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Navigating Economic Shocks: A Monetary Policymaker's Perspective

Remarks by

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Thank you for the kind introduction. I am delighted to be here at Stanford University today to discuss a topic that is central to the Federal Reserve's work: how policymakers analyze and respond to economic shocks in real time.¹

The economy is constantly experiencing shocks that change economic conditions and that policymakers must consider. Today, I will focus on shocks that are extremely difficult—if not impossible—to predict, such as the emergence of a pandemic, the start of a war, or a sudden breakthrough in technological advancement. When such shocks occur, the Federal Open Market Committee (FOMC) evaluates them and sets monetary policy consistent with its dual mandate of maximum employment and price stability.

This responsibility is both crucial and complex. Since the effects of shocks are uncertain in real time, policymakers must draw conclusions about their nature based on analysis of data, rigorous economic modeling, and careful judgment. Economic conditions also often reflect the effects of overlapping shocks, whose relative importance and interactions must be assessed.

Today, I will start by classifying economic shocks and then discuss how monetary policymakers might respond to different types of shocks. Then I will discuss how I am approaching the two significant developments affecting the current juncture: the energy price shock and the macroeconomic effects of artificial intelligence (AI). I will talk about how both might affect monetary policy going forward before taking your questions.

¹ The views expressed here are my own and are not necessarily those of my colleagues on the Federal Open Market Committee or the Board of Governors of the Federal Reserve System.

Classifying Shocks

One simple, yet effective conceptual framework policymakers can use to classify shocks is to determine whether their initial effect is on the demand side or the supply side of the economy.

The demand side of the economy comprises household consumption, business investment, government expenditures, and net exports. Demand shocks initially change these expenditures without directly affecting the economy's underlying productive capacity.

The supply side of the economy encompasses the structure of its production processes and markets. Supply shocks tend to affect the economy's productive capacity, often referred to as "potential output." Productive capacity captures the available supply of labor and capital as well as the productivity of those inputs.² Potential output is the hypothetical level of production that the economy can sustain over the long run while maintaining price stability and maximum employment.³

Both demand and supply shocks can vary in duration. They may be temporary, causing short-term fluctuations, or they may be persistent, leading to more enduring changes in the economy. The nature and duration of these shocks significantly influence the approach to monetary policymaking, a subject that I will return to shortly.

² Supply shocks can also reflect changes in the structure of markets that do not necessarily change the economy-wide level of potential output, such as a markup shock. Markup shocks occur when the wedge between a firm's production costs and the prices it charges changes without a corresponding change in actual costs of production. Markup shocks are a supply-side phenomenon because they affect prices for a given level of economic activity.

³ Another common definition of potential output is the hypothetical level of output that would prevail in the absence of frictions like nominal rigidity. Further, the distinction between demand and supply shocks discussed here does not necessarily hold for benchmark levels of output other than potential output as defined above. For example, demand shocks in the form of changes in household preferences can affect the hypothetical level of output under flexible prices in standard dynamic general equilibrium models.

A key concept for analysis of an economic shock is the output gap—a valuable tool for monetary policymakers as we assess economic conditions because it summarizes the strength of demand relative to supply. The output gap represents the relationship between the economy’s actual output—typically measured by gross domestic product (GDP)—and an estimate of its potential output. When GDP is higher than potential output, the output gap is positive, and the economy is in a state of excess demand. In this case, employment tends to be above its maximum sustainable level, with upward pressure on inflation. Conversely, when GDP falls below potential output, the output gap is negative, and the economy is in a state of excess supply. During periods of negative output gaps, employment levels typically are below their maximum sustainable point, accompanied by downward pressure on inflation.

Without shocks, monetary policy decisions would be consistent with GDP in line with its potential. This alignment would correspond to employment reaching its maximum sustainable level, with inflation stable at our 2 percent longer-run objective. In practice, such conditions rarely occur. Often, economic shocks push GDP away from its potential.

While conceptually distinct, supply and demand shocks are difficult to identify, especially in real time. Many economic events do not fall neatly into one category. They contain shocks that affect both demand and supply. Moreover, the persistence of shocks is highly uncertain, and even sophisticated forecasting techniques can struggle to resolve this uncertainty as an event unfolds.

With these classifications as a backdrop, let’s consider the implications of economic shocks for monetary policy formulation.

