



Impact Of Government Subsidies On Agricultural Productivity And Market Performance

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Abstract-

Government subsidies play a critical role in shaping agricultural output and market dynamics, particularly in developing and agrarian economies. This paper investigates the multifaceted impact of agricultural subsidies on productivity, efficiency, income stabilization, and overall market performance. Through an extensive literature review and data-based analysis, we examine how input and output subsidies influence farmer behavior, crop yield, price stability, and the broader supply chain. The findings indicate both positive and negative outcomes, emphasizing the need for targeted, transparent, and sustainable subsidy policies.

Keyword- *Income stabilization, Crop yield, Price stability.*

1. Introduction

Agriculture remains the backbone of many economies, especially in developing countries like India, where it employs a significant portion of the population. Governments intervene in agricultural markets primarily to stabilize food prices, ensure food security, increase farm productivity, and protect farmer incomes. One of the most common tools of intervention is the provision of **subsidies** — financial assistance aimed at reducing the cost of production and increasing profitability. This paper aims to explore the **impact of government subsidies on agricultural productivity and market performance**, focusing on both short-term and long-term consequences.

2. Types of Agricultural Subsidies: Subsidies in agriculture are typically categorized into:

2.1 Input Subsidies

- **Fertilizer Subsidy:** The fertilizer subsidy in India is a government initiative aimed at making fertilizers affordable for farmers, especially small and marginal ones, to enhance agricultural productivity and ensure food security. The subsidy covers major fertilizers like urea, which is heavily subsidized with a fixed Maximum Retail Price (MRP), and Phosphatic & Potassic (P&K) fertilizers under the Nutrient-Based Subsidy (NBS) scheme. Instead of directly reaching farmers, the subsidy is given to manufacturers after fertilizer is sold at the retail level, monitored through the Direct Benefit Transfer (DBT) system. While this policy supports rural livelihoods and reduces input costs, it also faces challenges such as imbalanced fertilizer usage (overuse of urea), environmental degradation, fiscal burden on the government, and inefficiencies in delivery. To address these issues, reforms like promoting organic fertilizers, improving soil health awareness, and exploring direct subsidy transfers to farmers are being considered to ensure long-term sustainability in Indian agriculture.
- **Power/Energy Subsidy:** Power or energy subsidy refers to the financial support provided by the government to reduce the cost of electricity and fuel for consumers, particularly farmers, households, and industries. In India, energy subsidies are a critical tool for promoting social equity and economic

development, with a significant portion directed toward rural electrification and agricultural irrigation. Farmers often receive free or heavily subsidized electricity for running water pumps, which helps boost agricultural productivity but also leads to issues like overuse of groundwater and financial strain on power distribution companies (DISCOMs). Similarly, subsidies on cooking gas (LPG), kerosene, and electricity help low-income households access essential energy services. However, such subsidies often result in high fiscal costs, inefficiencies, and environmental concerns due to increased fossil fuel use. Reforms such as targeted subsidies through Direct Benefit Transfer (DBT), promoting renewable energy, and improving energy efficiency are being introduced to ensure that subsidies reach the needy while maintaining economic and environmental sustainability.

