

Quickonomics

April 25, 2024

Dicing vegetables' inflation data

Key takeaways

- Vegetable inflation in India remains the most volatile component of food inflation
- In fiscal 2024, while the usual high volatility played out, there were other anomalies that pushed inflation higher. These disturbances included warmer weather, uneven rains and pest attacks
- As a result, the vegetable price index not only missed its typical seasonal winter decline but also outran the seasonal uptick last year. Average vegetable inflation therefore surged higher in fiscal 2024
- Rising intensity and recurrence of weather disturbances have led to frequent bouts of volatility in recent years. As climate risks mount, there is a need to mitigate its impact on vegetable production and prices

Vegetables atypical by nature

Vegetable prices are characterised by prominent seasonality and high volatility. Vegetables are, in fact, the most volatile component of the Consumer Price Index (CPI).

Measured as standard deviation, volatility in vegetable inflation, at 16.8, was much higher than the 4.1 for overall food inflation from fiscals 2014 to 2023.

Inflation volatility (measured by standard deviation)

	Headline CPI	CPI food	CPI vegetables
FY14-23	2.0	4.1	16.8
FY24	0.9	2.5	15.4

Source: NSO, CEIC, CRISIL

For one, vegetables are particularly susceptible to unusual weather. Erratic weather has disrupted supplies and fanned vegetable prices in India¹ many times over the past few years.

Remedial measures, such as creating buffer stocks and even imports, are ineffective solutions, given the perishable nature of vegetables. Technologies such as cold storage can prolong the shelf life of vegetables, but India comes up short on such infrastructure².

Short-term solutions, such as restricting hoarding and curbing exports (of onions, for instance), only bring temporary relief.

Thankfully, vegetables have a short crop cycle, so the arrival of new stock in the market can quickly tamp down prices. However, in fiscal 2024, weather-induced supply shocks kept the pressure on prices high, especially for onions and tomatoes.

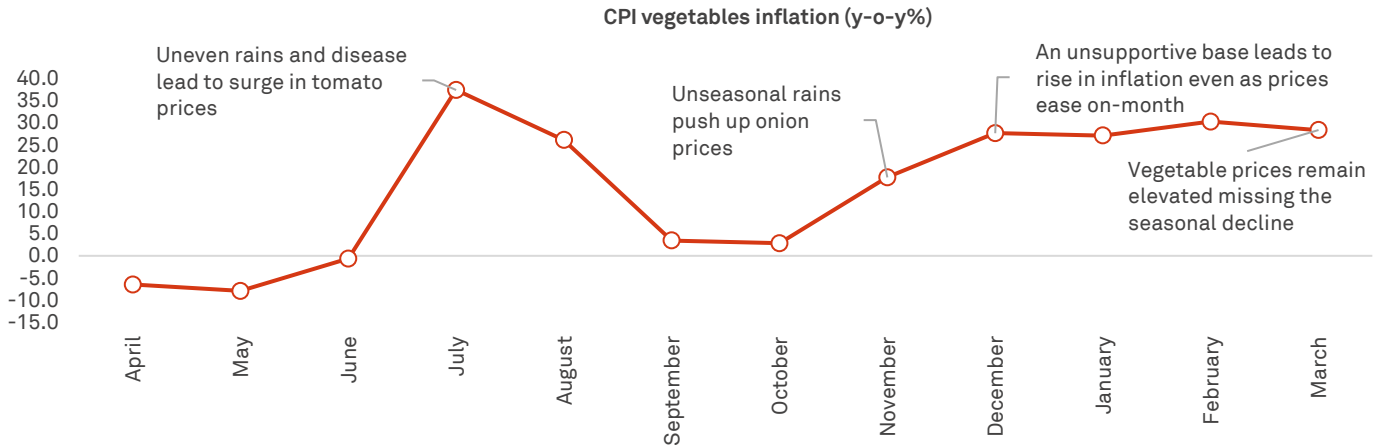
Vegetable prices typically follow a seasonal pattern — surging in summers and withering in winters when fresh stocks arrive in the market. This phenomenon did not play out in the winter of fiscal 2024.

