary pressure. According to the Taylor principle, for which no explanation is needed at this conference, taming higher inflation requires a higher policy rate. I believe that keeping inflation expectations credibly anchored is essential. Therefore, all else being equal, lower productivity could cause me to support keeping rates at a higher level for longer.

The second ongoing economic development I see altering productivity is the rapidly expanding use of AI. I view this emerging technology as likely to have a significant positive effect on productivity growth. In fact, I see AI as poised to be at least as transformative as other general-purpose technologies, such as the printing press, the steam engine, and the internet. With the wider adoption of AI, we could have a surge in potential output.

As I have discussed in several recent speeches, AI has the potential to revolutionize numerous sectors of our economy (Cook 2024). We already see AI assistants boosting productivity in customer service, software development, and medical diagnosis. AI's ability to process and analyze vast amounts of data could lead to breakthroughs in scientific research and innovation, resulting in an increased rate of new ideas, further amplifying its effect on productivity.

Of course, an AI productivity boom would come with its own set of challenges. If potential output expands too rapidly, it could leave slack in the economy and the labor

market. Moreover, the productivity gains from AI may not be uniform across all sectors, job types, or tasks, leading to a transitional period as the labor market adjusts. Despite these challenges, I am optimistic about AI and its potential to drive significant productivity growth in the coming years.

To summarize, I see productivity growth playing an important role in assisting FOMC policymakers achieve our dual-mandate goals. This dynamic played out, alongside other factors, in recent years when inflation eased from historic highs while the labor market remained solid. Two currently unfolding economic events are likely to influence productivity growth in the coming years—specifically, changes to trade policy and the expansion of AI. Those two developments may prove to run counter to each other, but it is too soon to predict precisely. I will be closely monitoring developments in this space. I look forward to engaging with those studying this topic, including, I am sure, many in this room.

Thank you. I look forward to the discussion.

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The views expressed here are my own and are not necessarily those of my colleagues on the Federal Reserve Board or the Federal Open Market Committee.

General Discussion

David Papell: This is for Lisa Cook. You identified two factors for productivity: tariffs and AI. I was surprised that you didn't mention immigration, because it seems to me that immigration could have a negative effect on productivity that could be more serious than tariffs.

Darrell Duffie: Isabel Schnabel: Last November at your ECB Money Markets Conference, you spoke about liquidity on demand as a way for the ECB [European Central Bank] to reduce its balance sheet, with the objective of having banks come to the ECB when they need more reserves. At the Federal Reserve, it's been a challenge to get banks to come to the Fed when they need reserves. During the SVB [Silicon Valley Bank] crisis, the Fed offered the Bank Term Funding Program (BTFP) on very generous terms. Banks did take advantage of that. But the Fed's facilities for providing liquidity on demand, like the discount window and the Standing Repo Facility, have not been all that effective at generating liquidity on demand when reserves are needed.

Could I please get some comments on how liquidity-on-demand is going in Europe and what can be done in the United States to reduce the Fed's balance sheet while maintaining liquidity in the banking system?

Jason Furman: While I generally agree with the approach that the Fed has outlined in dealing with the tariffs, I do wonder, and I'm going to ask a contrary question, which is partly to Isabel [Schnabel].

Europe has had experience with raising VATs [value-added taxes] and making temporary changes to VATs. I'm wondering how the ECB has looked at that? Do they look through the inflationary changes from changes in VATs, or do they look at the headline inflation number?

For anyone from the Fed who wants to answer, why should we think of tariffs differently from a VAT? With a VAT, if the United States established one, would we think it causes a lot of inflation? Would we need to worry about the inflation it would cause?

John H. Cochrane: Both the Fed and the ECB are soon heading into conclaves to do a strategy review, and that's entirely a good thing. The last strategies were well constructed to worry about deflation at the zero bound, and that's not our problem anymore.

I'd like to ask where you think it's going, in particular, with three issues. First, both the Fed and ECB define their targets as inflation on a forward-looking basis. The Fed promises to make up shortfalls but not past overshoots. So if the central banks knew the price level was going to go up suddenly by 20% and then no more inflation, they would say, "Well, there is inflation on the medium-term forward-looking basis," and ignore it. That's the "look through" case. But the peasants with pitchforks are really mad about the last price level increase. I wonder if this isn't the time to promise to reverse overshoots, in part for the same reason as undershoots: it might help you a lot in fighting inflation and to anchor expectations.