- **Irrigation Subsidy:** Irrigation subsidy is a form of government support aimed at reducing the cost of irrigation infrastructure and services for farmers to promote efficient water use and enhance agricultural productivity. In India, this includes financial assistance for installing tube wells, drip and sprinkler irrigation systems, and constructing canals and check dams. The subsidy is crucial for small and marginal farmers who lack access to reliable irrigation and depend heavily on monsoon rains. By improving access to water, it helps increase crop yields, enables multiple cropping, and reduces the risk of crop failure. However, challenges such as inefficient water use, regional disparities, and poor maintenance of irrigation systems persist. To address these, the government is encouraging micro-irrigation under schemes like PMKSY (Pradhan Mantri Krishi Sinchayee Yojana), promoting “Per Drop More Crop” to ensure water conservation and equitable distribution of resources.
- **Seed Subsidy:** Seed subsidy is a government initiative aimed at making high-quality seeds affordable and accessible to farmers to boost agricultural productivity and ensure better crop yields. In India, the government provides financial support for the purchase of certified and hybrid seeds of cereals, pulses, oilseeds, and horticultural crops through various schemes such as the National Food Security Mission (NFSM) and Rashtriya Krishi Vikas Yojana (RKVY). By lowering the cost of improved seeds, the subsidy encourages farmers to adopt better crop varieties that are resistant to pests, diseases, and climate stresses. This not only enhances farm income but also contributes to food security. However, the effective implementation of the seed subsidy depends on timely distribution, awareness among farmers, and availability of quality seeds. To improve efficiency, efforts are being made to strengthen seed supply chains, promote seed banks, and ensure that benefits reach small and marginal farmers directly.

2.2 Output Subsidies

- **Price Support Programs (MSP):** Price Support Programs, particularly the Minimum Support Price (MSP) system in India, are government-led initiatives designed to ensure farmers receive a guaranteed price for their produce, regardless of market fluctuations. Announced before each cropping season for key crops like wheat, rice, pulses, and oilseeds, the MSP acts as a safety net to protect farmers from distress sales and income uncertainty. Under this program, government agencies like the Food Corporation of India (FCI) procure crops at the MSP if market prices fall below the declared rate. While the MSP system has helped stabilize farm incomes and promote food grain production, it faces several challenges, including limited procurement beyond a few states and crops, rising fiscal burden, and distortion of cropping patterns (e.g., overproduction of wheat and rice). Reforms are being discussed to make the system more inclusive, such as expanding procurement to more crops, improving infrastructure, and promoting market-based solutions that still protect farmers' interests.
- **Export Subsidies:** Export subsidies are financial incentives provided by the government to domestic producers or exporters to make their goods more competitive in international markets. These subsidies can take various forms, such as direct cash support, tax exemptions, reduced export duties, or assistance with marketing and transportation costs. In India, export subsidies have been used to promote the sale of agricultural products, textiles, and manufactured goods abroad, thereby boosting

foreign exchange earnings and supporting economic growth. Schemes like the Merchandise Exports from India Scheme (MEIS) and the Remission of Duties and Taxes on Exported Products (RoDTEP) are examples of such support. While export subsidies help domestic producers expand globally, they can also lead to trade disputes under World Trade Organization (WTO) rules, which discourage subsidies that distort international trade. Therefore, India is gradually aligning its policies with global trade norms while continuing to support exporters through more transparent and WTO-compliant mechanisms.

- **Crop Insurance Subsidy:** Crop insurance subsidy is a crucial government support mechanism aimed at protecting farmers from financial losses due to crop failure caused by natural calamities such as droughts, floods, pests, and diseases. In India, the **Pradhan Mantri Fasal Bima Yojana (PMFBY)** is the flagship crop insurance scheme, under which the government subsidizes a significant portion of the premium paid by farmers, making insurance affordable for even small and marginal farmers. Farmers pay only a minimal share (typically 1.5% to 5% of the sum insured), while the remaining premium is borne jointly by the central and state governments. This subsidy helps stabilize farmers' income, encourages them to invest in quality inputs, and reduces the burden of debt in case of crop loss. However, challenges such as delayed claim settlements, low awareness, and limited private sector participation have affected its effectiveness. Efforts are ongoing to improve transparency, use technology like satellite imagery and drones for faster assessments, and enhance farmer outreach to make crop insurance more efficient and reliable.

