Comparative Analysis of Food Inflation Policies in India and Other Emerging Economies

Abstract

Rising prices are a concern for policymakers because they have the most significant impact on ordinary individuals. In developing economies, the adverse effects of inflation are more noticeable because essential necessities constitute a larger portion of people's expenses compared to developed countries. This paper explains the timeline of food inflation in India, along with changes in its pattern. It further elaborates on the various reasons behind food inflation in India, including the impact of the Covid-19 pandemic, the Russia-Ukraine war, and the role of climatic conditions, rising income, and hoarding. This paper sheds light on recent trends in food inflation in India, comparing it with some developed economies. We also examine the role of the RBI and the Central Government in containing food inflation in India. It compares India's food inflation policies with those of some emerging economies worldwide. Lastly, this paper provides potential solutions to improve various aspects and highlights initiatives aimed at solving the problem of food inflation.

Introduction

Food inflation has not only affected India, but has impacted the whole world, and is a matter of global concern. However, the risk of inflation has been felt more in the developing economies, with a higher share of necessities in the consumption basket, as compared to the developed economies. Unlike other economies, food inflation has a significant impact on the aggregate retail inflation in India. This simply means that the high portion of money spent on food by households and it's impact on the Consumer Price Index (CPI) contributes to inflation expectations. When people see food prices increasing, they tend to expect inflation in other areas too. Hence, wages might be adjusted to keep up the overall inflation rate, and this adjustment indirectly takes into account the impact of rising food prices has on the cost of living. So, food prices can influence both inflation expectations and wage adjustments. This helps in determining India's overall inflation dynamics and the use of various policies to solve it. With a Population of 142.86 crore (2023 mid-year estimates)[1], and people spending a significant amount on food expenditure, food inflation becomes an important topic to study. It has been a major cause of concern for both common man and Policy makers. Ever since October 2008, high inflationary pressure, especially double digit food inflation, has been negatively impacting the robustly growing

[1]https://www.indiatoday.in/india/story/india-population-2023-most-populous-in-world-land-per-capita-cricket-pitch-2362073-2023-04-19

Indian economy. Food prices in India started increasing from mid-2008 onwards, and in the year 2010-11, the overall inflation rate surpassed 10% of the entire year[2].

With the recent hike in the prices of tomatoes, due to climatic conditions, it becomes necessary to study the phenomenon of food inflation, in order to provide measures to curb it. At the same time, it is also essential to draw a comparison between the food inflation policies brought up by various emerging economies, to find various ways to maintain food security. This paper analyzes the phenomenon of food inflation, it's dimensions, and policies implemented in different emerging economies, to find potential solutions.

A Timeline of India's food Inflation

High and persistent inflation has been posing major macroeconomic hurdles for the Indian economy for a long period of time[3]. The food inflation was relatively stable during the pre- independence era, due to traditional agricultural practices and limited market influence. However, the 1960s saw two wars, with China (1962), and with Pakistan (1965), along with twin-droughts in 1965 and 1966, which created serious food shortages and increased food inflation. Nevertheless, the inflation cooled down by the end of the decade, due to bumper crop and green revolution initiatives. The 1970s stood out as a notably turbulent era marked by significant uncertainty related to inflation. By the late 1970s, the supply-demand imbalance led to extensively higher food inflation.

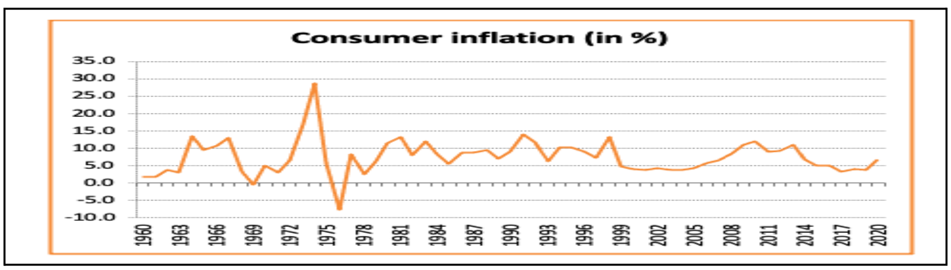

Figure 1: Consumer Inflation over years

https://scripbox.com/blog/history-of-inflation-in-india-and-what-to-expect-going-forward/?amp

The 'Green Revolution' policies which included price incentives, technology subsidies and infrastructural investment (especially in irrigation), along with Buffer stocks (Buffer stock system is a plan by the government to stabilize prices in a volatile market), kept food inflation less severe in the 1980s and 1990s. These actions boosted cereal and crop productivity and ensured stability[4]. Again in the 1990s and 2000s, the agricultural supply growth slowed to around 3 1/2 % per year, with cereal

[2] Punam Dev, 'Recent Trends in Food Inflation in India', International Journal of Engineering Research & Technology (IJERT), Special Issue - 2015, Volume 3, Issue 10, Haryana, India

[3] Rahul Anand, Naresh Kumar, and Volodymyr Tulin, 'Understanding India's Food Inflation: The Role of Demand and Supply Factors', IMF Working Paper, January 2016, WP/16/2

[4] Dr Subir Gokarn, 'Food inflation – this time it's different', BIS central bankers' speeches, 9 December 2011, Pune

production growing by only 1 1/2 % per year. To manage the rising demand, reducing buffer stocks helped to control the food inflation, as MSP growth moderated (refer to figure 2 and figure 3).

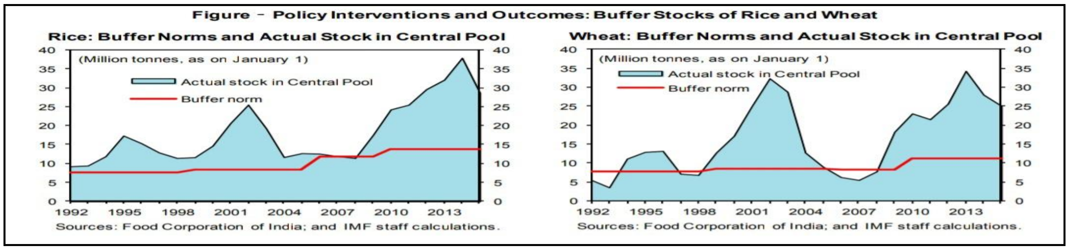

Figure 2: Policy Interventions and Outcomes: Buffer Stocks of Rice and Wheat

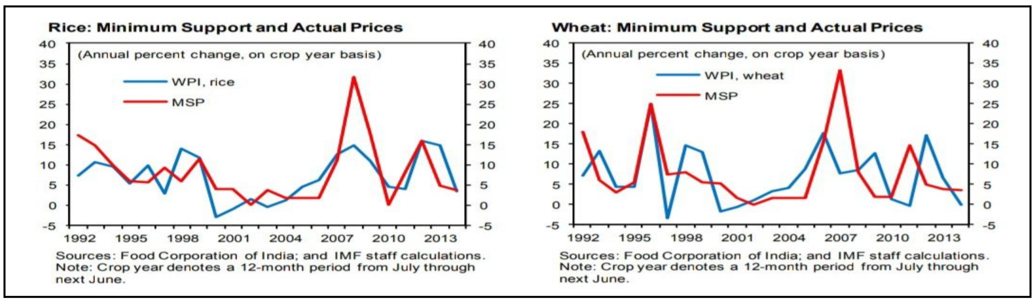

Figure 3: Wheat and Rice: Minimum Support and Actual Prices

The Indian Government's response to the increase in global food prices in 2007-08 helped to restrict the impact on domestic food prices (refer to figure 4). However, the buffer stocks continued to drop even falling significantly below the accepted norms (refer to figure 2). In May 2007, the quantity of wheat stock in the central pool was nearly half of the prescribed buffer stock norms. Along with this, governmental measures like large increases in food and fertilizer subsidies, and an increase of 30% in minimum support prices in 2008-2009 not only delayed, but also extended inflationary pressure, even after the global food commodity prices had started to decrease. Additionally, the global commodity price rise of 2007 to 2008 also led to two of the biggest exporters of food like India and China, along with those who imported food, becoming cautious about spending too much on International grain markets (especially during food emergencies). This resulted in massive increasing grain procurement and hoarding.

