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Using Inflation Shock Patterns to Help Forecast Inflation

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A new indicator—the Inflation Shock Momentum Index—can help identify emerging inflationary or disinflationary pressures in real time. The index tracks the shares of consumer spending categories that are experiencing consecutive positive or negative monthly inflation shocks, allowing detection of shifts in the underlying inflation environment. The index improves inflation forecasts at one-year to three-year horizons and responds to macroeconomic shocks in line with accepted theory. Recent index readings have fluctuated above and below zero, indicating that inflation may remain near current levels in the near to medium term.

The pandemic-era inflation surge highlighted the difficulty policymakers face in determining whether changes in inflation are being driven by transitory or persistent shocks (Lansing 2022). Early and reliable indicators of shifts in the underlying inflation environment can help improve monetary policy decisions. A delay in recognizing persistent inflationary pressures raises the risk that monetary policy will fall behind the curve, possibly weakening the anchoring of inflation expectations and making it more difficult to restore price stability. In contrast, premature policy tightening poses the risk of output or employment losses.

This *Economic Letter* describes a new indicator developed in Lansing and Shapiro (2026), called the Inflation Shock Momentum Index (ISMI). The index provides a timely signal of emerging inflationary or disinflationary pressures. We construct the ISMI by sorting categories of the personal consumption expenditures (PCE) basket of goods and services into groups based on the pattern of recent monthly surprises, called inflation shocks. Positive momentum categories are identified as those with three consecutive positive inflation shocks, while negative momentum categories are identified as those with three consecutive negative inflation shocks. The ISMI represents the expenditure-weighted share of inflation categories with positive momentum minus the share with negative momentum. To help monitor inflation shock momentum in real time, the San Francisco Fed has launched a new data page for the Inflation Shock Momentum Index with monthly updates.

The ISMI helps improve forecasts of overall PCE inflation at horizons of one to three years, even after accounting for standard predictor variables. The index also responds to macroeconomic shocks in ways consistent with economic theory, supporting its reliability as a measure of underlying inflation behavior.

Tracking directional inflation pressure

Inflation can be viewed as a combination of a slow-moving historical trend and new, unexpected changes, or shocks. In this framework, inflation can stay high or low for two reasons: (1) The underlying inflation trend

is slow to change, or (2) the underlying shocks can be long lasting. Some methodologies focus on the first point by testing whether trends have shifted (Lansing 2022). The ISMI instead addresses the second point by tracking whether recent shocks continue to move in the same direction. This approach delivers two benefits relative to existing indicators of inflation persistence. First, it distinguishes between upward versus downward inflation pressure, rather than simply gauging overall persistence. Second, it employs only recent data to provide early detection of shifts in the underlying inflation environment.

The ISMI tracks whether category-level inflation shocks have been consistently positive or negative in recent months. A sustained sequence of same-signed inflation shocks can indicate that the underlying inflation process is shifting. Looking at the entire pattern of inflation shocks across the many PCE spending categories increases the amount of information we can glean about the behavior of inflation in any given month.

For each of the 130 or so categories of goods and services in the PCE basket, we estimate a simple trend inflation model by regressing the monthly inflation rate on a constant and 1-month lagged monthly inflation using a rolling 120-month data window. The difference between the observed monthly inflation rate and the fitted trend model's prediction defines the inflation shock.

We then examine the most recent sequence of inflation shocks for each category. We classify a category as having positive momentum if it experiences three consecutive positive shocks and negative momentum if it experiences three consecutive negative shocks. We use three consecutive months as a classification rule to provide a reliable signal: A two-month rule is more likely to be satisfied by chance, while a four-month rule may exclude many informative signals. Nevertheless, our results are robust to the use of alternative classification rules. The ISMI aggregates momentum signals using the expenditure weights of each category. Specifically, the ISMI is defined as the share of spending categories with positive momentum minus the share of spending categories with negative momentum.

The ISMI therefore identifies the direction of inflation shocks over the most recent three-month period. Positive ISMI values indicate broad-based upward pressure on inflation, while negative values indicate downward pressure. On average since 1969, around 20% of the total monthly inflation rates across categories exhibit three consecutive positive shocks, while around 15% exhibit three consecutive negative shocks.