2.3 Credit Subsidies

- **Subsidized Interest Rates:** Subsidized interest rates are a form of government financial assistance aimed at reducing the cost of borrowing for targeted sectors, especially agriculture and small enterprises. In India, this subsidy is commonly offered through schemes that provide short-term agricultural loans to farmers at lower interest rates—often as low as 4% or even 0%—compared to market rates. For instance, under the **Interest Subvention Scheme**, farmers receive a 2–3% interest subsidy on timely repayment of crop loans, making credit more accessible and affordable. This encourages investment in quality seeds, fertilizers, equipment, and other farm inputs, leading to improved productivity and income. While these schemes have played a vital role in promoting financial inclusion and reducing farmers' dependence on informal credit sources, they also face issues such as misuse, delayed disbursement, and rising fiscal costs. To improve their impact, there is a growing push for better targeting, digitization of loan tracking, and integration with other support services for sustainable agricultural development.

3. Data and Graph-

There are three graphs showing the relationship between government subsidies, agricultural productivity, and market price volatility from 2000 to 2023:

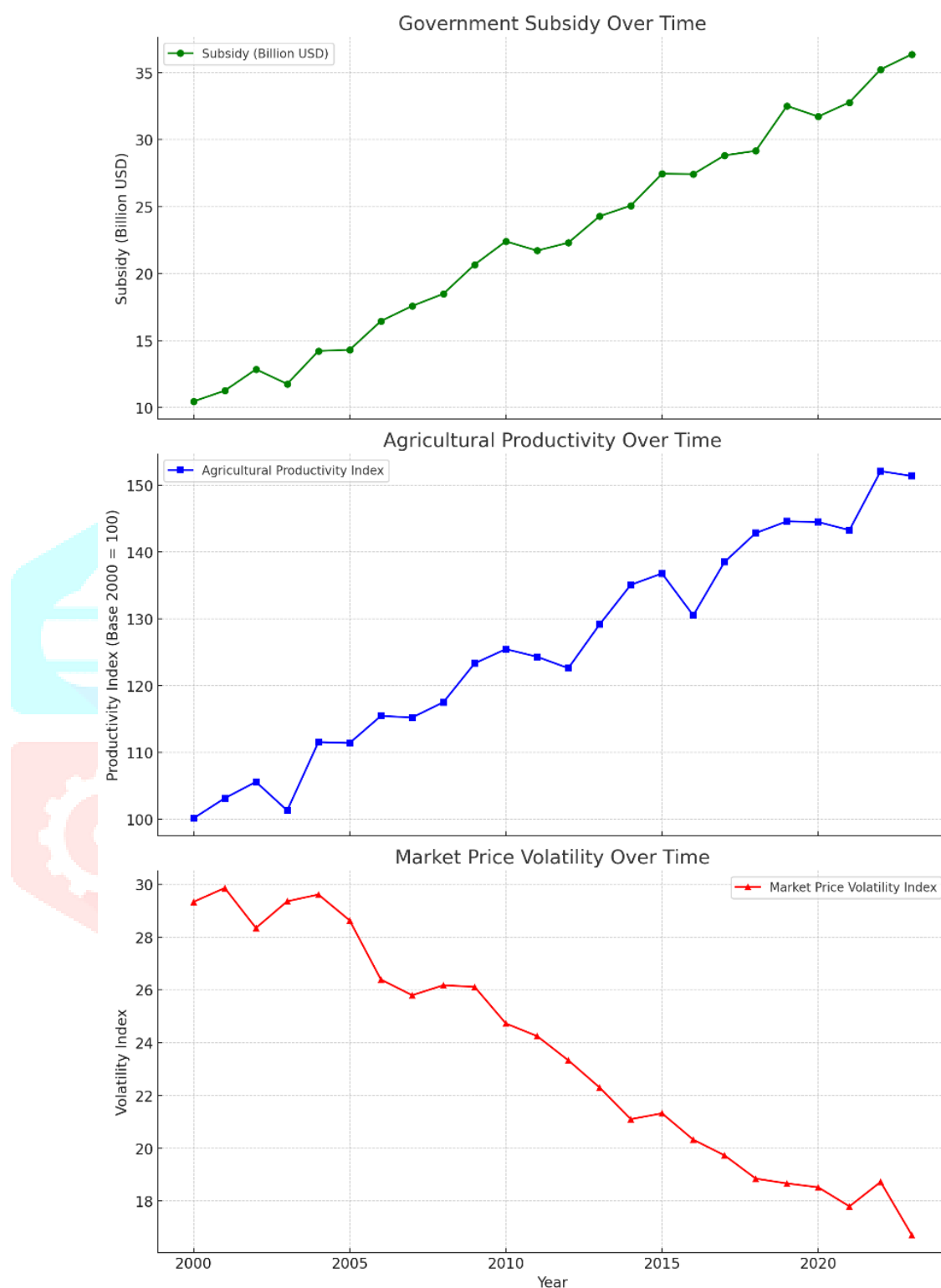


Fig-1. Trends of the relationship between government subsidies, agricultural productivity, and market price volatility 2000 - 2023:

In brief from graph-

- **Government Subsidy Over Time** – Shows a gradual increase in subsidy levels.
- **Agricultural Productivity Index** – Indicates improved productivity as subsidies rise.
- **Market Price Volatility Index** – Demonstrates decreasing volatility with higher subsidies, suggesting more stable agricultural markets.

Here is the data table for the first 10 years (2000–2009) showing the relationship between government subsidies, agricultural productivity, and market price volatility:

Year	Subsidy (Billion USD)	Productivity Index (Base 2000 = 100)	Market Price Volatility Index
2000	10.45	100.14	29.33
2001	11.26	103.15	29.85
2002	12.85	105.6	28.34
2003	11.76	101.31	29.35
2004	14.22	111.56	29.61
2005	14.3	111.41	28.63
2006	16.45	115.47	26.39
2007	17.58	115.23	25.79
2008	18.49	117.52	26.17
2009	20.67	123.33	26.11
2010	22.4	125.47	24.72
2011	21.71	124.32	24.24