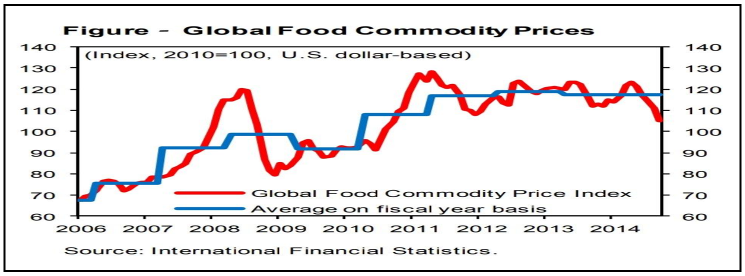

Figure 4: Global Food Commodity Prices

From 2006 to 2014, India faced the major concerns of consistently high food inflation. During this period, food prices went up by an average of 9%, and at its highest point in late 2009, it even exceeded 20%. This sustained high food inflation is especially troubling, because food makes up to 45% of people spending(as per 2015 data)[5].

The period of April 2014 to March 2019 was a successful period to control food inflation in India. During this time, the 6% limit of Consumer Price Index (CPI) inflation, set by the Reserve Bank of India (RBI), was breached only in 6 out of 60 months, and CPI inflation stayed below 4% in 23 out of 60 months[6]. The year-on-year CPI averaged 4.49%, and even lower at 3.52% for Consumption Food Price Index (CFPI) inflation. This means that, while the general inflation was under control, food inflation was even milder. This trend was especially noticeable after September 2016. However, the food inflation has witnessed fluctuations from 2020 onwards. This is because of various factors such as supply chain disruptions due to the Covid-19 pandemic, the Russia-Ukraine war, changes in the global commodity prices, climatic conditions etc. In the initial period of 2022, the CPI inflation had exceeded RBI's upper limit of 6%. From April 2019 to May 2022, the CPI inflation exceeded 4% target in 32 out of 38 months, and went 6% in 18 months[7]. There was surge in food prices in February 2022, reaching 5.85%, the highest level since November 2020[8].

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[5] RUDRANI BHATTACHARYA, ABHIJIT SEN GUPTA, 'Food Inflation in India: Causes and Consequences', National Institute of Public Finance and Policy, September 2015

[6] Samridhi Agarwal, Harish Damodaran, 'The Return of Food Inflation: Why it's Different this time', Centre for Policy Research, 30th June 2022 https://cprindia.org/the-return-of-food-inflation-why-its-different-this-time/

[7] Samridhi Agarwal, Harish Damodaran, 'The Return of Food Inflation: Why it's Different this time', Centre for Policy Research, 30th June 2022 https://cprindia.org/the-return-of-food-inflation-why-its-different-this-time/

[8] Manoj Kumar and Aftab Ahmed, 'India's February retail inflation up 6.07% year over year, above RBI target for second month', Reuters, March 14, 2022 https://www.reuters.com/world/india/indias-feb-retail-inflation-up-607-yy-above-rbi-target-2nd-month-2022-03-14/

Factors affecting food inflation in India

As the food inflation again surged from 2020 onwards, let's have a look at various factors affecting food inflation in India

a) The Impact of the Covid-19 Pandemic

Mahajanan and Tomar (2021)[9] discovered that the Covid-19 lockdown caused a decrease in the product availability and arrivals in online retail and wholesale markets. However, the impact on the prices of vegetables, fruits and edible oils was less. Lowe, Nadhanael, and Roth (2021)[10] found a significant drop in food arrivals in the wholesale markets, along with an increase in the wholesale food prices, after the lockdown announcement. However, this situation improved within 2 months. Narayan and Saha (2021)[11] while studying the effects of Covid-19 lockdown on urban food markets in India, noted that there are differences in the impact across different commodities and cities. It was observed that the retail food prices increased notably in many urban cities, especially the smaller ones. This study specifically mentions the substantial price hikes for pulses, oils, potatoes, tomatoes and onions.

b) Influence of the Russia-Ukraine war

The Russia-Ukraine war has led to a surge in global food, energy and fertilizer prices, with retail inflation in India climbing up to 7% in March 2022. It has also led to an above expected rise in food prices, which shot up to 7.7% year-on-year. This was majorly fueled by the supply chain disruptions and multiple sanctions on Russia. Inflation increased again in January 2023, going upto 6.52%, after staying within 6% for 3 months on higher food prices[12]. The black sea region plays a major role for global food security with supply of food, energy and fertilizers. The war has created a global wheat shortage because of Russia and Ukraine being the two of the major exporters of wheat and maize. Countries like Egypt and Indonesia, which are entirely

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[9]Mahajan K. and Tomar S. (2021). COVID-19 and supply chain disruption: evidence from food markets in India. American Journal of Agricultural Economics 103(1): 35–52. 25.
https://academic.oup.com/erae/article/50/2/232/6643211

[10] Lowe M., Nadhanael G. and Roth B. N. (2021). India's food supply chain during the pandemic. Food Policy 105: 102162.
https://academic.oup.com/erae/article/50/2/232/6643211

[11] Narayanan S. and Saha S. (2021). Urban food markets and the COVID-19 lockdown in India. Global Food Security 29: 100515
https://academic.oup.com/erae/article/50/2/232/6643211

[12] One year of Russia-Ukraine war: How the conflict impacted Indian economy, Times Of India, February 24, 2023
https://m.timesofindia.com/business/india-business/one-year-of-russia-ukraine-war-how-the-conflict-impacted-indian-economy/articleshow/98214568.cms

dependent on Russia and Ukraine for wheat, faced a major blow. The African and West Asian countries which were majorly dependent on the food imports from the black sea region, were vastly affected due to it's blocking. Apart from this, the Horn of Africa facing droughts worsened the food inflation. During this time, India took the initiative to export wheat in a large quantity. Prime Minister Shri Narendra Modi announced that "Indian farmers were ready, and capable to feed the world". As a result, India saw increase in wheat exports. It went from 2.1 Million Tonnes (MT) in fiscal year 2022-21, to 7.85 MT in 2021-22. Again in April-June 2022, Indian exports numbered 3 MT. Egypt, who faced "bread riots" being the world's largest importers of wheat, officially partnered up with India. India initiated its "Wheat diplomacy" during this time, in accordance with its neighborhood first policy. However, India banned weight export on 13th may 2022, due to pressure on its food security (exports were allowed with a few exceptions, only on the permission of the Government of India, on the request of the government of the country in need). The heat wave of March-April 2022 greatly affected the wheat production in India. Even the Food Corporation of India (FCI) was unable to wipe out the ample stocks for buffer stocks (similar steps were taken by Bulgaria and Hungary, of imposing food protectionist policies, to bolster their own reserves). The increase in price of wheat in India imposed problems for its domestic consumers. Hence, this type of wheat ban helps to control the spike in wheat prices in India.

c) Role of Climatic Conditions

Changes in climatic conditions like droughts, heat waves, cyclones, heavy rainfall etc, have time and again imposed challenges for the food security in India. The March-April 2022 heat wave caused a ban of wheat exports by India. India's agricultural sector plays a major role in its economic growth and food security, however due to the threat of El Niño, food security is at risk. Climatic conditions cause supply shortages, and hence spike in food commodity prices, which increases food price volatility. Erratic rainfall and white-fly disease, which affected Karnataka, had an adverse impact on the tomato inflation in 2023, as Karnataka is the one of largest tomato producing states in India. These weather related shocks usually affect the short to medium term price dynamics and output gaps, but can also have a long-term macroeconomic impact on potential output, natural rate of interest, sectoral composition and international competitiveness[13]. This can lead to extreme food inflation. Such climatic variations often impose challenges for a country's food security.

