

Quickonomics

January 9, 2024

An unlikely gauge of price angst

Google search interest regarding the prices of just three vegetables—tomatoes, onions and potatoes (TOP)—is a useful indicator of price anxiety.

Especially, since these food prices have kept the headline inflation under pressure in India and are also instrumental in keeping inflation volatility high.

In this Quickonomics, we use Google Trends data on TOP price searches as a proxy for price anxiety and observe how they are increasingly useful in gauging inflationary expectations—a key factor in monetary policy making.

Key takeaways

- Inflation anxiety has been easing over 2023, but remains higher than during 2018–2021, according to Google Trends data
- Within TOP, onions and tomatoes show a super spike in Google search interest every few years. Search interest in potato prices is comparatively rangebound and devoid of super spikes, as per the trends data for the past five years
- Fewer losses from potatoes, because of better storage, have kept prices and search anxiety on their prices rangebound. Tomatoes and onions lack adequate storage and face higher losses in comparison
- We find that the Google Trends index based on searches for 'inflation' is strongly correlated with inflation expectations of households based on the Reserve Bank of India's (RBI) survey, and hence, a good proxy for inflation anxiety in the economy

Inflationary pressures in the Indian economy may be tracked in three ways.

First, is by looking at the actual data. CPI inflation is released by the National Statistical Office (NSO) and the daily retail price data is released by the Ministry of Consumer Affairs.

Second, is the data on inflation expectations of households based on surveys¹, conducted by the RBI.

A third interesting source is Google Trends, which we have explored here. We take this as a proxy for inflation anxiety, based on Google web search requests by consumers for prices of commodities key to their consumption and those they believe are witnessing an upturn in prices.

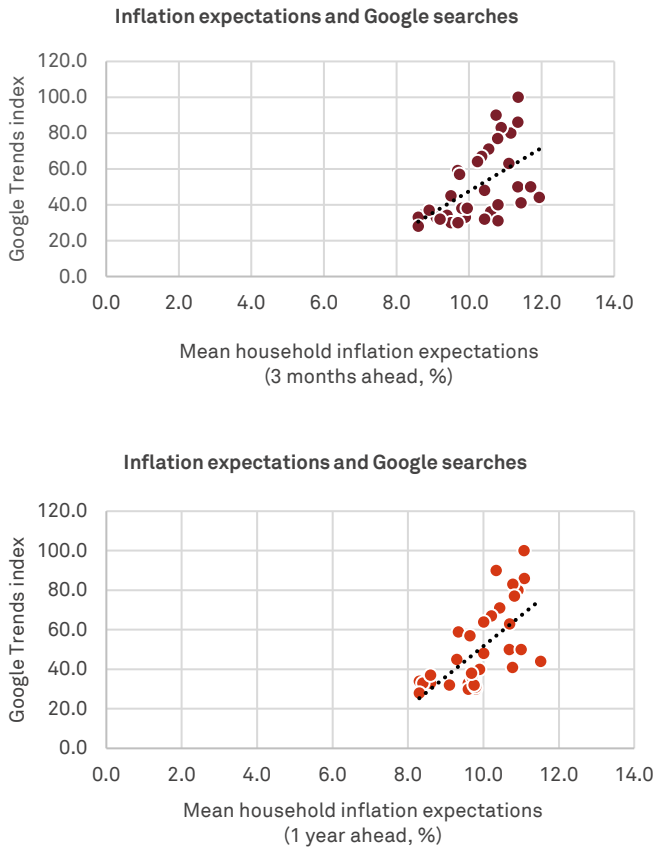
November CPI inflation made headlines again, as it rose to 5.6% from 4.9% in October. Food inflation jumped to 8.7% from 6.6%, with vegetables inflation soaring 17.7%, followed by pulses. This is the second price shock in vegetables in the current fiscal. Uncertainty on food prices is, thus, likely to haunt the Monetary Policy Committee (MPC) again. While there is little that the MPC can do to control food inflation, persistent food inflation can become generalised and enter headline inflation, requiring a monetary policy response. Hence, there is a need to closely watch food prices.

