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Introducing a new measure of inflation pressure for South Africa

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Abstract

Inflation dispersion affects the extent to which inflation harms welfare. As a result, inflation dispersion bears on the optimal inflation target and assessment of the appropriate stance of policy at any particular point in time. In this policy brief, we propose a new measure of inflation dispersion for South Africa, drawing on hundreds of goods and services categories to summarise inflation pressure in South Africa. We show that inflation dispersion describes divergences in inflation from the inflation target. Our analysis suggests that a lower average inflation level may not automatically imply lower inflation dispersion in South Africa, making it harder to anchor inflation expectations at a lower inflation target. This means that reforms to address persistently high administered price inflation and monetary policy communication focused on what policy must do to address inertial price and wage settings are particularly important.

JEL classification: E31, E37, E58

Keywords: CPI dispersion, underlying inflation

1 Introduction[1]

Most economists focus on summary measures of inflation, such as changes in the consumer price index (CPI) when assessing changes in the price level of the economy. But CPI is measured using hundreds of different goods and service components which tend to have very different underlying inflation dynamics. Both average inflation measures such as headline inflation, or exclusion measures such as 'core' inflation to strips out volatile categories such as food and fuel inflation, do not describe whether inflation pressures are concentrated in a limited number of components are reflect broader inflation momentum. Understanding whether inflation changes reflect temporary changes (i.e. exchange rate shocks or food price changes from a foot and mouth disease outbreak) or are broad-based (i.e. driven by domestic market supply constraints or demand-pressures across product and service markets) is crucial not just for forecasting inflation, but also for determining appropriate monetary policy settings.

Inflation dispersion affects the extent to which inflation harms welfare. As a result, it also bears on the optimal inflation target (see for example, Sheremirov (2020)). Joel and Hollander (forthcoming) demonstrate that price dispersion implies large real resource costs in South Africa, even at moderate levels of trend inflation. As a result, an inflation targeting central bank should focus on controlling the trend growth rate of underlying inflation. This prevents the central bank from over-reacting to temporary fluctuations in inflation from volatility in some sub-components of the inflation basket.[2]

The case for a lower inflation target rests on expected long term benefits from things such as improved economic efficiency and welfare from lower dispertion of inflation outcomes, as well as potentially lower long term interest rates from successful anchoring of inflation expectations at a lower level. The question this paper investigates is whether the dispersion of inflation in South Africa has been associated with divergences between headline inflation and the inflation target, and whether lower headline inflation outcomes have been associated with less inflation uncertainty. Our analysis suggests that a lower average inflation level may not automatically imply lower inflation dispersion in South Africa, making it harder to anchor inflation expectations at a lower inflation target. We argue that achieving lower trend inflation requires a deceleration in inflation across many price categories and reforms to address persistently high administered price inflation.

2 Inflation dispersion in South Africa

South Africa's headline inflation strongly deviated from the SARB's preferred 4.5 percent midpoint for much of the period between 2022 and mid-2024. Proponents of a lower inflation target argue that a lower target is likely to anchor inflation expectations more tightly at a lower level. Figure 1 shows that periods of stable, near target inflation has been relatively short lived over the last 15 years. There have been many long periods of divergence between inflation outcomes and the implicit policy target. The question this paper investigates is whether the dispersion of inflation has been associated with divergences between headline inflation and the target, and whether lower headline inflation outcomes have been associated with less inflation uncertainty.

We consider a range of alternative measures of the distribution of price pressures. Figure 2 shows that our measure of common price changes across categories in the CPI basket ('CPI-

[1]We thank Byron Botha and Sinead Morrow for contributions to earlier versions of some the analysis presented in this policy brief.

[2]Given the difficulties in interpreting changes in underlying inflation, we argue in Horn et al. (2025) that South Africa needs new measures of these concepts.

Figure 1: Inflation divergence from the inflation target

Common')[3] remain elevated than the Statistics SA measures of core inflation that excludes food, non-alchoholic beverages, fuel and energy ('core') or the trimmed mean measure which adjusts for the influence of extreme outliers by focusing on the middle of the inflation distribution. Our measure suggests that there has been more broad-based inflation pressure since 2019 than implied by the trimmed mean or core measures. As we argued in Horn et al. (2025), measures of trend inflation have also been higher than Statistics South Africa's core measure, which has implications for South Africa's optimal inflation rate (or the appropriate inflation target) since inflation dispersion affects welfare.