Second, do you think that it's important to distinguish supply and demand shocks? After all, supply shock lowers potential output. Lowering interest rates isn't going to do much at that point. You would think a different response would be appropriate.

Third, the last strategy review promised that the interest rate would respond slowly to inflation. Both the ECB and Fed did respond very slowly to the last inflation. But maybe 1979 and 2021 weren't so great on slow responses. Should we not think about swifter responses and promising swifter responses? If you need to raise rates, politicians, budgets, too-big-to-fail banks, everyone's going to be screaming about it. And so having a promise and a strategy in place that says we're going to respond quickly if we have to, would seem to be a very useful thing.

Lisa D. Cook: I'd like to respond to the AI question. There are five generations of Baptist ministers in my family, and my dad used to say that God only talks to you for thirty minutes. So I just keep things really tight. I didn't include immigration because of our time limits. But if I had more time to talk, I certainly would have talked about immigration, but for a slightly different reason. You probably know that more than half of the PhDs in STEM are awarded to those who have a first degree from another country besides the United States. So if I'm thinking about incremental additions to the stock of knowledge through patents, through educating the next generation of researchers, I'm really worried about immigration, and not necessarily the individuals who immigrate themselves, but their families and so on.

Certainly, we've seen some of our colleagues migrating to places like Canada and Europe. This is definitely our comparative advantage, and I think it could have a long-term effect. So I didn't forget about it. I just thought I didn't have time to cover it, but that's a big concern. Thank you for raising it.

Isabel Schnabel: So first on Darrell's question. As you said, we have introduced an operational framework that one could describe as a demand-driven system, which means that

once we are in a kind of steady state, it's the banks that demand the liquidity. And this demand determines the size of our balance sheet, not the ECB actively buying bonds.

We have already significantly reduced the balance sheet, especially because our longer-term refinancing operations have matured. We've also embarked on QT [quantitative tightening]. But that is the smaller part of the reduction so far.

We are still in a situation of abundant excess liquidity, and therefore, we still don't have much demand at our operations. But that is nothing to worry about. It's simply a reflection of the fact that liquidity is still abundant.

Of course, there is a question of whether there could be stigma in accessing our weekly operation. But we've never had any stigma regarding those operations. So my hope would be that the transition will work well. We are monitoring that very carefully because maybe it is still the case that no larger bank wants to be seen to be the first one to access these operations.

This is, for example, why I've published a blog together with the chair of our Single Supervisory Mechanism, Claudia Maria Buch, where we made very clear that, also from the supervisory side, it's seen as normal business to get liquidity from the central bank in the weekly operations. That's important for avoiding stigma.

So for now, there's not much to see. But I'm quite optimistic that eventually, once we get closer to less ample excess liquidity, banks are going to start to access our operations.

We are also in the middle of our monetary policy strategy review. Last time, we discarded the makeup strategy already very early in the process. Back then, we had an academic roundtable, and the first person who spoke advised us against makeup strategies

because they only work in one direction. A central bank would never push the economy into a recession just to get back to the 2% average.

I still find that quite plausible. So we have never had a makeup strategy, and I think I'm not saying too much that we are not going to have one anytime soon. So I still believe that a forward-looking approach is the right one. Still, as Kristin [Forbes] said, people cannot ignore what happened in the past, and so we have to think about how to deal with that.

To your point on the swiftness of responses, we have learned that we have to be able to change the course of monetary policy relatively quickly when we are facing large shocks. Most central banks didn't do that in the previous episode. It took a long time to reverse course. That was partly due to forward guidance. But asset purchases are, in general, relatively hard to reverse. So we have to think about how we can be more agile in both directions.

Of course, the previous strategy reviews were very much under the influence of the zero lower bound, and our reaction functions were very asymmetric. I think there is a clear argument for becoming more symmetric.

Beth M. Hammack: I'm happy to respond, Darrell, on your comment about some of the tools that we have. We are operating in a different regime than the ECB from a liquidity perspective. We're in an ample reserve regime, and we are continuing to reduce the balance sheet.

There is a concern at times about whether or not banks would be willing to use the ceiling tools that we have in place, whether that's the discount window or the standing repo facility. These help to provide a cap on rates and to keep things well-maintained. We've seen a couple of episodes, whether it was the third quarter of last year [2024] when rates traded

meaningfully above, and in the most recent episode in April [2025], things were very well contained.