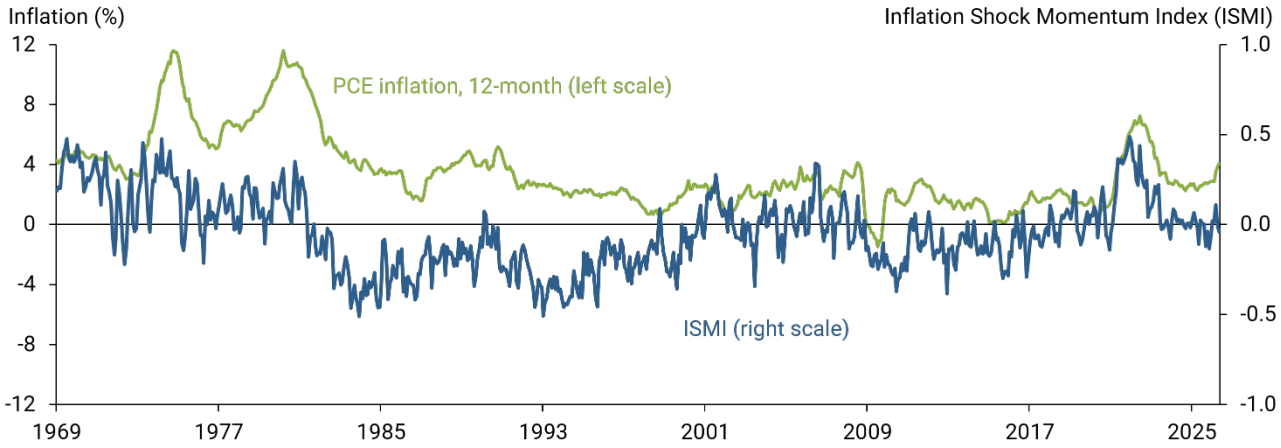
Tracking the ISMI over time

Panel A of Figure 1 plots the ISMI together with 12-month PCE inflation. Pronounced positive or negative fluctuations of the index align well with historical inflation narratives. The index is persistently positive during the Great Inflation era of the late 1970s and early 1980s. It then turns sharply negative during the subsequent disinflation and remains below zero into the 1990s. PCE inflation declined from around 5% in 1990 to 2% in 1999. The late 1990s is when long-run inflation expectations became well-anchored to the Fed's longer-term inflation goal (Bernanke 2007).

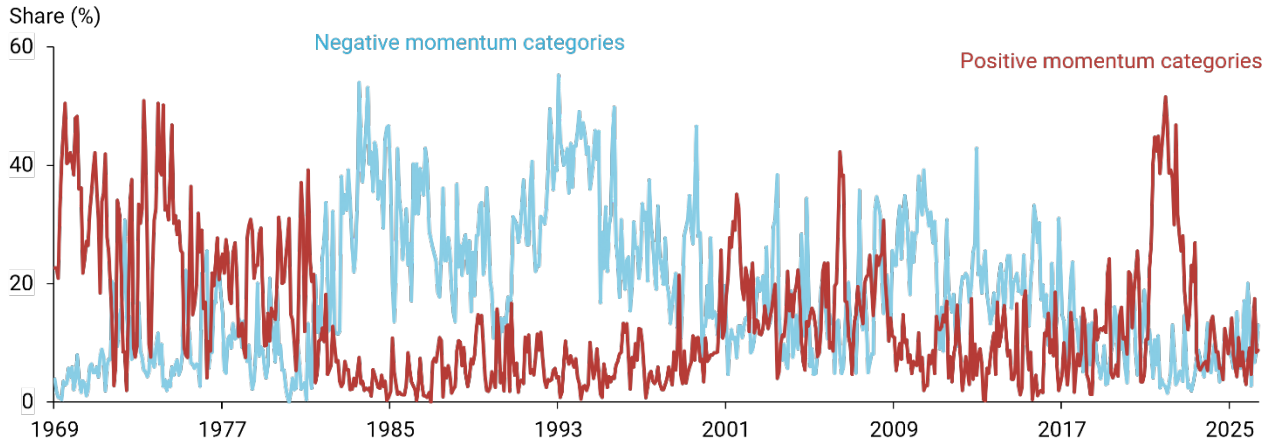
Panel B of Figure 1 shows that the positive and negative components of ISMI remain close to each other during the early to mid-2000s, translating to an index value that fluctuates around zero. This pattern