Responding to Shocks in Real Time

Our monetary policy strategy is designed to promote maximum employment and stable prices across a broad range of economic conditions. How we respond to economic events depends on whether shocks create tension between the two sides of our mandate.

First, consider a shock that moves the output gap and inflation in the same direction. We may have a positive output gap, with employment above its maximum sustainable level and inflation above 2 percent. Conversely, we may have a negative output gap, with employment below its maximum sustainable level and inflation below target. In both cases, our inflation and employment objectives are aligned; therefore, policy actions taken to address one objective also support the other. With a positive output gap, where we observe both overheating in the labor market and inflation exceeding our target, our policy response would typically involve raising interest rates to cool excess demand. The intent is to bring employment closer to its maximum sustainable level while addressing inflationary pressures. With a negative output gap, lowering interest rates can stimulate the economy, which simultaneously should help increase employment and raise inflation toward its target.

Now consider a shock that pushes the output gap and inflation in opposite directions. Policy tightening addresses inflationary pressures but possibly at the expense of employment; easing does the reverse. Thus, we could face a tradeoff, where tightening helps price stability but hurts employment.

Given this possible tension, how should I react as a monetary policymaker? The answer depends on the relative size of the economic costs arising from deviations of inflation and employment from their respective longer-run goals and the balance of risks

on both sides of our dual mandate.⁴ If inflation expectations risk becoming unanchored, then a stronger reaction to the inflation side of our mandate may be warranted.

Conversely, if inflationary pressures do not intensify and inflation expectations remain well anchored, then it may be prudent to prioritize the downside risks to output and employment. This response may be especially necessary if weakness in the labor market risks becoming entrenched.

Another consideration is whether the shock is expected to be short lived or persistent, keeping in mind that monetary policy actions tend to work with a lag. This consideration is important when deciding whether to respond to the shock or to allow it to pass without a policy response. If a shock is expected to reverse before monetary policy can take effect, looking through it may be the appropriate approach. It is challenging, however, to predict how long a shock may last. The appropriate monetary policy response, again, requires weighing the risks to both sides of our mandate from various actions.

When confronted with a single shock, policymakers must carefully identify and respond to the shock. Shocks, however, rarely happen in isolation, further complicating this task. Sometimes the economy faces multiple shocks simultaneously that may affect both supply and demand. Moreover, we face uncertainty about how shocks propagate through the economy. Such complications bring me to the challenges posed by the current juncture.

⁴ For more discussion on the FOMC's longer-run goals and monetary policy strategy, see the "2025 Statement on Longer-Run Goals and Monetary Policy Strategy" on the Board's website at <https://www.federalreserve.gov/monetarypolicy/monetary-policy-strategy-tools-and-communications-statement-on-longer-run-goals-monetary-policy-strategy-2025.htm>.

Challenges Posed by the Current Juncture

Currently, I am monitoring two significant developments: the conflict in the Middle East and the proliferation of AI.

The Middle East conflict is, in part, a supply shock. Global supply chains for oil and other energy-intensive goods have come under stress. The resulting spike in the price of oil, shown in figure 1, and related products has lowered real incomes and triggered a worsening of financial conditions more broadly. While oil prices have declined from the recent peak, considerable uncertainty remains in the region, which may still weigh on economic activity and inflation. This outcome has put modest downward pressure on aggregate demand. I expect the effects on demand to be muted, however, because the U.S. is now a net exporter of oil and U.S. production is less oil intensive than in the past, as is shown in figure 2.

As shown in the left panel of figure 3, this supply shock is occurring in an environment in which inflation has already been above the FOMC's target for some time, in part a result of post-pandemic imbalances. At the same time, the unemployment rate, illustrated in the right panel of figure 3, is near a level that most observers view as consistent with maximum employment.⁵

These factors confront the FOMC with a delicate balancing act. On the one hand, we face the imperative to address inflationary pressures. On the other hand, we must be mindful of employment potentially moving below its maximum sustainable level. This scenario exemplifies the type of policy dilemma where our dual-mandate objectives are not aligned but rather in tension with each other.

⁵ For example, the current unemployment rate of 4.2 percent is near the CBO's estimate of the noncyclical rate of unemployment, which is 4.4 percent.

Of course, this energy shock also overlaps with the shock stemming from a significant change to trade policy. Recent trade policy changes have had at least near-term effects on output and prices. Those policy changes may alter the economy's productive capacity and have implications for the labor market. As a policymaker, I take all of these developments into account. We do not have the luxury of considering each shock in a vacuum. Instead, we must consider the whole of the economy when setting policy to achieve our dual-mandate objectives.