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[13] Vimal Kishore, Himani Shekhar, 'Extreme Weather Events and Vegetable Inflation in India', Vol. 57, Issue No. 44-45,11 November 2022 https://www.epw.in/journal/2022/44-45/special-articles/extreme-weather-events-and-vegetable-inflation.html

d) Hoarding

Hoarding of food commodities can lead to reduced supply in the market, causing scarcity and driving up the prices due to increased demand. This leads to food inflation, as it disrupts the demand-supply balance. Hoarding can also lead to artificial shortages, leading to panic buying, further intensifying the inflation pressure. As per June 2023 data, prices of certain essential commodities like Tur Dal, Cumin, Garlic etc have gone up steeply. According to the Agricultural Produce Market Committee, this "price shock" was due to hoarding by unscrupulous dealers. A joint team of officials from the food and legal metrology departments, led by District supplies officers, investigated about 140 complaints against overpricing, profiteering and black marketing of essential commodities on 26th April 2021. Cases against 6 retailers were registered during inspection, with a penalty of ₹18,000 on 4 traders for over pricing of commodities like Chana Dal, Mustard oil etc. In 2020, during the rabi season, mandi arrivals all across the country, cured down by 30-40%, despite the season seeing a good harvest. Mandi arrivals for certain commodities like Chana and Mustard seed dropped significantly, around 60-70%, compared to the government's output-reduced procurement. The whereabouts of these vanished arrivals remain a mystery. In 2023, the central government cracked down on hoarders of pulses and other forms of produce. Consumer Affairs Secretary Shri Rohit Singh, while addressing this issue, said that "There are Tur imported from Myanmar, which people have kept. Please release it in the market is my appeal. Don't hold it, we have a set of reliable intelligence"[14]. The governmental price monitoring cell is using modified pricing prediction methods like root mean square error, a mathematical model economic forecasted, often used to gauge errors in predicting quantitative data. This will ensure strict surveillance to prevent any type of hoarding.

e) Rise in Annual Income

The rise in income leads to higher demand, which disrupts the demand-supply balance, causing food inflation. According to the estimates from National Statistical Office (NSO), India's per capita net national income (at current prices) for 2022-23 stands at ₹172,000, almost 100% increase from the per capita income in 2014-15, I.e., ₹86,647[15]. Further, it is

[14] Zia Haq, Centre cracks down on hoarders of pulses, other farm produce, Hindustan Times, Feb 19, 2023
https://www.hindustantimes.com/india-news/centre-cracks-down-on-hoarders-of-pulses-other-farm-produce-101676749721339.html

[15] Melissa Cyrill, 'India's Per Capita Income for 2022-23 Doubles from 2014-15, but Wealth Unevenly Spread', India Briefing, March 7, 2023
https://www.india-briefing.com/news/indias-per-capita-income-doubles-since-2014-15-but-wealth-unevenly-spread-27325.html/

expected to increase 1.6 times to $4000, or about ₹3.2 lakh by 2030, turning the country into an upper-middle income country[16].

Recent trends in India's food Inflation:

a) Analyzing whether Food Inflation in India is Demand-Driven or Supply-Drive:

According to the "Economic trends and prospects in Developing Asia" chapter of the Asian Development outlook, April 2023[17], on the demand side, despite global headwinds, private consumption expanded by an estimated 7.3% and investments by 11.2%.

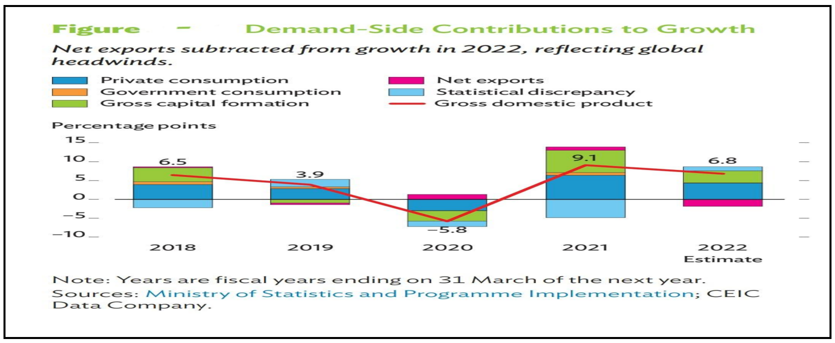

Figure 5: Demand side contributions in growth

For the supply side, on the other hand, the GDP growth is supported by agriculture, which increased by 3.3%, and services which increased by 8.8%. Transport, hostels, communication and trade grew robustly with an estimation of 14.0%. Manufacturing growth too remained positive at 0.6% (even after fluctuations).

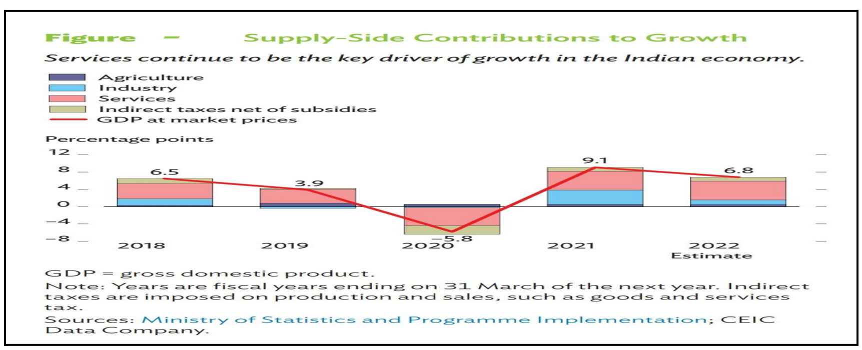

Figure 6: Supply-side contributions to growth

The Covid-19 pandemic and abnormal climatic conditions has caused demand for food and essentials to rise, causing demand-driven food inflation. As the world was gradually recovering

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[16] 'India's per capital income may rise 1.6 times to $4k by '30: Standard Chartered' The Economic times, 28 July, 2023 https://m.economictimes.com/news/economy/indicators/indias-per-capita-income-may-rise-1-6-times-to-4k-by-30-standard-chartered/articleshow/102216796.cms

[17] ASIAN DEVELOPMENT OUTLOOK, ASIAN DEVELOPMENT BANK, APRIL 2023, pg.no. 164

from it, the Russia-Ukraine war caused further global supply-chain disruptions, causing supply-driven food inflation worldwide. An Analysis by Centre for New Economics Studies, InfoSphere team, at Jindal School of Liberal Arts and Humanities, O.P Jindal Global University, on the inflation trends in India (in 2022), considers climatic factors, especially temperature and rainfall, to focus on Supply-side variable of rising food inflation. These exogenous factors are important as extreme conditions in these can affect production and yield of food grains. They have used a multiple-level analytical approach, with three outcome variables: Consumer Food Price Index(CFPI), Wholesale Price Index(WPI) and food inflation. They have inferred that food inflation and temperature share a direct correlation with each other, as temperature has an impact on food inflation. To understand this correlation better, CPI and WPI were taken as outcome variables. This study showed that over a period of time, even with fluctuations, the WPI inflation trend remained at stationarity growth, leading to a suspicion that the WPI inflation may not be a function of time. However, both CFPI and WPI are significantly impacted by climatic variables. WPI regression shows a positive linear relationship with climatic conditions. It can be said that climatic conditions have a perceptible

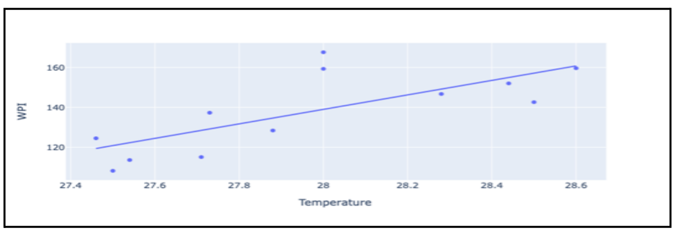

Figure 7: relationship between WPI and temperature

effect on food inflation. Hence, both demand and supply factors often play a role in food inflation in India.

b) **A Comparison of India's Inflation Progress with Other Developed Economies:**

Compared to India, some developed economies have vast differences between inflation percentage in 2021 to inflation percentage in 2022. The graph given below (figure 5) depicts the inflation trends in some of the developed economies of the world and showcases that countries like UK USA Japan Australia and even euro-zone for that matter had a drastic difference between inflation in 2021 and in 2022, with Russia-Ukraine war being one of the reasons for challenges.

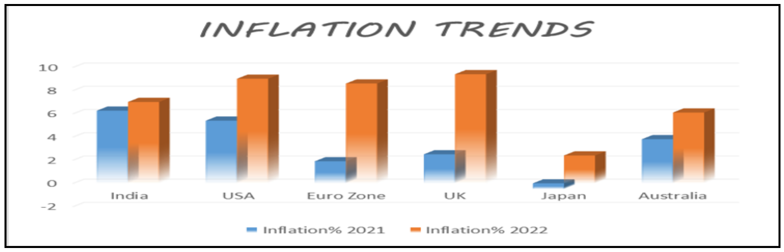

Figure 8: Inflation Trends

Image taken from https://thewire.in/economy/is-food-inflation-in-india-driven-by-demand-or-supply

According to SBI ecowrap report, the Food CPI Index of each country has been transformed with respective change in exchange rate in comparison to the Indian Rupee. The report found out that cost of living of food has increased by ₹25 in the US, ₹15 in India, ₹33 in Germany and ₹18 in UK from year 2021-2022[18].

