



The Economics of Food Insecurity

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ABSTRACT

Why does India struggle with food insecurity despite being one of the world's largest food producers, and what does this reveal about the real drivers of hunger?

Despite advancements in agricultural productivity and food-related welfare schemes, food insecurity continues to infest India, exposing deep-rooted systemic inefficiencies and socio-economic disparities. This paper contributes by emphasizing the qualitative aspects of food security, such as distribution, utilization, and socio-economic access, rather than focusing on just the quantitative aspects like production and price indices. Using secondary research and data from governmental, academic, and institutional sources, this paper explores the intertwined nature of income disparity, nutritional inequality, and inflation along with supply chain inefficiencies and how it affects food security, particularly in India. Ultimately, it argues that food security is not a singular agricultural or economic issue but a multi-dimensional challenge that demands both immediate policy rectification and long-term structural transformation.

The question in this research paper is answered by taking into consideration a hypothesis that food insecurity in India is not a result of food scarcity but stems from systemic failures in distribution, deep-rooted socio-economic inequalities, and inconsistent policy implementation.

Keywords: Food Security, India, Income Inequality, Malnutrition, Supply Chain Inefficiencies, Food Inflation, Public Distribution System, Socio-Economic Disparities.

INTRODUCTION

According to the World Summit on Food Security Rome, 16-18 November 2009; Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

People in India continue to frame food insecurity as a problem of agricultural output or price spikes, however, this paper proposes a different perspective. This paper investigates the hypothesis that food insecurity in India is not driven by food scarcity, but rather by systemic inefficiencies in distribution, socio-economic inequality, poor nutritional utilization and policy unpredictability. In other words, the core issue is not how much food is grown, but how equitably and efficiently it reaches those who need it.

To prove this hypothesis, this paper draws on evidence and facts from nutritional data, inflation patterns, supply chain losses, and international comparisons, particularly the case of Singapore, which ranks among the world's most food-secure nations. Through this analysis, the paper aims to demonstrate that addressing India's food insecurity requires structural transformation, not just agricultural expansion.

Before diving into the analysis explored in this research paper, the understanding of the criteria that determine whether a country is food secure or not is extremely important.

The four pillars of food security are availability, access, utilization and stability. Economically speaking, food security revolves around the capacity of individuals, households, localities and ultimately the country as a whole to afford and access readily available food to meet the basic nutritional requirements for living a healthy life. This encapsulates criteria like income levels, food prices, the functioning of markets, the effectiveness of economic policies, and overall financial stability as key determinants of whether a country can ensure food security for its population. But the four main dimensions for food security include:

1. Physical availability of food
2. Economic and physical access to food: Economic access to food refers to the ability of a country's population to meet their basic nutritional requirements having the financial means to buy food, whereas, physical access refers to whether food is physically available in a given location (it depends on infrastructure, transportation, market presence, and supply chain efficiency).

3. Food utilisation: Food utilisation refers to the way a human body makes the most of various nutrients in the food. Sufficient energy and nutrient intake by individuals are the result of good care and feeding practices, food preparation, diversity of the diet and intra-household distribution of food. Combined with good biological utilization of food consumed, this determines the nutritional status of individuals.
4. Stability of the above factors: Despite being one of the largest producers of food grains in the world, India's extremely poor rank in the Global Hunger Index, 2024 is a cause for serious concern. According to the data from the same, 13.7% of the population is undernourished, 35.5% of all children face stunted growth while 18.7% of them are wasted (have low weight for their height, reflecting acute undernutrition) and 2.9% of children don't live up to seeing the light of their 5th birthday, mainly due to malnutrition. Although the Global Hunger Index Score for India is gradually improving, from 38.4 to 27.3, India still ranks 105th out of 127 countries. India is a predominantly agricultural nation. As of 2024, agriculture and allied sectors contribute approximately 16% to the country's Gross Domestic Product (GDP) and provide employment to about 46.1% of the population. But why isn't agricultural growth leading to better nutritional outcomes? How can both malnutrition and overnutrition occur at the same time in India? These questions highlight the prevalence of food insecurity and that problems like poverty, wealth gaps, socio-economic factors like income distribution could be the main culprits of this problem.

GOVERNMENT INITIATIVES UNDERTAKEN

India did take a massive step early on, by introducing the Mid-Day Meal Scheme in various rural and urban parts of the country which not only provided food security but also boosted literacy rate and allowed the pursuit of further education for many students. Enhancement of enrollment, retention and attendance boosted nutrition improvement since 1995. The Mid-Day Meal Scheme (MDMS), now known as PM-POSHAN, is a school meal program in India designed to improve the nutritional status of school-age children, providing free, hot, cooked meals to students in government and government-aided schools.