[3]Codera's CPI-Common is based on a factor model drawing on CPI data at 8-digit level of disaggregation for series.

Figure 2: CPI-Common compared to analytical CPI series

Administered prices, which include prices set by government agencies or regulators (such as electricity tariffs, water charges, fuel prices and public transport fares), have played a key role in deviations in South Africa's inflation from the inflation target. Eskom's aggregate standard tariffs, for example, have increased at almost 15 percent per year since 2010, compared to average CPI inflation of about 5.2 percent over this period.[4] This means that successfully pivoting to a 3 percent inflation target necessitates alignment from government-set components, otherwise the SARB will need to keep monetary policy tight to reduce private sector inflation to below their new preferred level. As we expect public sector inflation to remain elevated, the SARB will need to lower private sector inflation to levels we have not seen before in South Africa. Since 2009, for example, public sector inflation has averaged 7.2 percent, compared to 4.9 percent for private sector inflation (excluding fuel inflation). Given the wedge between public and private inflation and our expectation that government inflation will remain elevated, private sector inflation would need to fall to around half of its average level since 2009 (just under 2.6 percent).[5] As we show in Horn et al. (2025), the dispersion of inflation is also more broad-based than government-related inflation components.

At present, inflation is at historically low levels and most measures of inflation pressure have been near post-2008 lows. Figure 3 shows that the proportion of price categories in the consumer inflation basket that are rising rapidly is low by historical standards (since 2009). Given the recent unilateral shift to a 3 percent inflation preference by SARB's Monetary Policy Committee in July 2025, it is also worth looking at the proportion of CPI items growing at faster than 3 percent. Figure 4 shows that the proportion of goods and services rising at more than 3 percent has historically included more than 60 percent of the price categories published by Statistics South Africa (or more than two thirds of the basket if one considers the weights of these items in the headline inflation index).

[4] See this blog post for more.
[5] This Codera blog post provides more detail.