¹October 2023, CRISIL Insight, 'Not on TOP of it' <https://www.crisil.com/en/home/our-analysis/views-and-commentaries/2023/10/not-on-top-of-it.html#:~:text=Food%20inflation%20is%20back%20to%20haunt%20the,price%20spike%20has%20driven%20up%20food%20inflation.>

²A 2021 study by NABARD researchers estimates approximately three quarters of cold storage facilities in India are used for potato storage, indicating limited capacity for other vegetables. Storage capacity is also relatively concentrated in a few states; Sep- Dec 2021, Tiwari, A., Afroz S.B., Kumar, V, 'Market Vulnerabilities and Potential of Horticulture Crops in India: With special reference to TOP crops', Indian Journal of Agricultural Marketing

Vegetable inflation dynamics in fiscal 2024

How the heat rose and fell through the year



Source: NSO, CEIC, CRISIL

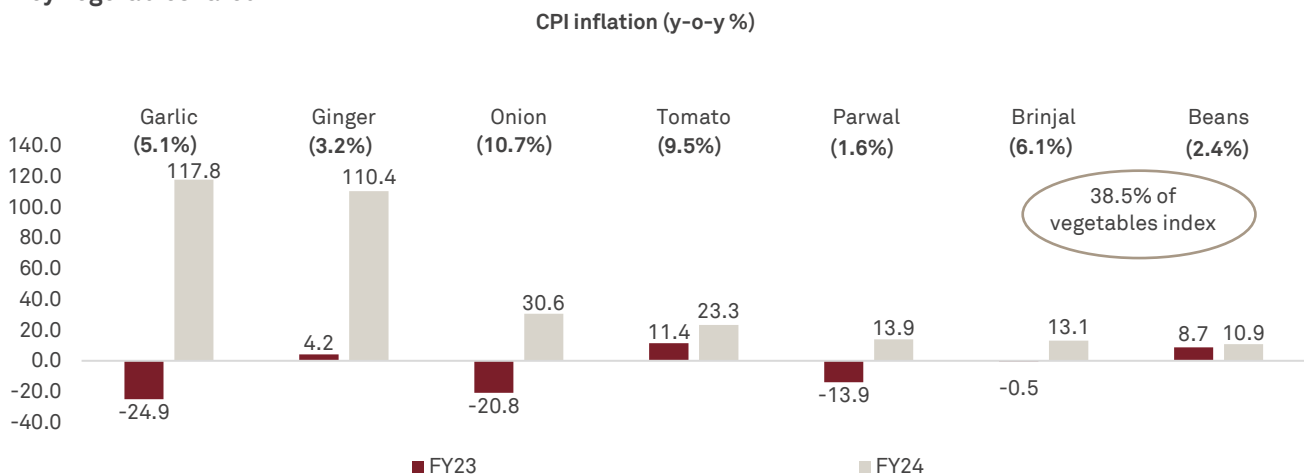
This March, vegetable inflation printed at 28.3%, down from 30.2% in February but way off the 8.4% deflation seen a year earlier. Fiscal 2024 saw huge volatility, from a low of -7.9% in May 2023 to a high of 37.4% in July 2023. The volatility, measured by standard deviation, stood at 15.4, the highest since fiscal 2020.

The gauge averaged 14.9% last fiscal from 3% in fiscal 2023 and far above the decadal average of 5.6%.

Vegetables were responsible for about 30% of food inflation in fiscal 2024, much higher than their 15.5% share in the food index.

While surging prices of tomatoes and onions made headlines in fiscal 2024, the price rise was not limited to these vegetables. Garlic and ginger, for instance, saw triple-digit inflation of 117.8% and 110.4%, respectively. Other vegetables such as brinjal, parwal and beans also saw a spike in inflation.

How key vegetables fared



Note: Figures in brackets indicate share of the commodity in the CPI vegetable index
 Source: NSO, CEIC, CRISIL

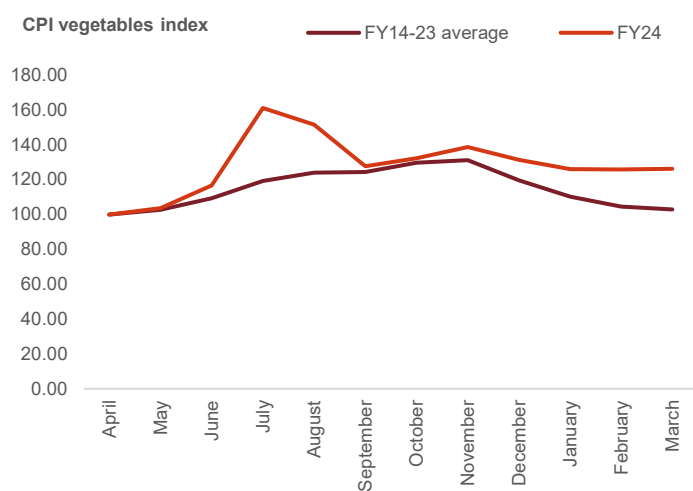
Last fiscal, India saw several vegetable price shocks as turbulent weather played spoilsport. El Niño conditions led to warmer-than-average weather and also impacted the monsoon. The southwest monsoon was below normal last fiscal, at 94% of its long period average.