Another step taken is The National Food Security Act (NFSA), 2013, a legislation done by the government that provides reliable access to food grains at an affordable price. It aims to provide subsidized food grains to approximately 75% of the rural population and 50% of the urban population, ensuring coverage of nearly two-thirds of India's total population. Under this Act, eligible individuals are entitled to receive 5 kilograms of food grains per person per month at subsidized rates: ₹3/kg for rice, ₹2/kg for wheat, and ₹1/kg for coarse grains. The NFSA also provides nutritional support to other vulnerable sections such as pregnant women, who are entitled to a take-home ration providing 600 calories per day, along with a maternity benefit of at least ₹6,000 for six months. Children aged 6 months to 14 years are guaranteed free nutritious meals through schools.

Governments of several countries have taken steps to mitigate this risk by introducing social safety nets and nutrition programmes. Provided that the governments do not have the resources, international communities step into the picture and help in funding for the same. These, partnered with other government measures such as the Public Distribution System, have allowed better access and distribution of food with those possessing valid ration cards. The PDS, implemented in 1977, ensured minimum availability of basic food grains to the sections of society.

Another scheme called the Antyodaya Anna Yojana identifies the poorest of the poor and sells food grains at a mere Rs.2 per kg. Other schemes like National Food for Work Programme(NFWP), National Rural Employment Programme(NREP), Sampoorna Grameen Rozgar Yojana(SGRY) and Legal initiatives like Right to food under National Food Security Act, 2013 to ensure accessibility of nutritious food amongst the population of India.

In low income countries, food consumption expenditures account for 50% or even more of the budgets of households. In lower middle income countries (such as India and China), the share in total expenditure is about 40%. While food prices are centric to the problems of food insecurity, it is not the fundamental problem. Why? During the early 2000s, food prices were at an all time low. Despite this fact, food insecurity still existed. One can, thus, derive that the principal cause of food security remains insufficient incomes and poverty. Governments of several countries have taken steps to mitigate this risk by introducing social safety nets and nutrition programmes. Provided that the governments do not have the resources, international communities step into the picture and help in funding for the same.

The UN Food and Agriculture Organization (FAO) and the UN High-Level Task Force have suggested a strategy to overcome food insecurity. First, there is an emphasis on response to support vulnerable communities. Alongside this, they believe in investing in long-term solutions that tackle the root problems which lead to undernourishment. On similar lines, the Scale Up Nutrition (SUN) movement advocates this approach by recommending direct nutrition interventions, like providing essential nutrients to those in need, while also addressing the broader, underlying issues that lead to chronic undernutrition.

However, the persistence of food security, despite these measures and policies, raises an important question: If food is available and programs exist to distribute it, why does undernutrition remain so high?

MAIN REASONS FOR FOOD INSECURITY IN INDIA

A) Income Disparities

According to the study "Income inequality and the double burden of under- and overnutrition in India", a thought provoking research paper by S.V. Subramanian and Ichiro Kawachi, highlights widening income gaps between the rich and the poor are leading to a paradox where both obesity and malnutrition exists. This brings out the contrary problems faced by people of different income brackets. Among the poorer segments of society, limited access to nutritional food leads to malnutrition.

Among the wealthy, sedentary lifestyles in combination with high calorie meals leads to overnutrition.

This suggests that the resources exist, however there is ill management and ineffective distribution of the same, leading to a conclusion that undernutrition and obesity stem from the same root: income disparity. The problem of food security is often treated as a quantitative problem but this research paper suggests that it is more to do with quality and distribution - both of which are intertwined with socio-economic status.

However, entire states with income inequalities are highlighted to be the worst, with high food insecurity. For example, Chhattisgarh and Odisha, both appear among India's most unequal states NFHS-5 confirms they also suffer acute food insecurity: 31.3% of Chhattisgarh's and 29.7% of Odisha's under-5 children are underweight. This emphasizes on the need for qualitative and distribution strategies to focus on the strengthening of food security within India.

"A Typology of Food Security in Developing Countries" by Bingxin Yu and Liangzhi You, published in the China Agricultural Economic Review in 2013, was published on the grounds of examining how recent fluctuations in food prices and economic changes have impacted global hunger and poverty reduction efforts. For the same purpose, all countries were categorised into 5 subgroups based on five dimensions of food security: consumption, production, imports, distribution, and agricultural potential.