Inflation expectation is a critical factor that guides monetary policy. Expectations of economic agents about future prices can affect current pricing and buying decisions, thereby affecting the actual inflation rate. The November round of the survey shows that mean inflation expectation for one year increased. This may have to do with the rising prices of vegetables, which are purchased at a higher frequency and whose prices tend to influence inflation expectations.

We find that the Google Trends index based on searches for 'inflation' is strongly correlated with inflation expectations of households based on the RBI's survey, and hence, a good proxy for inflation anxiety in the economy.

¹Inflation expectations survey of households. The recent survey was conducted during November 2-11, 2023 in 19 major cities, with responses from 6,036 urban households. Female respondents accounted for 50.1% of this sample

Google Trends data is a good proxy for inflation anxiety



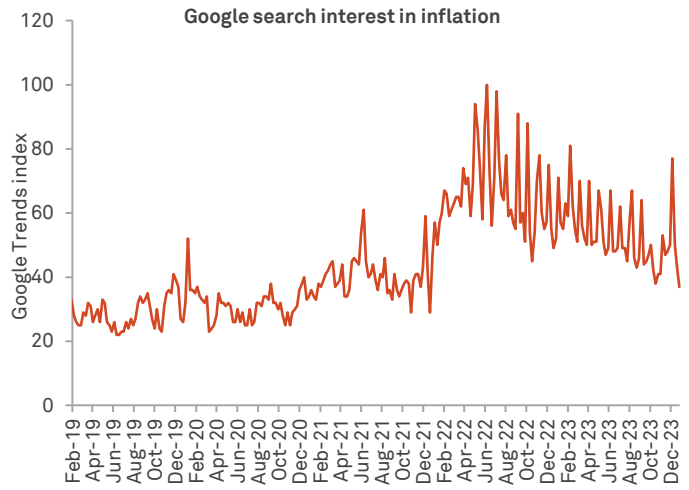
Source: RBI, CRISIL, Google Trends (<https://www.google.com/trends>)

This relationship becomes clear if we look at movements in the Google Trends index for India over the past five years:

- The index value, based on Google searches for ‘inflation’, was relatively low in 2018-2021, when inflation in India was under control. Food and fuel inflation was also relatively low during this period. The index began climbing in early 2022. It was at its five-year peak in May 2022, when fuel prices shot up due to the Russia-Ukraine conflict, and food inflation was also soaring
- For most of 2022, the index was relatively high, as inflation remained above the RBI’s target. Since then, the index has been consistently easing, despite occasional flare-ups in headline inflation, showing that anxiety about inflation has started to broadly ease in India

- However, the index is still above 2018-2021 levels, suggesting that anxiety remains high compared with that period. Though inflation anxiety is easing, high and volatile food prices could lead to a rise in inflation anxiety, if the price pressures persist

Google search interest in inflation peaked in mid-2022



Source: Google Trends (<https://www.google.com/trends>)

Understanding and interpreting Google Trends data

Google Trends creates an index using data from Google search volumes for a particular term in a given time period. The index values range from 0 to 100. An index value of 100 represents peak search interest for the term in the selected time period. Therefore, a higher index value corresponds to higher search interest. Google Trends indices can be used to assess changes in the interest about a topic. Spikes in a Google Trends index can be useful for pinpointing the events that are driving interest in that topic².

It is important to note that the Google Trends data that we have used for this study only captures inflation anxiety of those who have access to Google. However, India has 600 million smartphone users³, many of whom would be able to use Google

²For more information refer to <https://newsinitiative.withgoogle.com/resources/trainings/fundamentals/google-trends-understanding-the-data/>

³<https://pib.gov.in/PressReleaseFramePage.aspx?PRID=1876553#:~:text=Secretary%2C%20Ministry%20of%20Information%20Broadcasting,600%20million%20smart%20phone%20users.>