The quick succession of shocks raises the risk that inflation becomes entrenched and inflation expectations become unanchored. The question of whether the recent increase in energy prices will feed into longer-term inflation expectations and result in a persistent rise in inflation is a critical one.

The second development I am monitoring is AI. Surveys of businesses, like the one illustrated figure 4, suggest that the uptake of AI has risen considerably over the past two years. This technology presents a fascinating case study from a policymaker's perspective, as the economic shock from AI is likely to have persistent effects on both supply and demand.

On the supply side, AI will automate some workers' tasks and augment their ability to do others, which will likely lead to significant productivity gains. That development, in turn, would raise the growth rate of potential output over the coming years. On the demand side, optimism about AI may boost investment and consumption today, even before these productivity gains fully materialize. Firms expecting higher future profits are investing heavily in data centers, advanced computing equipment, and

AI capabilities. Indeed, figure 5 shows that firms' capital expenditures likely related to AI have increased substantially recently.

The timing of the supply and demand effects is of critical importance for monetary policymakers. If, on the one hand, the demand effects from stronger investment and consumption are realized sooner than the supply effects from productivity growth, AI could exert upward pressure on inflation. If, on the other hand, increased productivity lowers production costs sooner, we may observe downward pressure on inflation.

A related consideration is the potential effect of AI on the longer-run neutral rate of interest. Often called r^* , this is the real interest rate consistent with the economy operating at its full potential once all shocks have dissipated. If AI leads to permanently higher levels of productivity growth, it may increase firms' desire to invest and, hence, their demand for funding. Higher productivity growth may also discourage household savings by increasing expected future income. Under these circumstances, to reconcile the increase in investment with reduced savings, r^* would likely rise. However, predicting changes in the neutral rate is challenging, given the historically noisy relationship between productivity growth and real interest rates. Furthermore, potential AI-induced increases in inequality could have mitigating effects on r^* . High-income households tend to save at higher rates than low-income households. Thus, a rise in income inequality could lead to an increase in the supply of savings, putting downward pressure on the neutral rate.⁶

⁶ The increase in income risk associated with higher income inequality may also increase savings for precautionary reasons. For evidence on the drivers of long-run real interest rates, see Kurt G. Lunsford and Kenneth D. West, "Some Evidence on Secular Drivers of US Safe Real Rates," *American Economic Journal: Macroeconomics* 11, no. 4 (2019): 113–39.

While r^* , like potential output, is not directly observable, estimating it is of considerable importance for monetary policymakers, because these estimates are informative about the range of interest rates that we consider broadly neutral. If AI indeed raises the neutral rate, then for any given level of the federal funds rate, policy effectively becomes more accommodative. Conversely, if AI-related developments cause r^* to decline, policy effectively becomes more restrictive.

Policymakers must remain attentive to developments to ensure that the stance of monetary policy remains appropriately calibrated and to help the economy smoothly transition to a new equilibrium.

On the Current Stance of Monetary Policy

Before closing, let me add a word about the current stance of monetary policy. I am firmly committed to returning inflation to our 2 percent target, consistent with our dual-mandate objectives of price stability and maximum employment given to us by Congress. At our last meeting, in June, the FOMC decided to maintain the target range for the federal funds rate at 3-1/2 to 3-3/4 percent. This policy stance should continue to support the labor market while allowing inflation to resume its decline toward our 2 percent target as the effects of past tariffs and energy prices pass through completely. That said, in a scenario where actual inflation does not start to cool down soon, I believe that it could be appropriate to reconsider our current policy stance to ensure we fulfill our commitment to deliver price stability. Fortunately, our current policy stance leaves us well positioned to respond to economic developments based on the incoming data, the evolving outlook, and the balance of risks.

Conclusion

As I have emphasized today, understanding and responding to economic shocks as events unfold is challenging. Correctly identifying shocks as they occur and setting policy appropriately helps maintain well-anchored inflation expectations, which is crucial for monetary policy. When the public trusts that the FOMC will return inflation to our 2 percent longer-run goal, policymakers have more flexibility to respond appropriately to the full range of shocks the economy might experience. The economy will continue to evolve, new shocks will occur, and policy responses will adapt accordingly. I think carefully about the shocks the economy faces, and their implications, because this puts me, as a policymaker, in the best position to fulfill our mandate and to serve the American people.