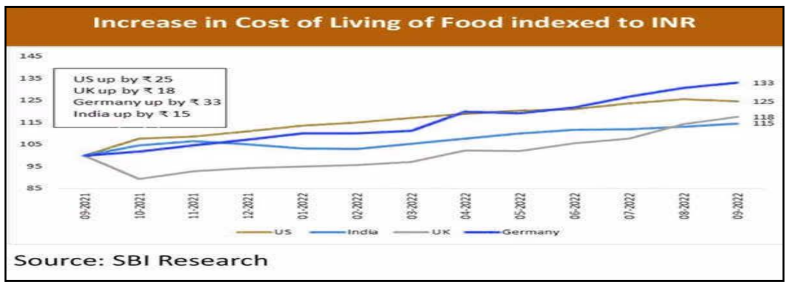

Figure 9: Increase in Cost of living of food indexed to INR

Image taken from

https://m.timesofindia.com/business/india-business/explainer-how-india-is-managing-cost-of-living-and-inflation-better-than-us-uk-and-germany/amp_articleshow/96025323.cms

Let's separately compare India's inflation progress with the USA, UK and Germany.

USA

The USA reported a higher CPI inflation rate at 7.5%, as compared to CPI inflation rate of 6.01% in India, in January 2022[19]. As per the 2023 estimates, by world of statistics (via twitter), the US food inflation stood at 6.7% as compared to 2.91% in India.

[18] Sunainaa Chadha, Explainer: How India is managing cost of living and inflation better than US, UK and Germany, Times Of India, Dec 6, 2022 https://m.timesofindia.com/business/india-business/explainer-how-india-is-managing-cost-of-living-and-inflation-better-than-us-uk-and-germany/amp_articleshow/96025323.cms

[19] Krishna Kant, A first in 3 decades, retail inflation in US higher than India for 4 months, Feb 15 2022, Mumbai https://www.business-standard.com/article/economy-policy/a-first-in-3-decades-retail-inflation-in-us-higher-than-india-for-4-months-122021500034_1.html

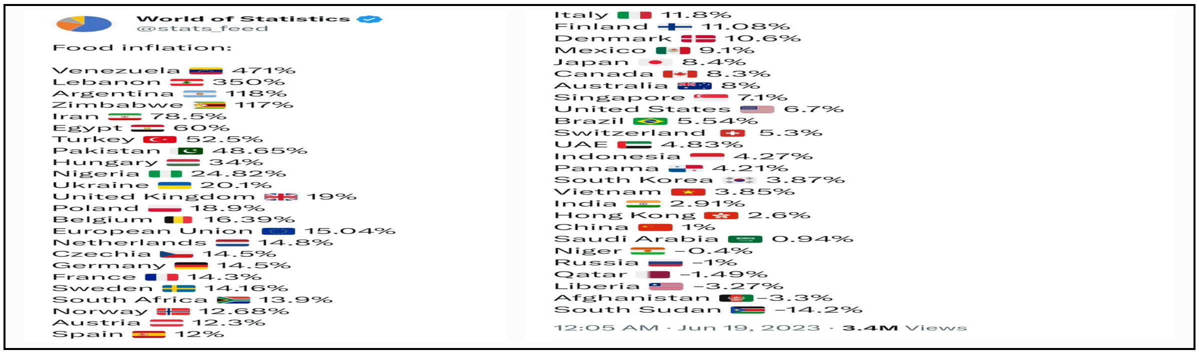

Figure 10: Data by World of Statistics (via twitter)

It is expected to be around 3.50% in 2024 and 3.40% in 2025, for a long term, as per the data by trading economics[20]. "This shows that India has done a good job in managing it's food inflation even at such a difficult global time" complimented Professor Shamika Ravi, a member of Prime Minister's economic advisory council[21]. This has been possible because of the timely steps taken by the Government of India. India amended it's export policy of wheat ban, as heat waves in several wheat growing regions in India before the rabi harvest affected the crops. This is because the wheat pods tend to shrink if overexposed to heat, at a mature stage. During its inaugural monetary policy review for the fiscal year 2023-24, the Reserve Bank of India opted to maintain the Repo rate at 6.5%. This decision aims to evaluate the impact of previous policy rate increases on different macroeconomic indicators. Up until the recent halt, RBI has raised the repo rate (rate at which it lends to banks) by 26p basis points since may 2022, as a way to combat inflation. Raising interest rate is a monetary policy tool, which helps in suppressing demand in the economy, further declining the inflation rate and vice versa. The reason for the increase in food inflation in the USA is attributed to the war in Ukraine, supply-chain disruptions, high labor cost and droughts and wildfire in the western United States.

United Kingdom

The food-price inflation has been increasing in the UK, which has created a cost-of-living crisis. According to the estimates by Kantar, as per February 2023, the prices had accelerated 17.1%, making it the highest increase recorded since 2008. According to Rocio Concha, director of Policy and Advocacy at the Consumer pressure group, "some households are already skipping

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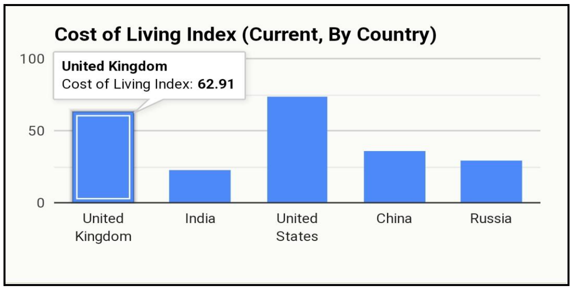
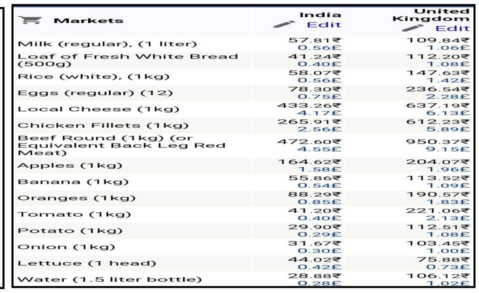
[20] Krishna Kant, A first in 3 decades, retail inflation in US higher than India for 4 months, The Business Standard, Feb 15 2022, Mumbai https://www.business-standard.com/article/economy-policy/a-first-in-3-decades-retail-inflation-in-us-higher-than-india-for-4-months-122021500034_1.html

[21] 'India has managed food inflation very well in difficult global conditions', The Economic Times, May 8, 2023 https://retail.economictimes.indiatimes.com/news/food-entertainment/personal-care-pet-supplies-liquor/india-has-managed-food-inflation-very-well-in-difficult-global-conditions/100069436

meals to make ends meet". As compared to this, India has been quite successful in controlling the cost of living (especially in terms of food commodities) as compared to the UK.





Markets	India Edit	United Kingdom Edit
Milk (regular), (1 liter)	57.81₹ 0.56£	109.84₹ 1.06£
Loaf of Fresh White Bread (500g)	41.24₹ 0.40£	112.20₹ 1.08£
Rice (white), (1kg)	58.07₹ 0.56£	147.63₹ 1.42£
Eggs (regular) (12)	78.30₹ 0.75£	236.54₹ 2.28£
Local Cheese (1kg)	433.26₹ 4.17£	637.19₹ 6.13£
Chicken Fillets (1kg)	265.91₹ 2.56£	612.23₹ 5.89£
Beef Round (1kg) (or Equivalent Back Leg Red Meat)	472.60₹ 4.55£	950.37₹ 9.15£
Apples (1kg)	164.62₹ 1.58£	204.07₹ 1.96£
Banana (1kg)	55.86₹ 0.54£	113.52₹ 1.09£
Oranges (1kg)	88.29₹ 0.85£	190.57₹ 1.83£
Tomato (1kg)	41.20₹ 0.40£	221.06₹ 2.13£
Potato (1kg)	29.90₹ 0.29£	112.51₹ 1.08£
Onion (1kg)	31.67₹ 0.30£	103.45₹ 1.00£
Lettuce (1 head)	44.02₹ 0.42£	75.88₹ 0.73£
Water (1.5 liter bottle)	28.88₹ 0.28£	106.12₹ 1.02£

Figure 11: Comparison of cost of living in UK and India
Image taken from
https://www.numbeo.com/cost-of-living/compare_countries_result.jsp?country1=India&country2=United+Kingdom

Germany

According to the provisional figures from the German federal office of Statistics, Germany recorded a year-on-year inflation rate of 6.4% in June 2023, with food prices going up to 13.7%[22]. As per the estimates of April and May 2023 from OECD, the food price inflation is on rise in both Germany and UK. This is because of the impact of the Russia-Ukraine war on the prices of grain, fertilizers and energy. Erratic weather conditions and labour shortages too caused this food inflation.