Figure 3: Breadth of 8-digit Price Increases

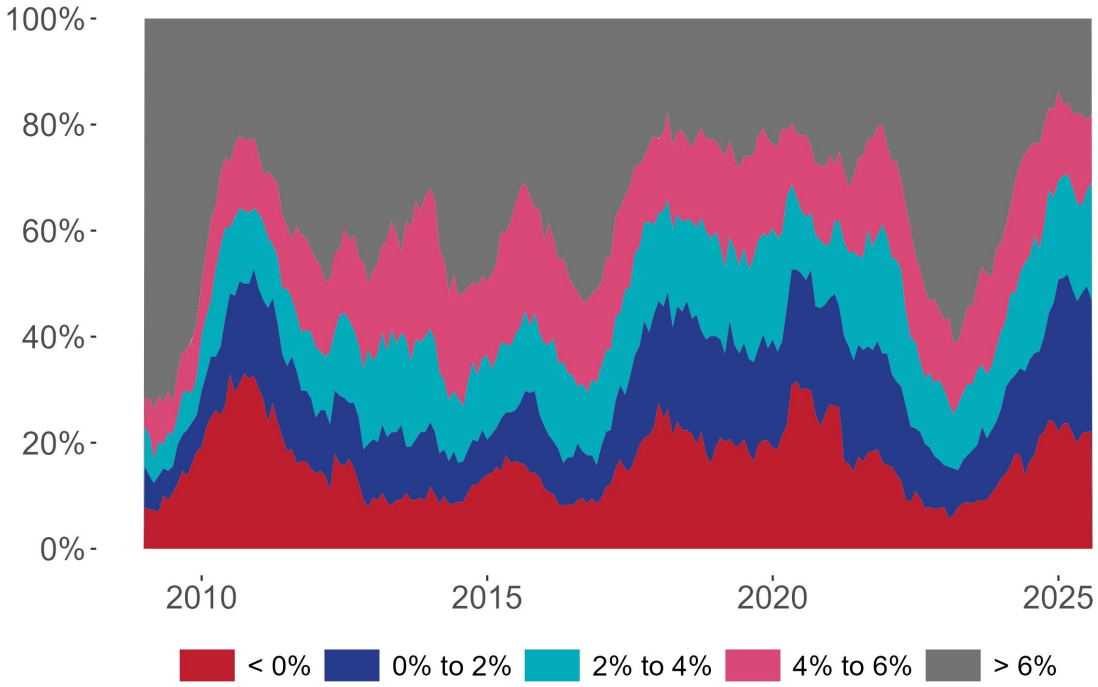