Thank you for inviting me to speak today. I look forward to our discussion.



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Road Map of Talk

- Classifying Shocks
- Responding to Shocks in Real-Time
- Challenges Posed by the Current Juncture
- Current Stance of Monetary Policy



Classifying Shocks

Demand Shocks

- Immediately affect household consumption, business investment, government expenditure, or exports
- No direct effect on potential output

Supply Shocks

- Immediately affect production processes and the structure of markets
- Change potential output



The Output Gap

$$\text{Output Gap} = \text{Actual Output (GDP)} - \text{Potential Output}$$

Positive output gap (excess demand)

- Employment tends to lie above its maximum sustainable level
- Upward pressure on inflation

Negative output gap (excess supply)

- Employment tends to lie below its maximum sustainable level
- Downward pressure on inflation



The Fed's Mandate

Dual Mandate – Maximum employment and stable prices

Response to shocks depends on both sides of the mandate

- Employment and inflation moved in the **same direction**
 - Objectives aligned
 - Policy actions can support both
- Employment and inflation moved in **opposite directions**
 - Objectives in tension
 - Policy actions depend on risks to each side of the mandate



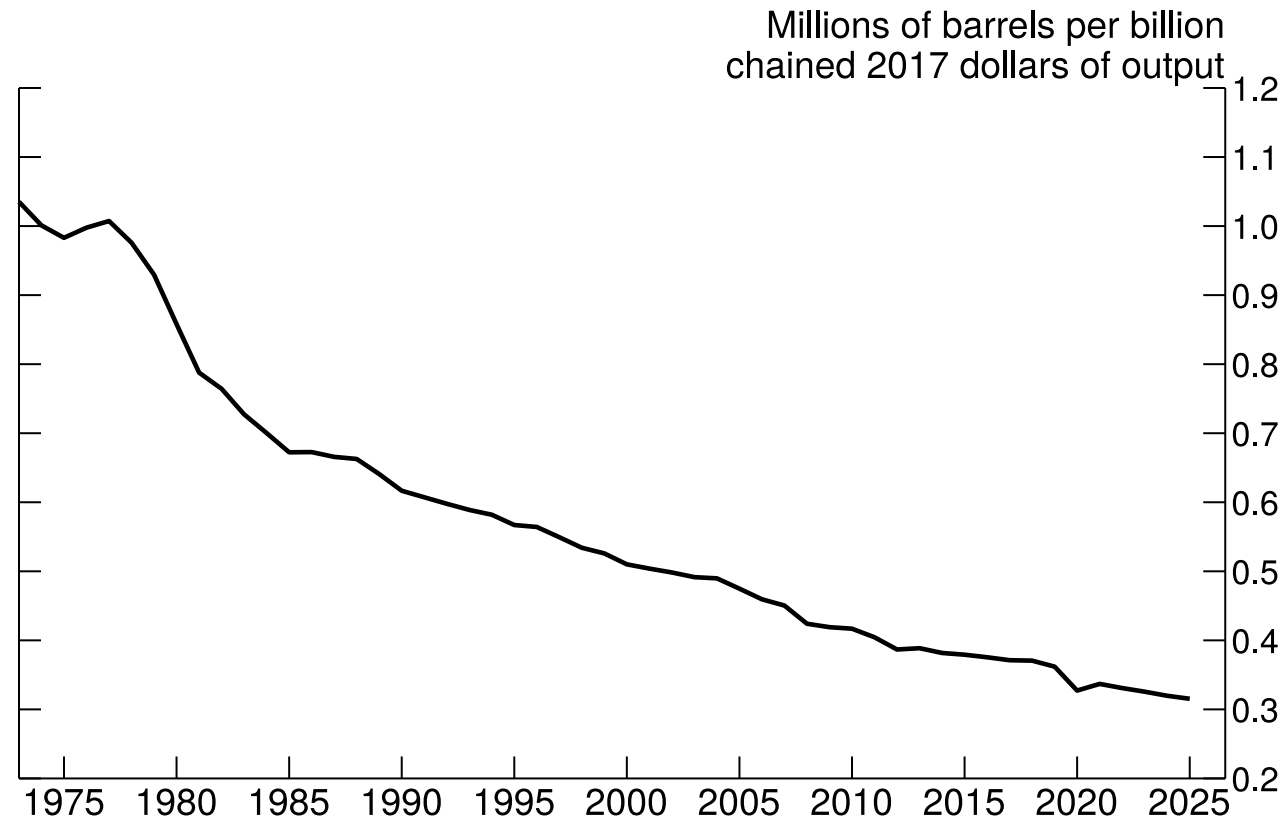
Figure 1: Oil Prices and the Middle East Conflict



Source: U.S. Energy Information Administration.