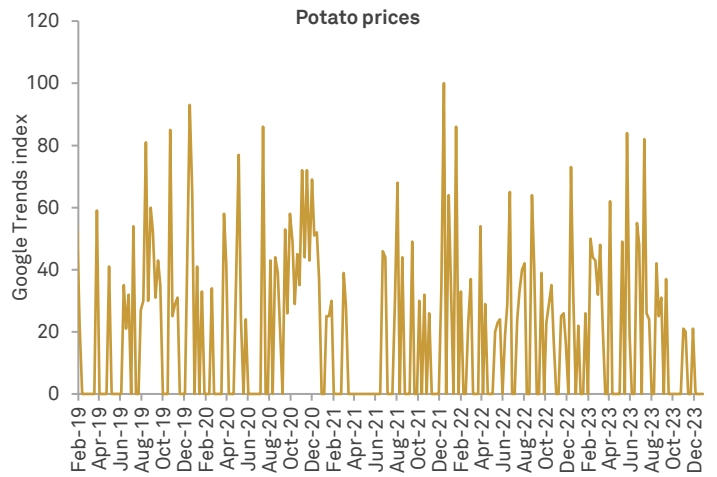
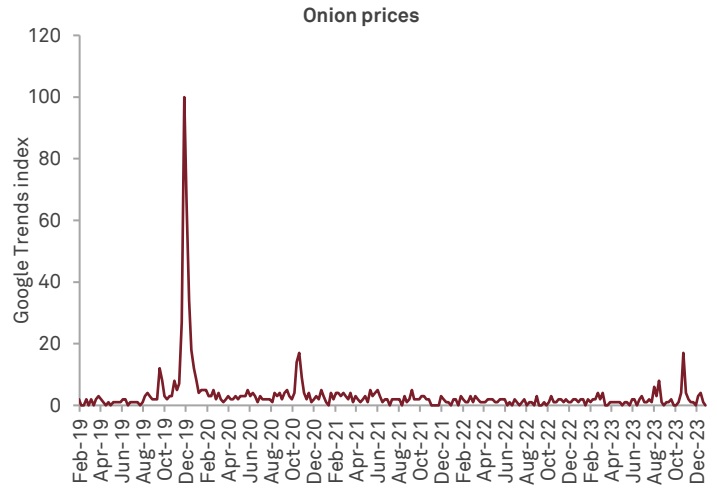
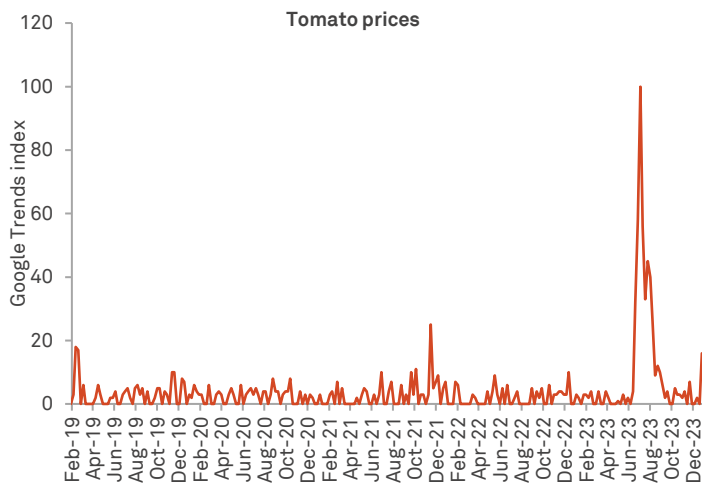
through their smartphones. Hence, Google Trends data is likely to capture a large segment of Indians. That said, data could have an urban bias, as rural mobile penetration trails that of urban areas and rural population is less likely to search for prices online.

Volatility in vegetable prices could heighten inflation anxiety

Vegetable inflation generated a lot of anxiety in July 2023, when it surged to 37.4%, led by a spike in tomato prices. CPI data for November revealed that high vegetable prices are again pushing up headline inflation, while fuel and core inflation remain under control.

In November, onion prices were the main culprit behind the surge in vegetables inflation. Though tomato inflation was also high, it was well below the July levels. CPI data is available with a lag of 12-14 days every month. The Ministry of Consumer Affairs also releases daily data for retail prices of TOP. Google Trends data can be used to assess the movement in and anxiety around TOP prices.