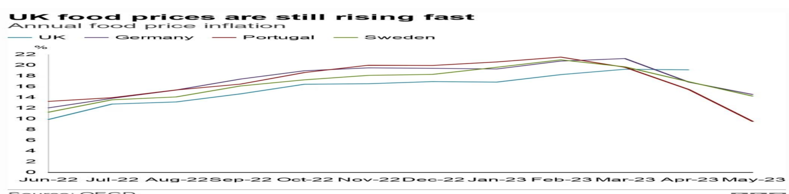


Figure 12: food price rise in UK and Germany

Policies implemented to control food inflation in India

a) Role of RBI

The Reserve Bank of India is entrusted with the responsibility to control inflation under the RBI act 1934 (by maintaining price stability). RBI has to retain the inflation target of 4%, with a tolerance band of plus +/- 2%, under the "Inflation targeting" regime, started in 2016. Hence, for any given month, RBI's target zone for inflation lies between 2% and 6%. Monetary policy is a macroeconomic policy laid down by the RBI. It is a set of tools that a nation's central bank

[22] Germany: Inflation rate rises for first time in 4 months, 06/29/2023
https://www.dw.com/en/germany-inflation-rate-rises-for-first-time-in-4-months/a-66069681

has available, in order to promote sustainable economic growth by controlling interest rate and overall supply of money. The RBI implements its monetary policy through numerous ways like open market operations, reserve system credit control policy, bank rate policy, moral persuasions and many other instruments. There are two ways to go forward with the monetary policy measure - those are Quantitative tools and Qualitative tools. Quantitative tools include direct and indirect ways to control inflation.

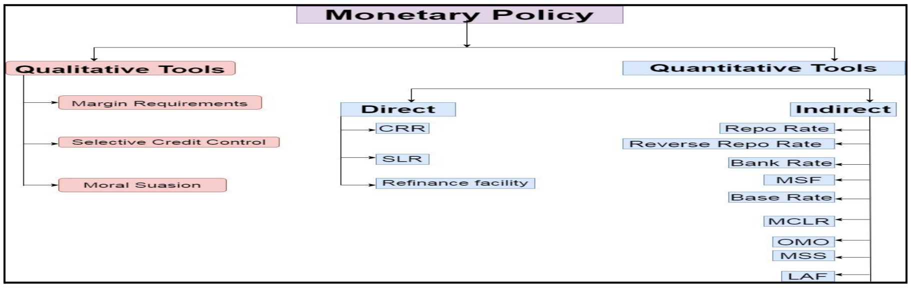


Figure 13: Monetary policy of RBI

1) **LAF and Repo Rate**: Under indirect ways to control inflation, the Liquidity Adjustment Facility (LAF) is a very popular means. Repo rate is one such LAF. The RBI usually uses the policy tool of increasing/decreasing Repo Rate to control inflation. Increasing Repo rate (rate at which the RBI lends money to commercial banks) results in costlier borrowing for both consumers and producers.
2) **Reverse Repo Rate:** Apart from Repo rate, Reverse Repo rate (being a LAF) is a rate at which the RBI pays to the banks in order to keep additional funds in the central bank. It is done to ensure liquidity in the economy, and controls the money supply.
3) **Marginal Standing Facility (MSF):** MSF is also a measure used by RBI, under the quantitative way of controlling inflation (it also comes under LAF). The MSF rate is the penal rate at which RBI lends money to banks, higher than the rate available through the Repurchase Agreement (Repo) policy. It is an emergency borrowing scheme, in case interbank liquidity completely dries up. This scheme was launched by the central bank in 2011-12, while reforming the monetary policy. Banks can utilize MSF rate by using a maximum of 1% of SLR (Statutory Liquidity Ratio) service.

   $$\text{MSF rate} = \text{Repo Rate} + 1$$
4) **Bank Rate**: Bank rate is the interest rate at which RBI lends long term funds to banks. However, currently the RBI doesn't entirely control the money supply through bank rates. It rather uses LaF as a tool to establish control over money supply (Example repo rate, reverse repo rate, MSF etc), under the Market Stabilization Scheme (MSS) of RBI.
5) **Open Market Operations (OMO):** RBI tends to buy and sell government securities in the open market, in order to control money supply. These operations are called Open Market Operations (OMO). When the government engages in the sale of

government securities, it withdraws the security from the market. Conversely, when RBI purchases securities, the opposite effect occurs. This purchasing action is undertaken to manage inflation. OMO'S are carried out with the goal to monitor short term imbalances in market liquidity that may arise in foreign capital influx.

Direct Ways to control inflation in the Quantitative measures

1) **Cash Reserve Ratio:** Cash reserve ratio (CRR) mandates the bank to reserve a portion of their funds in cash at the RBI. The amount cannot be lent out or yield any interest or profit for the banks.
2) **Statutory Liquidity Ratio:** The Statutory Liquidity Ratio (SLR) stipulates that banks allocate a portion of their funds to liquid assets like gold or approved securities. It is basically a minimum amount of deposits to be maintained by commercial banks to RBI, in the form of liquid assets.

Qualitative measures

Qualitative measures differ from quantitative ones as they target a specific sector of the economy, rather than the entire money supply. Various ways to curb inflation under qualitative measures are:

1) **Margin requirement:** RBI sets collateral margins that affect how much customers can borrow. If the RBI increases its margins, customers can borrow less money.
2) **Moral suasion:** The RBI persuades banks to invest in government securities, instead of certain sectors.
3) **Selective credit control:** This involves restricting loans to particular industries or speculative businesses as a way to manage credit.

b) **Is Monetary policy really an effective tool?**

The monetary policy of increasing the report rate has both positive and negative implications on food inflation. Increasing the report rate will make the loans costlier, thus curbing demand - both for consumption (example - buying a new car or house) and for investment (example - building a new factory).

1) The higher is the report rate, the lower is the borrowing by banks, as the borrowing costs for both businesses and consumers increases. This can lead to reduced investment and consumption, which can further negatively impact economic growth.
2) Higher interest rates can make borrowing for investment more expensive for businesses. This can lead to delayed or reduced investments in projects and development, which can affect the overall economic activity.

3) Increased borrowing costs can result in reduced credit growth as banks become more cautious about lending. This can particularly affect small and medium sized enterprises which rely heavily on credit for their operations.
4) The measure of increasing Repo rate might not have a substantial impact in reducing inflation, if the inflation includes high food and oil prices. This is because, food prices can be influenced by a variety of factors like weather conditions (like what happened in case of tomato in 2023), transportation cost, global market dynamics and supply shortages, which might often be beyond the control of the monetary policy tools like interest rates (according to renowned economist Nicholas Kaldor).
5) Financial inclusion is restricted in India as compared to the USA. Unlike Americans, who often use credit for their expenses, Indians typically earn before spending, which affects the effectiveness of the RBI's credit control measure. In India, people tend to save before spending and may not heavily rely on credit for day today expenses. If people are not significantly dependent on credit, changes in credit policies might have a limited effect on the spending behavior.