Figure 2: Oil Intensity of U.S. GDP

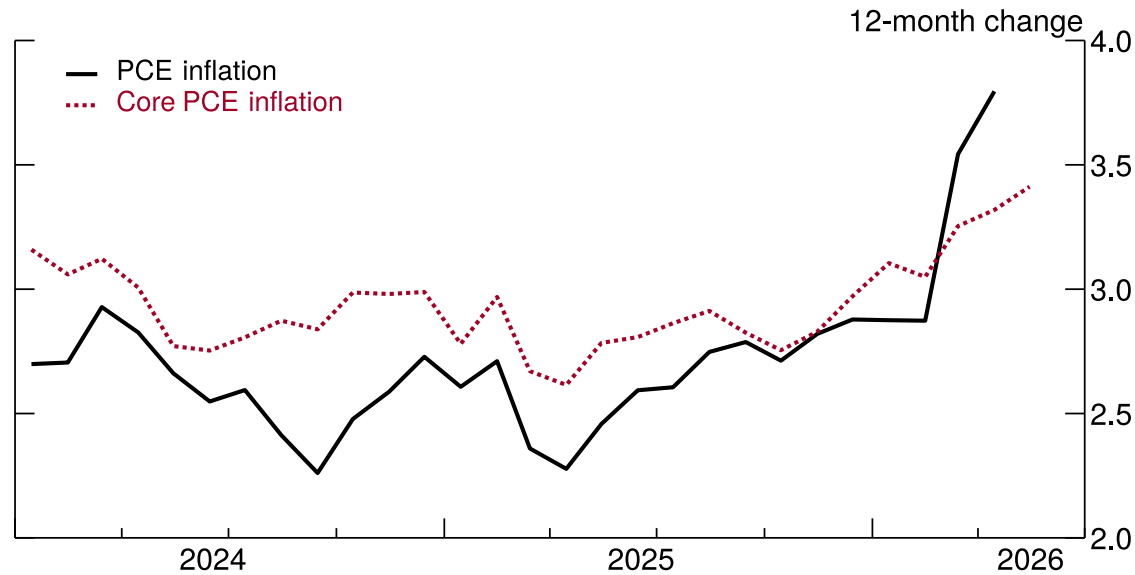


Note: Series in millions of barrels per billion chained 2017 dollars of output.

Source: U.S. Energy Information Administration; U.S. Bureau of Economic Analysis.