Google Trends data on search interest reflects super spikes in onion and tomato prices



Note: The series are normalised such that the highest search interest over the specified period equals 100
Source: Google Trends (<https://www.google.com/trends>)

Prices of TOP—which form more than a third of the CPI vegetables index—are more volatile. Of these three, Google Trends data clearly highlights higher volatility in onion and tomato prices.

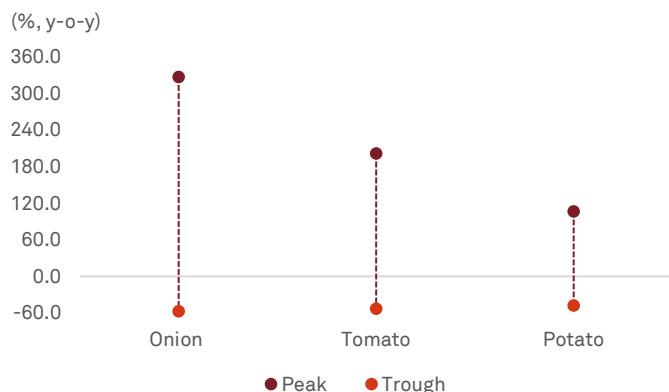
The maximum search interest for tomato prices was in July-August 2023, when tomato inflation was the highest in the past five years and a super spike in search interest for tomato prices was seen. For onions, the index reached its peak with a super spike in December 2019, when onion inflation had crossed 300% after prolonged rains hit onion harvest earlier in the year. Another peak

was seen in late-2023, as onion inflation rose to 86.5% in November. However, the spike in search interest was much smaller than the super spike in 2019, as the increase in prices this year was smaller compared with that in December 2019.

Thankfully, onion and tomato prices correct quickly, due to short crop cycles and government intervention. However, they generate a lot of anxiety among consumers and producers when they shoot up. Hence, tomatoes and onion prices are prone to super spikes in search interest.

In contrast, the search patterns for potatoes did not show any super spike in the past five years, as their prices are relatively less volatile. Potato price searches—as is visible from the chart—are rangebound. This is in line with inflation behaviour in the components of TOP—peak and average inflation for potatoes is lower than for tomatoes and onions.

CPI inflation — peak and trough in past 5 years



Source: NSO, CRISIL

In the past five years, peak inflation rate for potatoes has been 107% (in November 2020), while for tomatoes and onions it has been much higher at 327.4% (in December 2019) and 202.1% (in July 2023), respectively.

One potential reason for this is that post-harvest losses for potatoes are lower than those for onions and tomatoes. According to a 2022 study by NABARD Consultancy Services (NABCONS), post-harvest losses for tomatoes, onions and potatoes were ~11.6%, ~7.3% and ~6%, respectively⁴. Second, potatoes have a higher storage capacity and are more commonly processed compared with tomatoes and onions⁵.

What do Google trends indicate for inflation anxiety in December and January?

The good news is that the spike in search interest for onion prices has moderated, indicating that the anxiety is cooling off. This is in line with the drop in onion prices since late November, due to fresh arrivals in the market and the ban on onion exports. The search interest for tomato prices has eased as well.

Conclusion

Easing inflation anxiety about TOP prices and cooling of non-food inflation has brought some relief at the end of the calendar year. But edgy vegetable prices, elevated foodgrain inflation and the now-recurring weather worries are keeping inflation concerns on the boil. The repeated flare-ups are a reminder that as long as food prices remain high and volatile, they will continue to influence headline inflation and, consequently, monetary policy. Meanwhile, as mobile phones become widely owned, we could turn increasingly to Google Trends indices as a useful metric to monitor price behaviour and expectations.

⁴December 2022, NABCONS, 'Study to determine post-harvest losses of agri produces in India', Ministry of Food Processing Industries, Government of India.

⁵2021, Indian Journal of Agricultural Marketing, Market vulnerabilities and potential of horticulture crops in India: with special reference to TOP crops.

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