The findings of the study show that classification of countries into "developing countries" and "low income countries" actually hinder the accurate analysis of food security. This is because these titles are broad categories and extremely general, therefore masking the heterogeneity of different factors of food security.

For example, high income nations such as the United States of America and other Western European countries have robust food security with stable food chains and efficient economic systems to prevent large scale food insecurity. Middle income countries like Brazil, China, India have improved food security as compared to previous years because of economic growth and technological advancements in agriculture. However, they still face challenges like income inequality and regional disparities in food distribution. Low income countries such as Sub Saharan countries struggle with severe food insecurity driven by weak agricultural productivity, economic instability, climate change, and political conflicts.

"Impact of Food Inflation on BPL and APL Household Consumption – A Study in Kannur District, Kerala" found that below poverty line (BPL) households were comparatively adversely affected as opposed to above poverty line households. 58.4% of BPL households reduced the consumption of their essentials like pulses, eggs, meats. This is comparatively more than APL households who reduced their consumption by 48.6%. BPL households shifted their consumption towards cheaper alternatives like staple foods of rice and vegetables and reduced their intake of protein and nutrient dense foods. Moreover, there was an increased dependency on the PDS system, highlighting the support provided by the government. 72% of BPL households spent more than 50% of their income on food-making them highly sensitive to price volatility.

B) Demand-Supply Inconsistencies

Food prices inflation in India occurred because of demand and supply inconsistencies. Private consumption by consumers grew rapidly between 2005 and 2012 at 8.5% annually. Even during the Global Financial Crisis of 2008-09, demand did not crash and Indians kept buying more and more. On the other side of the same coin, the supply (farm output) was growing at a healthy rate of 5% annually which eventually couldn't keep up with the annual growth of 8.5% of demand. Along with this, the rise of global commodity prices, especially due to crop failures in major exporting countries like the USA, Brazil, and Australia, combined with a bad monsoon in India, particularly in the states of Maharashtra, Karnataka, and parts of Andhra Pradesh, led to decrease in agricultural output and increase in pressure on the farmers to meet the ever growing demand for food. This led to the inflation of food during the period. However, with favourable weather conditions in the upcoming years of 2010-11, and reduced spending in 2012, food prices stabilized and farm output recovered.

Multiple inferences can be drawn from this, including the demand pull inflation which explains how rapid growth in consumption, partnered with agricultural shortage led to higher prices of commodities. A possible reason which caused fluctuation in demand could be urbanisation and changing dietary preferences. Rapid city growths and higher incomes facilitate demand of better quality of goods such as animal-source foods, processed items, and convenience meals-shifting diets away from staples and boosting overall food demand.

Another important observation includes price volatility for food in comparison to other goods. Persistent food inflation ensured that food prices rose faster than non-food prices, leading to improvement in terms of trade in agriculture. This was beneficial for farmers as the income received by them for agricultural produce became substantially higher than the expenses incurred for consumption goods.

The global financial crisis in 2008-09 was the most disruptive economic crisis since the Great Depression in 1930. There was a major collapse of banks and the Federal Reserve drastically reduced the interest to near zero. A European debt crisis along with mass unemployment was observed. However, India was relatively shielded due to strong regulations. The Global Financial Crisis overlapped food inflation during 2008-09, with lowered interest rates and loose monetary policies framed by the RBI helped farmers get a better cash flow which helped agricultural productivity. This cycle in turn boosted rural terms of trade. Monetary policies undertaken by RBI include bringing down the repo rate from 9% in October 2008 to 4.75% in April 2009. On similar lines, the cash reserve ratio was reduced from 9% to 5%.

These steps infused liquidity into the banking system.

In addition to this, RBI implemented sector specific measures like special refinance windows for the National Bank for Agriculture and Rural Development (NABARD), which enabled greater agricultural lending at concessional rates. This helped ease credit constraints for farmers which improved their cash flow and allowed timely purchase of agricultural inputs which in turn improved agricultural productivity.

C) Supply Chain Inefficiencies

According to “Challenges and opportunities for agri-fresh food supply chain management in India,” one third of agricultural products get wasted every year due to poor supply chain management and distribution. Fruits and vegetables are typically perishable in nature which adds complexity to develop an effective supply chain. Facilities, inventory, transportation, information, pricing, sourcing are the main problems which lead to supply chain inefficiencies.