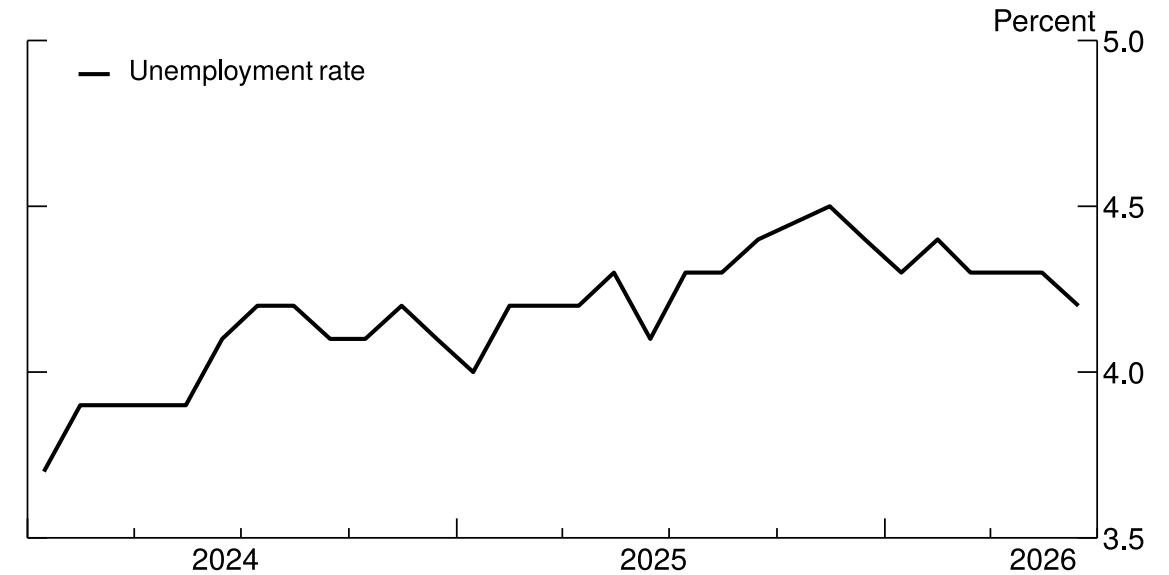


Figure 3: Inflation and Unemployment



Note: Personal consumption expenditures price index (PCE) inflation is the change in the personal consumption expenditures price index, and core PCE inflation is the change in the personal consumption expenditures price index excluding food and energy. October 2025 values are interpolated by Haver Analytics. Monthly values.

Source: U.S. Bureau of Economic Analysis, Personal Consumption Expenditures Price Index; Haver Analytics, [Our data - Haver Analytics](#).

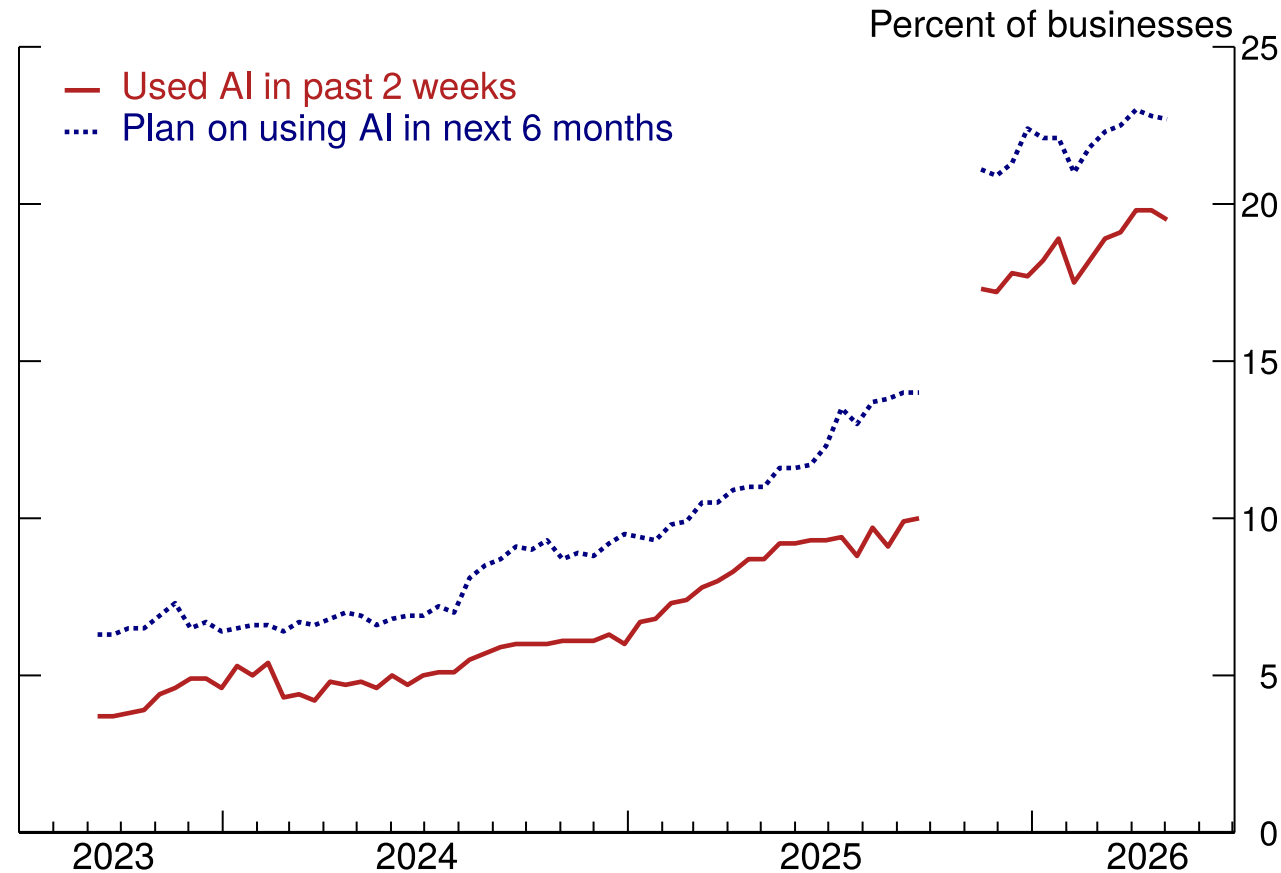


Note: Monthly values. There is no data point for October 2025.