   Core inflation (excluding food and fuel items) was lowest in 2022-23, in India, at 5%. Core inflation is seen as an indicator of demand-driven inflation, which can be controlled by monetary policy, as opposed to this, food inflation which is Supply driven might be outside the purview of RBI's monetary policy.

c) Role of the Government

The consumer price index CPI inflation spiked to 7.4% in July 2023, exceeding RBI's tolerance limit of 6%. The reason behind this was food inflation, which is more volatile than Core inflation (excluding food and fuel inflation). Here monetary policies by the RBI don't play much role as vegetables have a short crop cycle and prices spike and correct in a short span of time. The "Cobweb cycle" happens when price fluctuations lead to fluctuations in supply, which in turn can cause a cycle of raising and falling prices. This cycle happens when farmers tend to aggressively so crops that are seeing high prices. This leads to supply exceeding demand, further decreasing prices. Cereals, Spices and Pulses being non-perishable goods cause more concern for overall food inflation as compared to vegetables and fruit inflation. Cereal inflation averaged 13% since August 2022. Along with this, spice inflation too averaged 18% since 2022, due to pest attack and low production. The inflation on pulses averaged 11% in June to July 2023. The steps taken by the Government of India to curb the food inflation are:

Wheat and Rice: For the 1st time in 15 years, the Government of India has imposed a stocking limit on wheat till March 2024, in order to check the holding and contain rising prices of key commodities. Further the government has also decided to sell 15 lakh tonnes of wheat, to large scale consumers and traders, from the central pool (central storage), starting at the end of June. This action falls under the Open Market Sales Scheme (OMSS). Additionally, rice will also be sold to large buyers under this scheme, but the specific quantity will be decided later on. The Government also clarified that it has no intention to modify the policy regarding wheat imports, as the country already possesses sufficient stock of wheat. The Government has decided to keep the restrictions on exporting wheat in place. Addressing this issue, Food secretary Shri Sanjeev Chopra said that the stock limit on wheat has been imposed because some unscrupulous elements are holding the stock, and creating artificial scarcity (hoarding), which drived the Mandi prices by almost 8% in May 2023. He mentioned that a stock limit of 3000 tonnes has been imposed on wheat traders/wholesalers, 10 tonnes on retailers, 10 tonnes for each outlet for big chain retailers, and 3000 tonnes at all their deposits[23]. These entities have been instructed to report their current stock levels and keep them updated on the Department of Food and Public Distribution's portal. If the stock exceeds the set limits, they must bring their stock within the prescribed limits within 30 days of notification being issued. This step aims to regulate the quantities of wheat held by different players in the market to ensure sufficient supply and to prevent excessive stock piling. In order to check prices to improve domestic availability, the Government has decided to offload both wheat and rice, under the OMSS, to bulk buyers and traders. The offloading of around 15 lakh tons of wheat will be done through e-auction organized by the Food Corporation of India (FCI).

Rice, too, presents a big challenge, as a severe global crisis has emerged because the exports of a type of rice called "5% broken rice", which serves as a national standard, increased significantly. This surge in exports caused domestic rice prices to rise. Mr. Anshul Singh from Santoshi Impex, a food trading company, explained that "the countries in need of food started importing this type of rice from India". The increased prices of broken rice also affected poultry farmers, who switched to using other grains like maize in their animal feed, which led to rise in maize prices. To enhance domestic rice supplies, India prohibited the export of broken rice and imposed a 20% export tax on non basmati rice varieties in September 2022. This move cost International prices to rise further, as India is one of the world's leading rice exporters. By 20th July 2023, India fully halted rice exports (except basmati variety). The Central Government has announced that it would sell 50 lakh tons of food grain from FCI stock, in order to boost an ability to control the price rise. The Central Government is undertaking sale of additional 25

[23] Govt Imposes Stock Limit On Wheat Till Mar 2024; To Offload 15 Lakh Via OMSS To Check Prices, Press trust of India, 12 Jun 2023
https://www.outlookindia.com/business/govt-imposes-stock-limit-on-wheat-till-mar-2024-to-offload-15-lakh-via-omss-to-check-prices-news-294196

lakh tonnes of rice in the open market, along with reduction of its reserve price from ₹30 to ₹29 per kg. As mentioned earlier, the Government has started the weekly sale of wheat and rice under the OMSS from June 2023, around 8 lakh tonnes of wheat and 2200 tonnes of rice has been sold by the FCI so far. Additionally, the weighted average selling price of wheat has increased by 5.5%, in the past 7 weeks, from ₹2136 on the 28th of June, to ₹2255 per quintal on 9th August. Moreover, the Government offering more wheat will also compel big farmers and traders, who have been hoarding their stock for better prices, to release the same. Shri Ashok. K. Menon, the chairman of FCI, acknowledged that they have 87 lakh tonnes of surplus wheat, after meeting the requirement under food security scheme and other welfare programs, pointing towards the fact that the Government has enough grains for market intervention.

Tomatoes and Onions: As addressed by Union finance minister Shri Nirmala Sitharama, imports of tomatoes are being brought from Nepal to India, and the 1st lot of imports are likely to reach Varanasi, Lucknow, and Kanpur cities, in order to manage the demand-supply balance of tomatoes. In order to solve the tomato crisis, the center released buffer stocks of onions and pulses, carried out imposition of stock declared by entities to prevent hoarding, rationalization of import duty, changes in import quotas and restrictions on exports of specific commodities.

In order to handle the rising onion prices, the Government started procurement of onion at ₹2410, per quintal, in Maharashtra and MP, for buffer stock. It is being sold at a subsidized rate of ₹25 per kg for consumers in different regions, to control the soaring prices. The Government has imposed a 40% export duty on onions, to restrict outward shipments and boost local availability, amid worry about the kharif output. While imposing export duty on onions, the Government has also begun procurement of additional 2 lakh tonnes of onions from farmers, so that they are not affected by the export curb. Also, approximately 1400 metric tonnes of onions have been dispatched from the buffer stocks, by the government, in order to balance the demand supply curve.

Comparative Analysis of Food Inflation Policies in Emerging Economies with India

Let's compare the food inflation policies in some of the emerging economies like Brazil, Russia, Vietnam, China, Thailand and South Africa.

1) **Brazil-India**

Both India and Brazil, being two of the fastest growing economies in the world, face challenges in addressing food inflation. The Russia-Ukraine war triggered a food inflation in Brazil in 2022, which exacerbated hunger. According to a Brazilian article posted by Anne Vigna, 33% million Brazilians endure hunger and 30% of families were at risk of food shortage in June 2022. The food inflation in Brazil is 2.3% (July 2023 estimates), as compared to 4.49% in June 2023 in India. The steps taken to control the food inflation in Brazil are:

a) Unlike India, Brazil is considering a strategy to encourage farmers and traders to store more of certain crops like corn, soya beans and rice, rather than immediately selling them. The motive behind this is said to be creating stockpiles of these stable foods, which can help stabilize prices and ensure a consistent supply in the market. This is achieved through increased incentives and higher storage tariffs. The rise in storage tariff, the fees paid to storage facility owners by an average of 34%, is aimed at promoting the development of additional storage capacity for public stockpiles of food. Brazil has faced a shortage of storage capacity. Hence, the Government hopes these higher tariffs will help address the issue and support farmers income. However, this can even lead to dangerous consequences like hoarding.
b) Just like India, strategic food reserves and buffer stocks are maintained to manage supply fluctuations and prevent extreme price volatility in Brazil. These reserves can be released into the market during times of scarcity to stabilize prices (like what India did in case of pulses and onions).
c) The Brazilian government employs a policy known as the "Guaranteed Minimum Price Policy" to support agriculture and enhance food security (similar to MSP policy in India). This policy aims to ensure that the purchase prices for crops cover the production cost and provide a certain level of profit for small and medium sized farmers. For example, during the 2007-08 harvest season, the government increased the guaranteed minimum price for key crops like rice, beans and maize to help farmers cope with rising cost and potential losses.
d) The Brazilian government undergoes purchasing surplus crops at prices higher than those in the market, which helps to protect farmers during the harvest and minimize price fluctuations. When the market prices fall below the government established market level, actions are taken. Such as buying surplus crops from small farmers, equalizing prices, building up stock piles of selected crops etc. This aims to contribute to the economic growth, increase farmers income and enhance the competitiveness of crop export.

e) Since the new government assumed office in January 2023, addressing hunger and food security has become top priority on their agenda.
    1) They have redesigned the "Bolsa Familia cash transfer program" and increased its benefits. This program provides financial assistance to low income families to help alleviate poverty and enhance their economic situation (just like the National Social Assistance Program in India).
    2) They have revived the council of food security, which had been discontinued in the previous administration. This council plays a role in coordinating efforts to ensure adequate food supply and distribution to the population (just like the National Food Security Council in India).
    3) The National Food Procurement Program has been restructured to better facilitate the procurement and distribution of food to those in need. This helps in supporting local farmers while providing food to the vulnerable population (just like the "Public Distribution System" in India).
    4) The resources allocated for the national program of school food has been raised by around 37%. This program focuses on providing nutritious meals to students in schools, helping improve their overall well-being and nutrition.