The trading desk at the New York Fed that manages the balance sheet has been spending some time thinking about ways that it could help to improve these operations. I think Roberto Perli had a speech yesterday where he said that they're going to begin to do morning operations, which would be one way to help.

Another tool that could be useful is central clearing. If the standing repo facility were a cleared facility rather than a bilateral facility, that would likely reduce the balance sheet cost for dealers and make it more attractive for them. It could also have the benefit of reducing stigma for them.

The discount window is another ceiling tool, but it has different challenges from that perspective because you couldn't really clear those pieces.

Alberto G. Musalem: Let me pick up where Beth left off on the discount window. There is a modernization effort going on. It has to do with the stigma side and making collateral management for the depository institutions more effective and efficient, particularly with respect to collateral posted at the FHLBs [Federal Home Loan Banks] versus at the Fed's discount window. That work is ongoing.

On Jason's question about the VAT experience, that is the classic textbook of a one-time price increase. In Japan, they changed the sales tax many times, and we saw inflation go up for that month, and then stop.

I think the initial conditions are important today. We have inflation above target, and it has been for four years. Short-term inflation expectations are rising, and the public and businesses may be more sensitive to inflation than they have been in the past. We have

tariffs announced or imposed very broadly across the input-output structure of the economy, including intermediate inputs. Of course, an increase in sales taxes would also do that, although maybe the cascading of sales taxes may not be as dependent on how it is implemented, and may not be as complete. So initial conditions are different, and that opens the door to the possibility, or the risk, that the impact of higher tariffs will not be just like a sales tax increase.

On the framework questions, John, there were four or five questions in there. What I will say is that we are continuing to work on it. All the regional Banks and the Board of Governors are contributing. It is really a system-wide effort. We're reaching out to the communities we serve with Fed Listens events. We are listening to how policy has affected people's lives and livelihoods in our districts. To pick up on what Isabel said, I don't want to prejudge what the framework will be because we are still working on it. My personal view is that the framework we have today will be revised. The current framework has, as a central case, the effective lower bound, which causes some asymmetries. Therefore, the current framework has some built-in asymmetries. The catch-up strategy is one of them, the definition of the shortfalls is another, and there are other asymmetries. What I learned is that, going forward, we have to build a framework that is more robust to different states of the world, that still considers the zero lower bound asymmetry and state, but that is also focused on other states. And absolutely, we have to consider supply and demand shocks and try to distinguish between them.

Cook: John [Cochrane], Thanks for bringing this up. I think that one of the things that's happened is that we are looking at the data that was available.

Do we need to use different types of data, data that might be more informative at different points in the business cycle, during business cycle transitions, versus other parts of the business cycle, or to do different types of research? The research on sectoral analysis and macro models has changed since the beginning of our strategy review last time.

I think that this was a shortcoming. We weren't doing as much of that. I think that we are learning from the research that's being presented. We're learning from the data how we should interpret the data at different points. So I think the strategy review is comprehensive; it includes large questions, it includes smaller questions, more defined questions, and more amorphous questions. Stay tuned. We're still working on it.

Torsten Slok: The term premium has gone up quite a lot recently. How should we think about this in a Fed decision framework? If the term premium goes up for fiscal reasons and the fiscal outlook just continues to get worse and worse, does that mean the central bank should be cutting because we get tighter conditions in the long end? Does it mean the Fed should not do anything in the front end? Should we just wait and see?

Does anyone on the panel have a view on this question? First of all, do you disagree with why the term premium is going up? Second, what does it mean for monetary policy when we have this fiscal push on the term premium in the background?

James B. Bullard: This conference has historically asked a lot of questions about balance sheet policy and wanted more clarity around balance sheet policy. Would it be possible in the framework review to say something about balance sheet policy? I think in the past, the committee has not been able to come to a complete consensus on that, but maybe there's more consensus these days than there would have been. And also, in Europe, it's not as clear to me what the statement is on the purpose and nature of balance sheet policy for the ECB.

Patrick Kehoe: I was talking to the graduate students the other day about how tariffs will pass through, and how much of the tariffs will wind up in final consumer prices as they trickle in over time. We were chatting about how different it is if you're taxing final goods.