Source: U.S. Bureau of Labor Statistics, Unemployment Rate; Haver Analytics, [Our data - Haver Analytics](#).



Figure 4: Artificial Intelligence – Rising Uptake

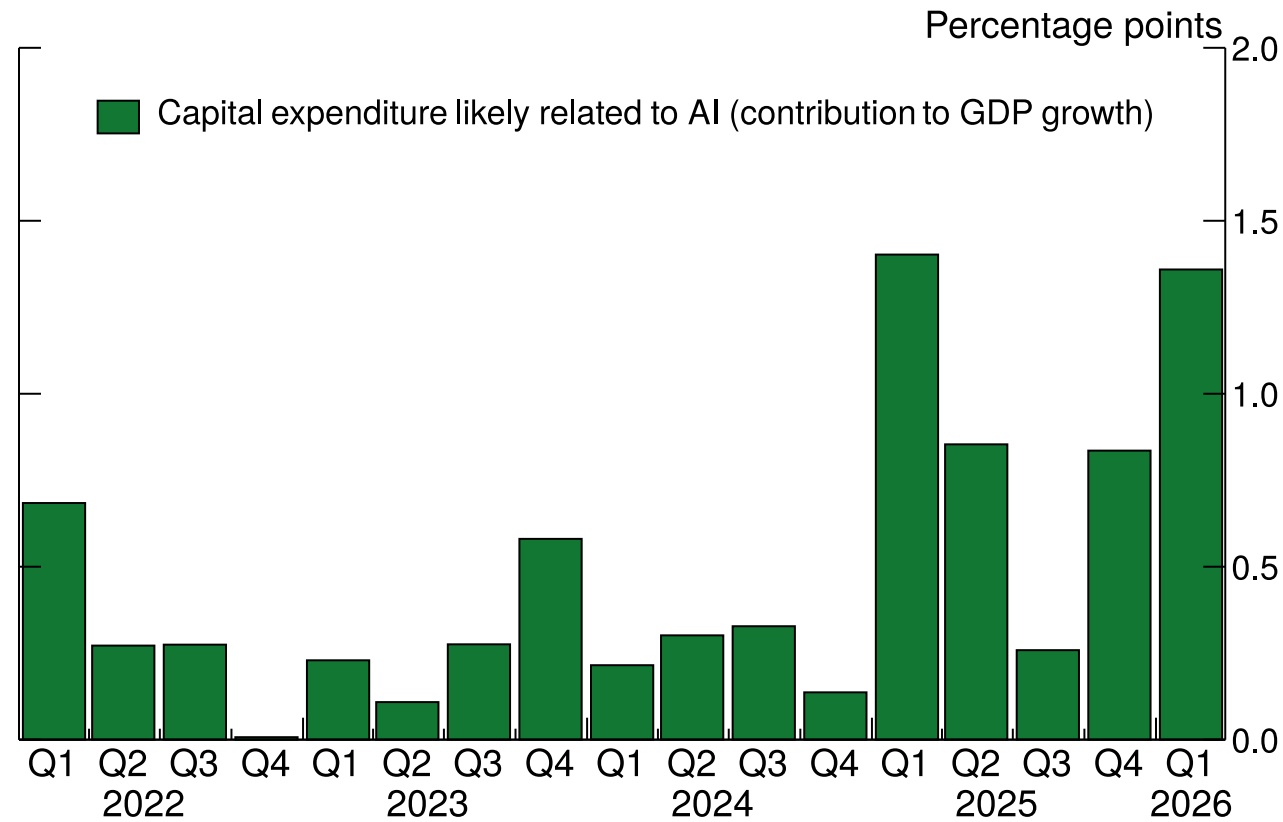


Note: Data missing due to govt. shutdown (Oct. 6 to Nov. 16, 2025), structural break due to the rephrasing of survey questions.