The Ministry of Food Processing Industries (MoFPI) had commissioned a study through NABARD Consultancy Services Pvt. Ltd. (NABCONS), namely, “Study to determine Post harvest losses of Agri Produce in India” in 2022 with reference year 2020-22. The details of estimated loss of perishable food during transportation reported in the study are as follows:

Category	Estimated Monetary Loss (₹ in crore)
Cereals	26,000.79
Pulses	9,289.21
Oilseeds	10,924.97
Fruits	29,545.07
Vegetables	27,459.08
Plantation Crops	16,412.56
Livestock Produce	29,871.41
Eggs	3,287.32

Inadequate infrastructure such as cold storage, warehousing, and transportation as the key reasons for these losses. They also point out that the lack of coordinated supply chain practices, fragmented distribution networks, and poor communication between producers and markets further deteriorate efficiency.

Possible problems:

Inconsistent access to all-weather roads and logistics support, especially in rural and remote areas:

Many rural and remote areas in India still lack dependable all-weather roads, which hampers timely transportation of perishable produce to markets or processing centers. For example, in regions of Himachal Pradesh, roads and critical infrastructure for transportation is poor. This leads to apple farmers not being able to transport their harvests to the market in time, leading to losses and poor connectivity.

Multiple layers of intermediaries between farmers and consumers.

Several intermediaries such as commission agents, wholesalers, distributors in the agricultural supply chain in India increase inefficiencies before the produce reaches consumers. This delays payment to farmers, and inflates the overall price. Initiatives like Farmer Producer Organizations (FPOs) aim to reduce dependence on middlemen and improve farmer incomes, but their reach and scale remain limited, restricting their broader impact on food access and affordability.

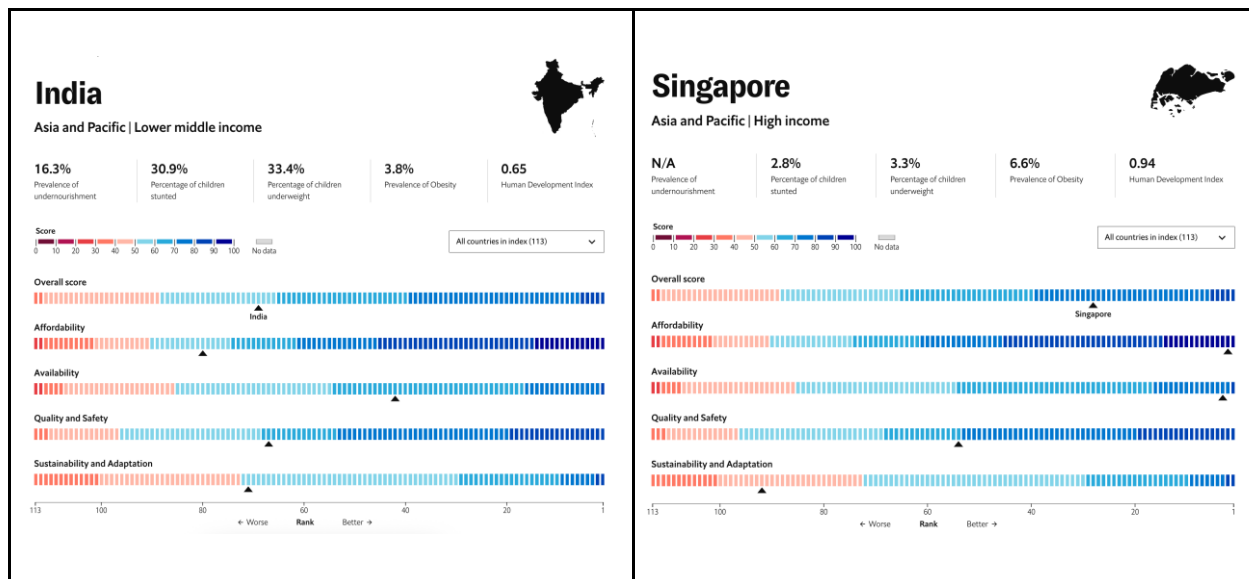
Farmers receive only a small portion of the final retail price due to commission agents and wholesalers inflating margins.

Existing policies lack execution or proper enforcement.

There are numerous government schemes aimed at improving agricultural infrastructure and market access—like e-NAM (National Agriculture Market), PM-KISAN, and PM FME, however their poor implementation due to bureaucratic delays, lack of awareness among stakeholders, and poor coordination between state and central agencies makes them ineffective.