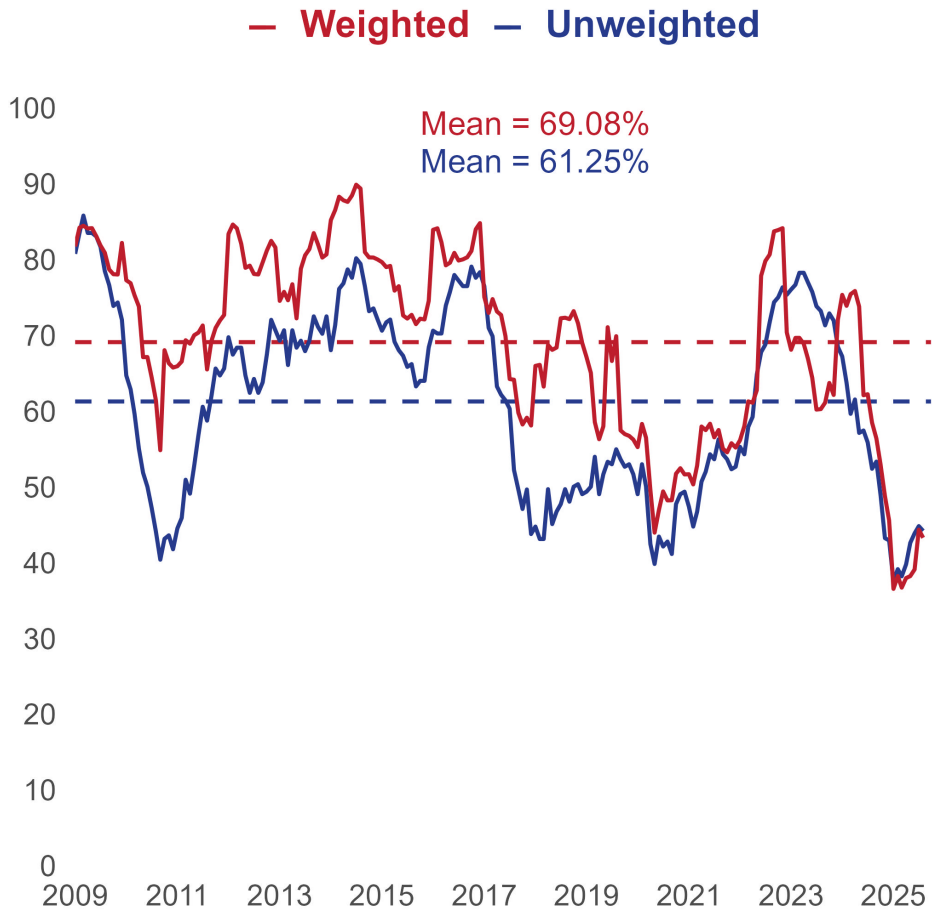
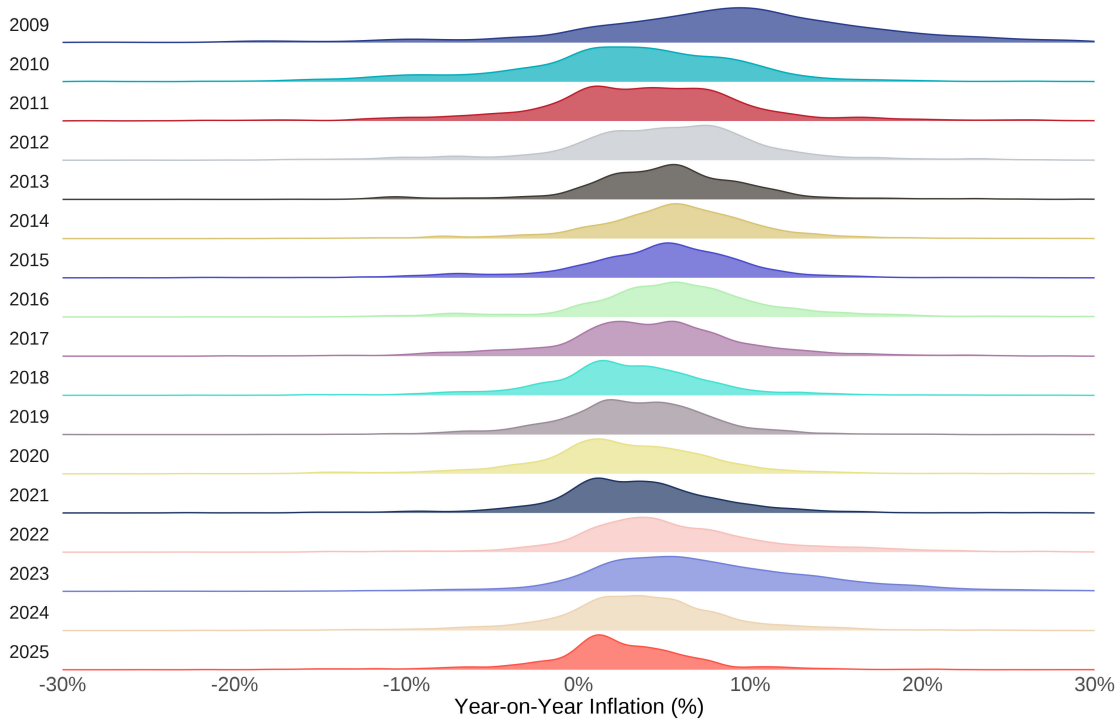