Figure 1
Inflation Shock Momentum Index (ISMI): Historical view and components

A. ISMI relative to personal consumption expenditures (PCE) inflation



B. Positive and negative components of ISMI



Note: Panel A shows 12-month PCE inflation and ISMI, which tracks the shares of PCE categories that are experiencing three consecutive positive or negative inflation shocks. Panel B shows the two separte components of ISMI that measure positive versus negative momentum.
Source: Bureau of Economic Analysis and authors' calculations.

coincides with 12-month PCE inflation remaining close to 2% (panel A). The ISMI then declines sharply with the onset of the Great Recession in late 2007 and remains mostly negative during the 2010s, coinciding with a period of persistently low inflation. Indeed, from June 2009 until the start of the pandemic in February 2020, 12-month headline PCE inflation was below the Fed's 2% goal for 101 out of 129 months, or 78% of the time.

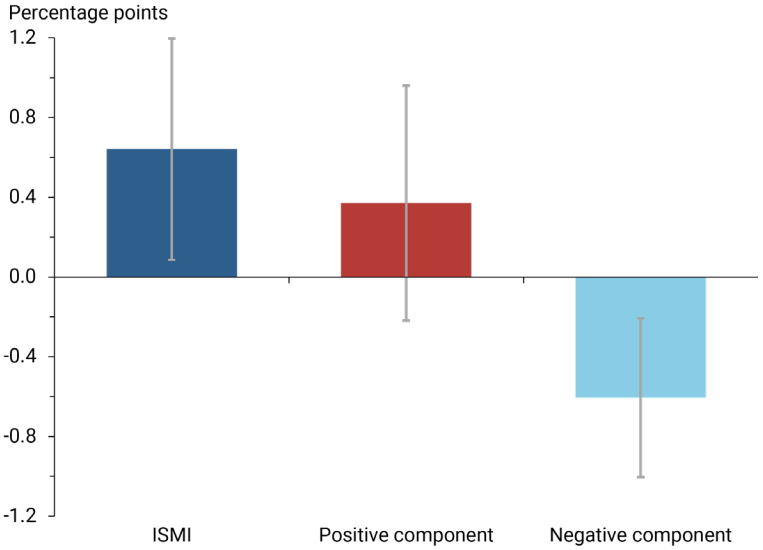
The ISMI undergoes pronounced shifts during the pandemic era, initially declining at the onset of the 2020 recession, reflecting widespread negative demand shocks. The index then rises rapidly during 2021 and 2022, as PCE inflation surged to a 40-year high of 7.24% in June 2022. This pattern reflects a growing share of spending categories experiencing at least three consecutive positive inflation shocks.

Following the inflation peak, the ISMI declines faster than PCE inflation and eventually turns negative. This trajectory signals the emergence of broad disinflationary pressure, even while PCE inflation remains above the Fed's 2% goal. As of May 2026, the value of the ISMI has been fluctuating around zero, indicating that current inflation readings may persist.

Predicting future PCE inflation

We next assess whether the ISMI provides useful information about future PCE inflation. Figure 2 shows the estimated response of the PCE price index to a one standard deviation surprise change in the ISMI. We cumulate the PCE price index response over the subsequent 36 months, after accounting for changes in other standard inflation predictors. These include 1-year-ahead household inflation expectations from the University of Michigan Survey, the vacancy-to-unemployment ratio, and the price of oil. A surprise increase in the ISMI is associated with a 0.5 percentage point cumulative increase in the PCE price index after 36 months (dark blue bar).

Figure 2
Cumulative inflation response to a surprise increase in ISMI



Note: Bars show 36-month cumulative responses of the PCE price index to a one standard deviation surprise change in the ISMI. Gray bands show the range of estimates with 90% confidence.

We repeat the same exercise to examine the separate impacts of surprise increases in positive versus negative components of the ISMI. The results show that the impact of the negative component (light blue bar) is larger than the impact of the positive component (red bar). This tells us that the ISMI is particularly useful for detecting future disinflationary pressures.