The distribution of monsoon, too, was uneven with an unusually dry August. In fact, August 2023 was the driest and hottest August since record keeping began in 1901, according to the Indian Meteorological Department (IMD). Crops of certain vegetables were also affected by viruses.

Consequently, not only did the vegetable price index inflate much more than the typical seasonal levels, but it also missed the winter decline. Prices stayed elevated for most months of the year, climbing above the previous year's levels, leading to higher inflation.

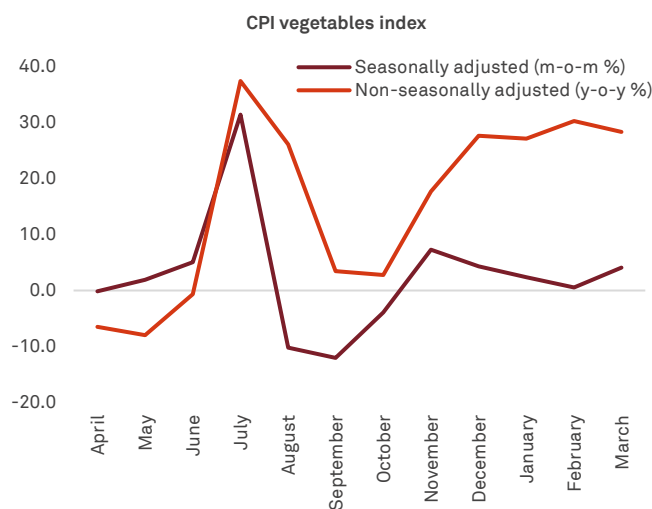
The seasonally adjusted CPI vegetable index shows that an adverse base was partly responsible for the rise in vegetable inflation in the last few months. Even as vegetable inflation was rising between November and February, the on-month rise in prices (seasonally adjusted) was slowing.

Missing the seasonal decline



Note: April of each fiscal is indexed to 100
Source: NSO, CEIC, CRISIL

Base effect fuels the simmer



Source: NSO, CEIC, CRISIL

What climate change means for vegetable output and prices

According to the World Meteorologic Organization, 2023 was the warmest year on record at 1.45 ± 0.12 °C above the pre-industrial average, reminding us of the escalating climate risk. This was not a one-off event and global temperatures have been rising over the years.

According to the US National Oceanic and Atmospheric Administration, the 10 warmest years on record have all been during the last decade. Some parts of India, too, experienced record high temperatures and other extreme weather conditions. The frequency of extreme weather is rising, too.

A report by the Centre for Science and Environment states that India experienced an extreme weather event on 86% of the days³ during the first nine months of 2023.

Monsoon patterns, too, have been affected by climate change. A recent study by Council on Energy, Environment and Water highlights how monsoon patterns have changed in India over the past four decades, with increasing occurrence of excess and deficient rainfall⁴.

India is among the most climatically vulnerable countries and the weather risks are only mounting. Given the higher susceptibility of vegetables to the weather (heat waves, flooding, storms, changing monsoon patterns, and so on), climate change is likely to have a dire impact on vegetable production and prices. Rising temperatures could also exacerbate the pest problem.

³India 2023, Assessment of extreme weather events, Centre for Science and Environment

⁴Prabhu, Shravan and Vishwas Chitale. 2024. Decoding India's Changing Monsoon Patterns – A Tehsil-level Assessment. New Delhi: Council on Energy, Environment and Water

Structural solutions

Vegetables impart a lot of volatility to overall food inflation. With increasing frequency of extreme weather conditions, the risks to vegetable prices are climbing.

Although vegetable price shocks are transient and dissipate as fresh stocks arrive in the market, repeated shocks could bring persistence to vegetables and hence food inflation. Hence, it is crucial to adopt measures such

as improving cold storage facilities, promoting use of hybrid weather resistant seeds and reducing post-harvest losses.

The IMD has predicted an above-normal southwest monsoon in 2024. This augurs well for vegetables prices, but the distribution of monsoon is also crucial. IMD expects above-normal temperatures till June, which could keep vegetable prices elevated for the next few months.

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