Figure 4: Diffusion index for consumer prices



To assess the extent of inflation dispersion, we use detailed 8-Digit CPI data that include CPI at category grouping, which include, for example, specific products such as 'loaf of white bread'.[6] Figure 5 shows that between 2009 and 2025, South Africa's 8-digit CPI inflation showed a high degree of dispersion and positive skew, with most prices increasing moderately, while a smaller set of items experienced sharp price spikes. This pattern reflects persistent supply-side shocks and structural bottlenecks, with headline inflation often masking substantial variation in consumer price experiences.[7]

Figure 5: Distribution of inflation in South Africa



Having calculated the kernel density of changes in prices over time, we next calculate several measures of inflation dispersion based on the statistical moments of the cross-sectional distribution of component inflation. These include:

- **Standard deviation**, which captures how widely inflation rates diverge and signals spreading of inflation pressures across the components of CPI if increasing substantially;
- **Skewness**, which measures whether there are large positive or negative outliers in the distribution, and tends to be positive for South Africa as a small number of categories experience much larger increases in prices than others. If skewness rises, it may suggest that inflation is becoming more persistent.
- **Kurtosis**, which measures the presence of extreme price changes.

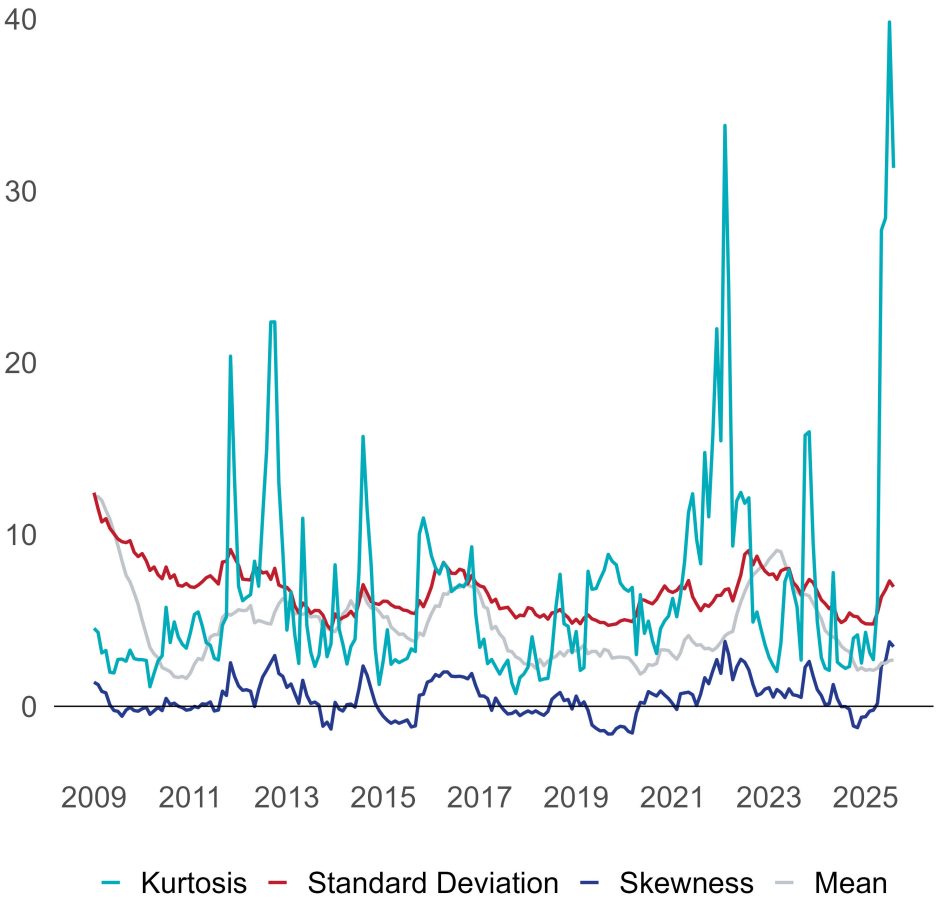
Figure 6 plots time series of these statistical moments for the hundreds of categories of 8-Digit CPI components. Positive skewness, on average, indicates that while most items experience moderate price changes, a smaller number of items have large price increases that pull the average upward. A high standard deviation suggests wide variation in price movements across