Source: Business Trends and Outlook Survey, U.S. Census Bureau.



Figure 5: Artificial Intelligence – Investment Boom

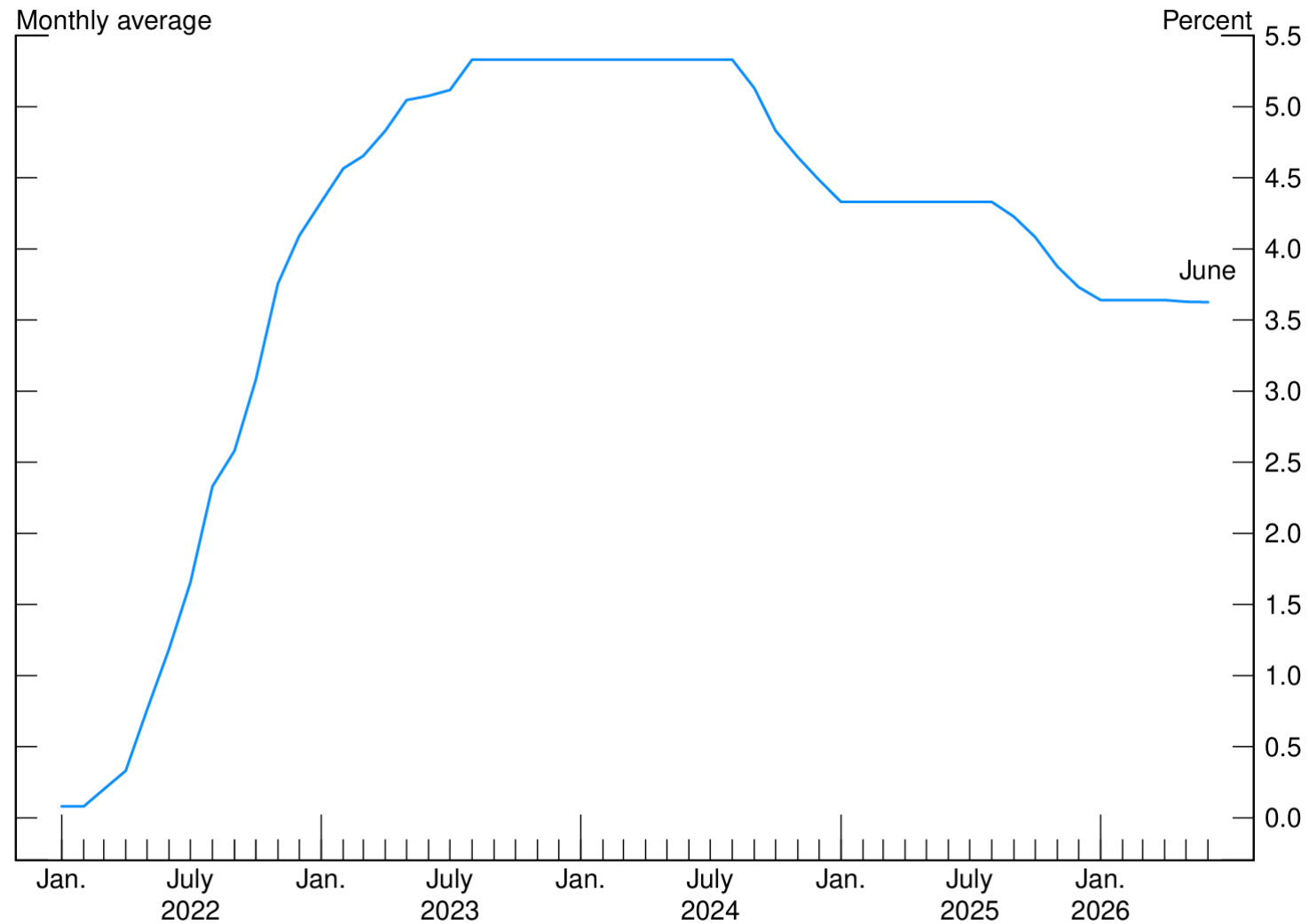


Note: Includes software, data centers, high tech, and power investment.

Source: U.S. Bureau of Economic Analysis.



Figure 6: Federal Funds Rate



Source: Federal Reserve Bank of New York, <https://www.newyorkfed.org/markets/reference-rates/effr>.



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