COMPARISON

Attached below are some images from the Global Food Security Index 2022 which can be used to compare the 2 countries



The side by side data from the Global Food Security Index 2022 illustrates a striking contrast between the 2 countries. While India and Singapore sit on the opposite ends of the agricultural spectrum: India being a good surplus, agrarian economy, and Singapore as a near total food importer, their outcomes on food security are inverted. India's 30.9% stunting rate and 33.4% child wasting effect display features of chronic undernutrition. However, Singapore's figures in the same context, 2.8% and 3.3% respectively, show a population largely free of hunger. India ranks far lower than Singapore in both affordability and availability of food, despite being one of the world's largest food producers. This suggests that economic access and distribution, not supply, are the real barriers.

This comparison illustrates that food self-sufficiency does not guarantee food security. Singapore, a nation that imports over 90% of its food, consistently ranks among the world's most food-secure countries. India, on the other hand, is one of the world's largest food producers yet continues to face widespread undernutrition.

Singapore invests heavily in food security through measures like strategic stockpiling, diversifying import sources, and maintaining strict food safety standards, demonstrating how governance can offset natural resource limitations.

This supports the hypothesis that systemic, socio-economic, and policy design factors, not scarcity, are the root causes of food insecurity.

RECOMMENDATIONS

This paper does not claim to have all the answers, but the solutions proposed are grounded in the idea that we can no longer afford to treat food security as an agricultural problem alone. It is a question of access, equity and institutional trust. Recommendations mentioned below offer both short term operational fixes and long term solutions.

While large systems like the PDS and PM POSHAN already exist, their effectiveness often stops short of the people who need them most. Strengthening and streamlining the PDS will ensure consistent availability, prevent leakages, and improve the quality of grains distributed. The government can consider digitalising and linking ration cards to geography by implementing accessibility to PDS for everybody in high poverty areas instead of those with only eligibility. Introduction of food coupons or digital vouchers that will allow the poor to buy from local grocery stores (not just ration shops). The authorities can also consider activating emergency response teams at the district level. Floods, heatwaves, or local supply shocks can interrupt food access overnight. Trained local teams equipped with emergency grain stock and nutritional kits can ensure no one goes hungry during crises.

The government should seriously consider rebuilding the supply chain specifically in the post harvest to retail sector. For this, investing in rural cold chains, warehouses, and transport, especially for fruits, vegetables, and dairy, all of which come under perishable goods, is essential. Rationalization of food logistics tax like GST on storage, to make preservation viable even for small traders may help in improving the supply chain and reducing intermediate cost. To eliminate the problem of middlemen, capping of intermediary margins and actively promoting direct farmer-buyer platforms like e-NAM and FPO marketplaces could prove extremely beneficial.

Another aspect for improving food security could be addressing socio-economic inequalities at the root level. A solution to this could be to link up the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) with a nutritional based component. The MGNREGA which primarily helps in guaranteeing employment to the unemployed for a period of 100 days could add a nutritional component which promises food security to the unemployed for a similar time period. This amendment will make sure access to food and targeted relief where it is needed the most.

While this may face budgetary constraints and implementation challenges, it presents a potentially viable and impactful solution. Promoting kitchen gardens and urban farming initiatives in slums and belts of poverty stricken areas will lead to improved self-reliance.

On a larger and more technological based ground, initiatives can be taken up to develop weather-resistant crops, improve soil health, and reduce dependency on erratic monsoons through wider adoption of micro-irrigation and water-saving practices. The most important step, however, still remains to strengthen the already existing schemes by monitoring and developing grievance redressal in NFSA and PM POSHAN.

CONCLUSION

This paper set out to investigate whether India's food insecurity is driven by insufficient food production or deeper economic and structural issues. Based on the evidence presented, from post-harvest loss data and inequality-linked undernutrition to global comparisons with countries like Singapore, the conclusion is clear: food insecurity in India is not a crisis of scarcity, but of access, affordability, and equity.

The co-existence of malnutrition and overnutrition reflects deep divides in income, awareness, and access - pointing to a failure not just of markets, but of governance and social justice. Policy measures like the NFSA, PM POSHAN, and PDS are necessary, but no longer sufficient. Food security must be redefined beyond grain quotas and subsidy schemes—it must include supply chain modernization, nutritional literacy, climate resilience, and inclusive economic growth.

Short-term fixes may fill plates, but only long-term structural transformation can end hunger with dignity. The most urgent fix that can be implemented immediately is improving the already existing schemes like PM Poshan, MGNREGA and PM Kisan, and consider implementing structural and long term fixes in the supply chain and infrastructure development. The paper has provided recommendations that are feasible and strategic to addressing this issue. India must move decisively, from provisioning to empowering, from reactive welfare to systemic reform. Until then, food will remain available, but not assured - for millions.

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