[6] EconData from Codera Analytics (2025) makes it easy to accesss historical disaggregated CPI data and historical CPI weights. One can also automate any workflows that use such data, whether you work in excel, R or Python.

[7] This post provides a discussion of the effects of supply shocks on inflation in South Africa.

individual products, reflecting diverse inflationary pressures within the economy. It is striking, for example, that despite the decline in headline inflation over the last six months, that the standard deviation has risen. Kurtosis spikes in the early 2010s, the period between late 2021 to 2022 and in 2025, reflecting, amongst other things, very large relative increases in some government-related price categories and some food price categories (see Horn et al. (2025) for more detail). These moments demonstrate that a decrease in the central tendency of inflation does not necessarily imply lower dispersion in inflation outcomes or lower inflation uncertainty over the short term. The real effects of dispersion are function of the relative price changes that differences in inflation rates across components in CPI create.[8] Achieving lower trend inflation would be expected to reduce the overall economic costs of inflation. But there are a number of supply-side distortions that affect price and wage setting in South Africa that will not be eliminated by adopting a lower inflation target. These distortions act to reduce the extent to which economic benefits from lower average inflation can be realised.

Figure 6: Statistical Moments of Consumer Price Inflation in South Africa



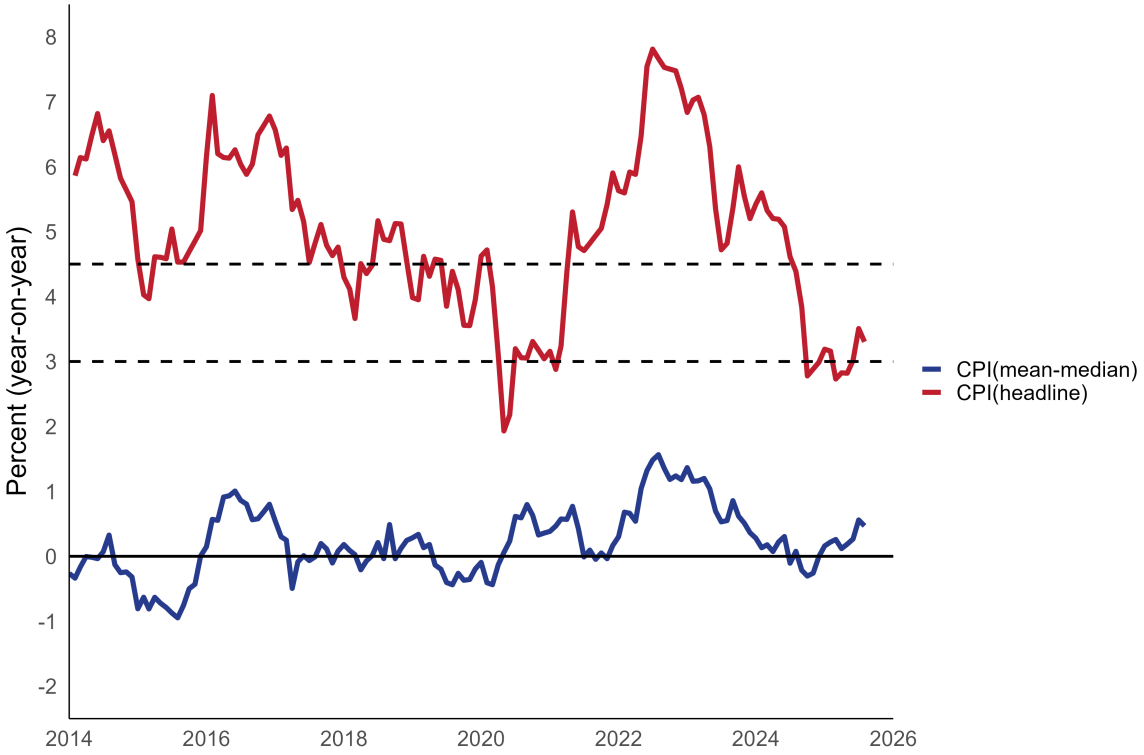
To measure inflation dispersion, we calculate a summary measure as the difference between the mean and the median of the inflation distribution.[9] When the mean exceeds the median of the inflation distribution, it is positively (i.e. rightwardly) skewed, with inflation pressure

[8] We measure relative price changes in Horn et al. (2025) and suggest that there is a lot of heterogeneity in the volatility of shocks to supply or demand that affect different price categories in South Africa, given the role of categories such as administered prices and commodities in determining prices. We also show how the use of fixed expenditure weights in CPI results in understatement of inflation during periods of relative price changes which encourage substitution towards cheaper products.

[9] See this blog post for a comparison of the means and medians of different CPI components and the CPI distribution at different levels of aggregation.

picking up. Figure 7 plots the divergence criterion against headline inflation to demonstrate that periods of increasing dispersion have been associated with deviations of inflation from the inflation target, with inflation tending to rise when the inflation distribution widens. Inflation dispersion turned positive on a sustained basis between 2016 and 2017, 2019, 2021 and 2022 to 2024 and again over the last several months, with inflation often above target inflation during these periods. Cross-correlations show that our dispersion measure leads headline inflation by 2 months, while skewness leads headline by 3 to 4 months. This suggests that dispersion may provide useful signals of future developments in inflation.

Figure 7: CPI dispersion measure and headline inflation



3 Conclusion and policy implications

In this policy brief, we propose a new measure of infation dispersion, drawing on hundreds of goods and services categories to summarise inflation pressure in South Africa. We argue that this measures enables a richer understanding of inflation dynamics than other measures of underlying inflation.

We show that a decrease in the central tendency of inflation does not necessarily imply lower dispersion in inflation outcomes or lower inflation uncertainty. In the context of a potential shift to a lower *de jure* inflation target in South Africa, this suggests that a lower target level may not automatically imply lower inflation dispersion, reducing the economic benefits of a lower target.

Our analysis also suggests that successfully pivoting to a 3 percent inflation target without keeping monetary policy tight requires alignment from government-set and other CPI components that have been persistently higher than 3 percent. Its highly unlikely that government-related inflation will be brought under control without comprehensive economic and public sector reforms, suggesting that the private sector will have to bear the costs of sustaining any

deceleration in inflation. Apart from the need for economic reforms, this makes it crucial for monetary policymakers to explain how policy must address inertial price and wage settings.

It is important to note that our analysis has not considered the economic factors that affect inflation outcomes. Supply-side factors that are beyond the influence of monetary policy have been an important driver of inflation in South Africa. The rising dispersion in inflation which we document means that assessment of the drivers of inflationary pressures is particularly important for assessment of the appropriate policy path to achieve a lower inflation target. We therefore recommend that SARB monitor inflation dispersion and use metrics of inflation dispersion in its monetary policy analysis.

Initial results suggest that the distribution of inflation outcomes could provide useful signals about future developments in inflation. An important avenue for future research would be to assess whether incorporating cross-sectional measures of CPI components improve inflation forecasts.

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