2) **Russia-India**

The Russian exit from the grain deal has striked fear of global food inflation. According to the monthly data by the Federal state statistics service, food inflation in Russia increased by 2.23% in July 2023[24]. As an aftermath of the Russia-Ukraine war, Russians are spending an average 40% of their disposable income on food (2022 estimates). In order to control food inflation in Russia, the steps being undertaken are:

a) The Russian government has occasionally implemented price controls on certain food items to curb food inflation. This involves setting maximum prices that retailers can charge for certain goods.
b) Russia has, at times, imposed export restrictions on certain food products to ensure sufficient domestic supply and to stabilize prices (like what India did in case of wheat)
c) Just like India, the Russian government has provided subsidies and support to the agricultural sector to boost domestic production and reduce reliance on imports.
d) Adjustments to import tariffs and quotas have been used to manage the availability of certain food items in the domestic market in Russia.

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[24]https://take-profit.org/en/statistics/inflation-rate/russia/#:~:text=What%20is%20Food%20Inflation%20in,by%20Federal%20State%20Statistics%20Service

e) Just like the Buffer-stock norms in India, the Russian government maintains strategic reserves of special commodities which allows Russia to release supplies into the market during times of scarcity thereby helping to stabilize prices.

f) The Russian government invests in improving agriculture infrastructure such as storage facilities, transportation networks and irrigation systems. These investments can reduce post harvest losses and ensure a smoother supply chain.

g) The Russian government in April 2023 announced the launching of a long term saving for public program. This will allow people without special knowledge in investment culture to create long term savings and further invest them in financial instruments. Along with this, the government has also transferred $2 billion rubles for comprehensive re equipment of 11 research institutes working in biology industry, poultry breeding and seed production, to ensure food security.

h) Russia has invested a lot in development of cold chain infrastructure for perishable goods, which can reduce post-harvest losses and ensure steady supply, contributing to price stability. India, too, has the cold chain infrastructure facility. However, this sector is a bit unorganized in India, also lacking investment.

i) The Russian emphasis on modern storage facilities like silos and grain elevators has helped manage grain stocks efficiently. Improving storage infrastructure in India can help minimize post-harvest losses and prevent price fluctuations.

3) Vietnam-India

The food inflation in Vietnam is 3.79% as per the data of 31st July 2023[25]. Inflation has been kept low in Vietnam over the past decade, with proper use of monetary policy, exchange rate management and fiscal policy, with main focus on stability. Vietnam, so far, has been successful in reducing food poverty and has even achieved the UN sustainable development goal for hunger. However, undernourishment still hasn't been eliminated, with 6.7% of the Vietnamese population being undernourished (2022 estimates). Hence, even a small food price rise can rapidly lead to poor health. The steps taken to solve this issue are:

a) The Country's central bank I.e The State Bank of Vietnam (SBV) has maintained an accommodative, yet flexible monetary policy, to facilitate low cost financing to help support the economic growth while curbing inflation. The Asian Development Bank (ADB) mentions that Vietnam's careful money policy and control over prices of things like fuel, electricity, food, health care etc will likely keep inflation low at 4% in 2023.

b) The government of Vietnam has issued an extension of 3, 6 and 9 months to pay land fees, and taxes estimated at around VNĐ135 trillion to support enterprises. Nguyễn

[25]https://www.fxempire.com/macro/vietnam/food-inflation

Minh Cường, from the Asian Development Bank, claimed that Vietnamese inflation will remain under 4%, considering the government's ability to control prices through measures like reducing environmental protection tax on fuel.

c) Vietnam is targeting double the amount of foreign investment in agriculture to $35 billion, by the end of 2023. This has also helped the Vietnamese agriculture and economy to grow as Vietnam accounts for about 12% of the Entire world's rice export (India being the top most exporter of rice). Apart from this, the government has also invested in rural infrastructure like irrigation systems, storage facilities and transport networks to improve efficiency of the agricultural supply chain, reducing wastage and price volatility.

d) The Vietnam's government has allocated funds to agricultural research and development projects which can lead to innovations which will further improve crop yield's quality and resilience to natural challenges thus helping to manage the food inflation.

4) China-India

The food inflation in China was -1.70% in July 2023, indicating deflationary effects. According to the National Bureau of Statistics, the consumer price index fell by 0.3% in July, but was 0.2% when compared with June. This case seems completely opposite to India, which has increasing CPI inflation. Let's have a look at the policy China undertook to keep its food inflation in check, even after being such a populated country.

a) Beijing offered 40 Yuan ($6) monthly as a subsidy to low income residents, to cushion the impact of rising food prices, from February 2023. This was done as a continuation of the low income subsidy programs started in 2011. However the scheme faced backlash in China due to the amount given being too low.

b) In order to contain inflation, the Chinese government introduced price caps on one hand, and attempted to absorb liquidity on the other. They controlled the prices of public utilities and fuel such as diesel and gasoline, and put pressure on local administration to control the price rise of agricultural products. To control the excess liquidity and the expansion of bank lending, the Chinese Central Bank had raised the reserve requirement ratio for commercial banks 5 times in 2008.

c) Despite low inflation, China is experiencing lackluster demand. This is because of numerous reasons like recession, real estate market facing problems, and even pandemic related restrictions. The "Zero Covid policy" refers to strict measures aimed at preventing the outburst of the pandemic. However, even though this policy helps to maintain production, it can suppress consumer demand, leading to deflation. Despite this, the Chinese government focused on virus containment and stability, over economic growth. This gives rise to weak core inflation, where supply is recovering faster than demand. Consumer prices are contracting in China for the 1st time in two years in July 2023. To tackle this, the Chinese government has taken steps like tweaking interest rates, promising more support for the private sector, and measures to revive economic recovery. However, these measures had little effect and the Chinese deflation is expected to weigh on its economic growth in the 2nd half of 2023.

d) To keep inflation in check, the Chinese government imposed measures like price controls, subsidies for shoppers, a crackdown on hoarding and price gouging.

e) The Chinese government has utilized the power of public private collaborations to maintain stability. They have put in place various rules in different areas to make sure they have enough food, and to make their food system strong. One such policy was started in 2006 to make sure they always have at least 120 million hectares of land for growing crops. They are also making it easier to transport fresh food quickly by creating special routes for it.

f) China uses the "Farmland Red lining" policy which helps to ensure a minimum amount of arable land for crop cultivation promoting food security (India can take inspiration from it).

g) China focuses on policies and practices to reduce food loss and wastage along the entire food supply chain. This can increase availability of food and help stabilize prices.

5) **South Africa-India:** The food inflation in South Africa was 9.90% in July 2023 (which is comparatively higher than India's food inflation rate of 4.49% in July 2023). The reason behind this can be traced to the electricity crisis which led to power outages adding to substantial cost across the food chain. Along with the environment factor, supply-chain disruptions and the Russia-Ukraine war too played a role in the rising food inflation in South Africa. To help cope with it the South African central bank increased the interest rate by 0.75% highest since March 2020. However, the food inflation is still rising in South Africa. What lessons can South Africa learn from India controlling its food inflation?

a) India has an established system called the public distribution system PDS which involves maintaining buffer stocks of essential commodities to stabilize prices during times of shortage. South Africa could consider formation of a similar system to manage its food price fluctuations.

b) In certain cases India has imposed price controls on essential commodities to prevent excessive inflation. South Africa could assess the feasibility of implementing similar methods.

6) Thailand-India

Food inflation in Thailand was 1.49%, as per July 2023 data. However, food prices accelerated from 6.42% in June to 8.02% in July 2023. Let's have a look at some of the policies Thailand implemented to control its food inflation.

a) The Thai central bank adjusted its interest rates and money supply, and tried to keep the monetary policy tight, in order to avoid expansion of inflation.
b) The Prime Minister of Thailand, Mr. Prayut Chan-o-cha urged the public to cut down on energy consumption to save energy.
c) The cabinet agreed to cut the excise tax on diesel from 5.99 baht for 3 months (till 20 may 2022), by three liters, to help in easing the effect of high energy prices on the cost of transport and consumer goods amidst the Russia Ukraine war.
d) The major change in the governmental policy for agriculture happened in 1986, when pro consumer policy was replaced by pro producer one. The export taxes and restrictions were eliminated, resulting in a neutral nominal rate of production for most exportable crops. Ever since then, the Thai government has increased the agriculture subsidy through the agriculture price support initiatives, with the goal of improving farmers income. One such initiative includes the "Agricultural credit policy" in which the bank of Thailand (BOT) instructed all commercial banks to allocate 5% of all commercial loans for agriculture, at an interest rate lower than the market. Another example can be the "Paddy Pledging Program", under which, the main aim was to provide soft loans at lower interest rates for farmers in need of cash at the early harvesting season, so that they can keep their products from the market at harvest.
e) The ministry of Commerce of Thailand is also cooperating with commercial operators to manage the cost of inputs and to prevent the sudden rise in the cost of items including capital goods.