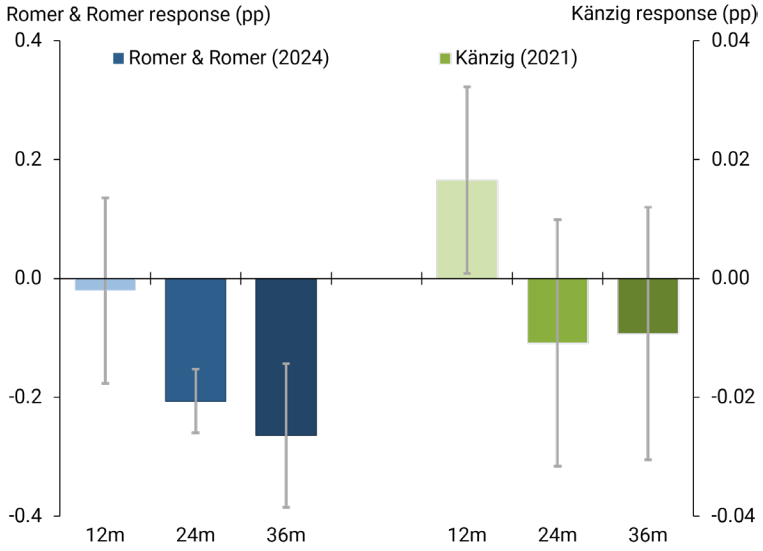
To further evaluate whether the ISMI provides information about future inflation, we conduct an out-of-sample forecasting exercise to gauge the statistical significance of the index in forecasting 12-month PCE inflation one to three years ahead. Specifically, we use a statistical technique known as the least absolute shrinkage and selection operator (LASSO) to perform an out-of-sample forecasting exercise. This procedure allows us to include many alternative inflation predictors while seeking to approximate the challenges of real-time forecasting. Specifically, no future inflation data is used in constructing the index.

The out-of-sample forecasting exercise shows that the ISMI materially improves PCE inflation forecasts. For instance, including the ISMI in the out-of-sample forecasting model reduces forecast errors by approximately 5 to 10%. This is a substantial improvement, given the inherent difficulty of predicting future inflation (Stock and Watson 2007). Notably, the forecast improvement from including the ISMI is larger at longer horizons of two to three years. This suggests the ISMI can detect slow-moving structural shifts in the underlying inflation process that other standard predictors may miss.

Response of ISMI to economic shocks

Another way to evaluate the ISMI is to examine how it responds to two types of macroeconomic shocks: (1) a monetary policy shock aimed at reducing inflation, as identified by Romer and Romer (2024), and (2) a news shock about the future oil supply, as identified by Känzig (2021). The left side of Figure 3 shows that the ISMI declines significantly and remains low for an extended period in response to a monetary policy shock aimed at reducing inflation. This response shows that the ISMI captures the well-documented effects of a monetary policy tightening that restrains demand and puts sustained downward pressure on inflation.

Figure 3
Cumulative response of ISMI to economic shocks



Note: Bars show cumulative responses in percentage points (pp) to two types of macroeconomic shocks. Gray bands show the range of estimates with 90% confidence.
Source: Romer and Romer (2024), Känzig (2021), and authors' calculations.

The right side of Figure 3 shows that the ISMI increases significantly, but for a shorter period, in response to negative news about the future oil supply. The transitory nature of the response is consistent with the response of other economic variables to typical supply shocks. These divergent ISMI responses—a persistent decline following a monetary policy tightening but a more transitory rise following news about a decline in the future oil supply—provide evidence that the index is indeed capturing emerging shifts in the behavior of inflation in response to macroeconomic shocks.

Conclusion

Determining whether recent inflation movements are persistent or transitory remains a central challenge for policymakers. The ISMI developed in Lansing and Shapiro (2026) is a simple metric that tracks sustained directional pressure in PCE inflation using category-level monthly inflation rates. As described in this Letter, the ISMI helps improve forecasts of future inflation at horizons of one to three years and responds to macroeconomic shocks in a manner consistent with theory.

The index offers a practical tool to detect emerging shifts in the underlying inflation environment and can contribute to improving policy responses to evolving economic conditions. Index readings in 2026 have been fluctuating above and below zero, indicating that inflation may remain near current elevated levels in the near to medium term.

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Data

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