If you're taxing these particular types of shirts, it's not in the middle of a value chain. But if you tax something at the center of production that goes into many, many goods, like steel, it could have massively more effect. We're trying to look for papers on this topic, but we couldn't find that much work on that question. If you have huge tariffs and a lot of them affect things right at the center of production as intermediate inputs that would be passed on in many industries, you could get a much bigger multiplier on final goods prices.

Have you or your teams been thinking about issues like that at the regional Feds and the Board of Governors?

Elena Pastorino: This is an end-of-the-day question for Isabel and the panel. I am a European economist, so my eyes are often trained on Europe, too. We often talk about political uncertainty in the United States these days, but the same concern can be raised for Europe—for instance, in light of the war in Ukraine and the fiscal commitments that coping with it may entail for the European Union (EU). So given the potential risk of short-term political and fiscal instability in the EU, what is the actual size of the monetary space in which the ECB can effectively operate?

Schnabel: Let me say a few words about balance sheet policies, which of course also have to be part of a strategy discussion.

I've already given many speeches on asset purchases, so I'm not telling you any secrets. When it comes to balance sheet policies, one has to distinguish different purposes.

We have QE [quantitative easing] as a monetary policy stance instrument, and then we have asset purchases for market stabilization and monetary policy transmission. I think there's a general consensus that asset purchases for market stabilization have been very effective, can be short-lived, and have relatively small side effects. Therefore, they are well accepted.

So the discussion is really much more about QE for monetary policy stance reasons. There, it seems that the ratio of benefits and costs is worse than we may have thought. They were probably less effective than we had thought, and they were more costly than we had thought. This would lead me to the conclusion that the bar for QE in the future should be higher than it was.

I do think there is a case for this tool to remain in the toolbox. Especially when we are getting close to the effective lower bound, there is clearly a case to use it. But maybe we have to be a bit more cautious on that.

On the question of final versus intermediate goods, I showed one chart in my presentation. We looked precisely at this question of whether it makes a difference whether retaliation is on final or intermediate goods. It does make a big difference. Maybe you can have a look at that analysis. I think it's interesting.

Hammack: I'll comment on the term premium. I don't have a strong view on what is driving it. We have a number of models that work on decomposing it. For me, the important part is that, as I think about financial conditions generally, the term premium is a component of the level of long-term rates. That level has an impact on households and businesses and affects their willingness to borrow or lend at any point in time. And so, to me, this issue is really thinking about that channel and how that's going to change their viewpoints.

So I think the role for monetary policy is not to combat the term premium per se. That's not our role. Our role is to think about the overall impact on the economy, and on the real economy, and to take it in from that perspective. On the balance sheet, I appreciate the question. I don't believe that a broad balance sheet policy is within scope for us to put in this framework review. But I do think monetary policy is at its best when it's clear and transparent and when the public has a good sense of what our reaction function is. And so, I think it's a great suggestion that we should put out more transparency around what our balance sheet policy is.

Musalem: On balance sheet policy, again, I don't want to prejudge the outcome of the framework review. I will state my personal views. I would think it productive to communicate to the public the conditions under which the balance sheet policy should be used at the effective lower bound, or used for market-functioning reasons, or used for monetary policy reasons. I believe the public and the markets would benefit from that kind of information and structure.

On Pat Kehoe's point, absolutely, if you have intermediate goods, the pass-through is higher. That is why the analogy to a sales tax or a VAT may not be direct, because the VAT on intermediate inputs gets reimbursed. A VAT doesn't cascade down the entire input-output structure, whereas tariffs do. So the effect of tariffs on prices could be a little higher. I've seen private-sector estimates, including the effects on intermediate goods, based on the effective tariff rates of about a week or two ago, that suggest a price-level impact of 1.5% to 2%, with no information on how that would be distributed over time.

I agree with Beth on the term premium. The way I think about it is that we look at a lot of models, and they tell slightly different stories. Sometimes those models agree,

sometimes not. My interpretation is that the expected real rate, without the term premium, has been coming down. The risk-free nominal rate has been coming down as well. Expected long-term inflation has been rising modestly, very modestly, and the term premium on inflation has been rising somewhat. If you decompose the term premium into an inflation component and a real return component, it's about fifty-fifty in terms of drivers of what is increasing the term premium. So it's hard to say if fiscal policy or monetary policy is responsible.