Potential areas for improvement/Recommendations

1) One of the potential areas for improvement could be re-designing the “Public Distribution System” (PDS) in India, so that those in need can access the essential food commodities, without them being misused. Though PDS is the largest food distribution system in the world, the main issue lies in identifying the actual beneficiaries. Thus, improving the efficiency of distribution, reducing leakages, and targeting subsidies to those in need can help stabilize prices. In order to achieve this, the following steps could be undertaken:
    a) The estimate of the potential National Food Security Act (NFSA) beneficiaries is based on the 2011 census, and doesn't take in consideration the increase in the number of

poor households over years or even the households who went into poverty due to the Covid-19 crisis[26]. Hence, conducting regular and timely updates of census data can ensure that the beneficiary list remains up-to-date. This can be done through ways like:

1) Utilizing machine learning and data analytics techniques to identify patterns and abnormalities in the beneficiary data, helping to detect potential discrepancies and fraud.
2) Developing a dynamic database that integrates data from various sources like Aadhar, income tax records, social welfare databases etc. This can help in identifying beneficiaries accurately and prevent inclusion or exclusion errors.
3) Involving local communities, self-help groups, and panchayats in verifying and updating beneficiary lists, as they might have a better understanding of local demographics and can help in accurate data collection.
4) Conducting regular audits of the beneficiary database to identify and rectify any errors, duplicate entries and even ineligible beneficiaries.
5) Making use of geospatial technology to map beneficiary locations and track changes in demographics and population density, helping in accurate targeting.
6) Integrating data from various government schemes to cross-refer and validate beneficiary information, reducing errors. Along with this, foster collaboration between different Government departments to share data and update the beneficiary list based on changes in income, employment, and other relevant factors.

b) The Global Positioning System (GPS) technology can be used to track the movements of trucks carrying food grains, from state depots to fair-price shops, and can help in preventing diversion.
c) Mechanisms for addressing public grievances like toll-free helplines for call centers to receive complaints and suggestions. Along with this, SMS alerts could be introduced at the beneficiary level.
d) A performance audit conducted by the Comptroller and Auditor General highlighted the significant deficiency in the Government's storage capacity. This is a serious issue as there are rising instances of food procurement and the food grains deteriorating, due to insufficient storage conditions. The following steps could be undertaken to solve this issue.

[26] Reetika Khera, Anmol Somanchi, 'A review of the coverage of PDS', Ideas for India, 19 August, 2020
'Outdated census data deprives over 10 crore of PDS: economists' - The Hindu, April 15, 2020
https://www.thehindu.com/news/national/outdated-census-data-deprives-over-10-crore-of-pds-economists/article31350648.ece

1) Allocating funds to build and upgrade storage infrastructure, including warehouses and silos, as adequate storage facilities are necessary to protect food grains from the outside elements and prevent spoilage.
2) Equipping the existing warehouses with modern technology such as ventilation systems, humidity control, pest management etc, to obtain optimal storage conditions.
3) Strategically locating storage facilities near major procurement areas to reduce both the transportation time and cost, and minimize the risk of spoilage during transit.
4) Collaborations with private entities to invest in and manage storage infrastructure, leveraging their expertise and resources to expand capacity.

2) Even though India is currently investing in cold chain infrastructure to maintain temperature controlled supply-chain for perishable goods, the current cold chain infrastructure faces certain challenges. One such challenge is the absence of the cold chain industry from various states in India. It is only majorly located in Punjab, Uttar Pradesh and West Bengal (with 60% of the country's storage capacity here). The Government of India is trying to spread this cold chain network across the country through its National Chain Development Program (NCCDP). Public-private partnerships can be used to spread the network across the country. Collaboration with private companies to leverage their expertise, technology and resources in building and managing the cold chain infrastructure can help in spreading the network across different states. Apart from this, educating farmers, producers and stakeholders about the cold chain systems through workshops and training programs, or even building a mobile application dedicated for the same can help.
3) Reform the mandi system - the gap between the wholesale prices (what farmers receive when they sell their produce in bulk) and retail prices (what consumers pay when they purchase the same goods in smaller quantities) is significant in India, which causes concerns for fair pricing in the agricultural supply chain. This is because of Fragmented supply chains (as multiple intermediaries are involved in the process of getting commodities from the farmers to the consumers, and each intermediary adds their own cost to the final price) and commission agents. Hence, there is a need to reform the mandi system. To address this issue, fruits and vegetables could be exempted from the Agricultural Produce Market Committee (APMC) regulations. This would encourage direct marketing between the farmers and buyers, eliminating fees paid to the agents.
4) Liberalizing the trade policy can help in curbing food inflation. As the Indian Government imposed an export ban on wheat, instead of an outright ban, another solution can be to filter

exports through a gradual process of minimum export prices and transparent export duties for shorter durations.

a) Minimum Export Prices: The government could establish a minimum price threshold for the export of particular commodities. This threshold can be designed to guarantee that exports take place only when prices exceed a specific level. If global prices fall below this threshold, exports would be limited. This approach safeguards the domestic availability and affordability of essential goods.
b) Transparent Export Duties: If the price at which products are being sold for export is higher than the set minimum, exporters would have to pay a clear and openly stated fee called an "export duty." This fee would be calculated based on the difference between the actual selling price for export and the lowest allowed price. This helps the government earn money and also stops too many products from being sent out of the country when they might be needed at home.
c) Shorter Durations: Applying these measures for shorter periods of time can be convenient. This allows flexibility in responding to changing market conditions. For instance, during times of global price spikes or supply disruptions, these measures could be put in place temporarily to stabilize domestic markets.

5) Though India already has the Directorate General of Commercial Intelligence and Statistics, under the Ministry of Commerce, at the central level, there is a lack of such agency at the state level. Formation of commercial intelligence agencies at the state level can help in assessing commercial information at grassroot level.
6) India is currently taking steps to pursue Ethanol as automotive fuel. According to Oil Minister Shri Hardeep Puri, a fifth of petrol will be made up of ethanol by 2025. India has already achieved the target of supplying petrol mixed with 10% of ethanol by June 2023 (90% petrol and 10% ethanol, and is moving forward to advance the target to 20% ethanol by 2025. This is very significant as Ethanol is made up from crops like sugarcane, and can replace crude oil (for fuel) to some extent. Replacing crude oil can help in mitigating the impact of fluctuating global oil prices on transportation and distribution cost in the agricultural sector. Ethanol is a cleaner-burning fuel compared to traditional gasoline, and can be more environment-friendly. More investment could be made in producing Ethanol from sugarcane, especially with a focus on regions like eastern Uttar Pradesh and northern Bihar, where the climate and agriculture are suitable for sugarcane cultivation (NITI Aayog 2021). To ensure stability and attract investment in ethanol production growth, the Government could establish a minimum price for ethanol over a set period. This price could increase gradually when purchased by oil companies.

7) India is giving a technological push to its natural farming with the help of Blockchain technology. It is done to increase the country's food shipments and incentivise farmers to take up chemical-free processes. The NITI Aayog has launched a pilot project with the government of Himachal Pradesh, on apple farming, in order to ensure quality production while also monitoring the produce across the whole storage and supply chain. This technology can be extended to other commodities like mangoes, grapes, bananas etc as India ranks second in the production of vegetables and fruits in the world, but its share in the global vegetable and fruit market is just 1% purchase. Many are unaware about the use of blockchain in agriculture, hence, awareness camps could be set up to educate farmers and stakeholders. Additionally, a blockchain platform could be developed, which will allow secure and transparent recording of data at each stage of the supply chain. India has even utilized the Ai technology and built various ai-powered chatbots like "Kisan Suvidha", "Agribolo", "Corteva Krishi" etc, to help its farmers.

Conclusion

In conclusion, the analysis of food inflation in India, and its comparison with other emerging economies reveals the importance of understanding the unique drivers behind, and policy responses that can shape this complex issue. Studying factors behind food inflation and global strategies offers insights for better measures against rising food prices, and ensuring food security. In India's case, it is crucial to determine whether food inflation is demand-driven or supply-driven, as this distinction aids in deciding whether to employ monetary policy or fiscal policy.

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