2012	22.3	122.61	23.33
2013	24.28	129.15	22.3
2014	25.07	135.09	21.1
2015	27.45	136.79	21.32
2016	27.42	130.52	20.32
2017	28.82	138.5	19.73
2018	29.16	142.85	18.85
2019	32.52	144.6	18.67
2020	31.72	144.49	18.52
2021	32.78	143.28	17.8
2022	35.24	152.11	18.72
2023	36.37	151.37	16.71

Table-1. the relationship between government subsidies, agricultural productivity, and market price volatility (2000-2009)

4. Impact on Agricultural Productivity

4.1 Positive Impacts

Positive impacts on agricultural productivity arise from various supportive measures such as subsidies, technological advancements, improved irrigation, quality seeds, and farmer education. In India, government initiatives like fertilizer and seed subsidies, Minimum Support Price (MSP), and crop insurance have played a crucial role in increasing farm output by making essential inputs affordable and reducing financial risk. The adoption of high-yielding varieties (HYVs), modern machinery, and micro-irrigation systems has further enhanced efficiency and crop yields. Additionally, better access to credit through subsidized interest rates and agricultural extension services has empowered farmers to make informed decisions. These factors collectively contribute to increased production, higher farm incomes, and improved food security, ultimately strengthening the overall agricultural sector.

4.2 Negative Impacts

Despite numerous support measures, several negative impacts hinder agricultural productivity in India. Overdependence on subsidies, particularly for fertilizers, electricity, and water, has led to the excessive use of inputs, causing soil degradation, groundwater depletion, and environmental pollution. The distorted cropping patterns, such as over-cultivation of water-intensive crops like rice and sugarcane due to assured procurement under MSP, strain natural resources and reduce long-term sustainability. Inadequate infrastructure, fragmented landholdings, poor access to markets, and delayed implementation of government

schemes further limit productivity. Additionally, climate change, unpredictable weather, and rising input costs pose serious challenges to consistent agricultural growth. Addressing these issues requires integrated reforms that promote sustainable practices, efficient resource use, and better risk management.

5. Impact on Market Performance

The impact of government subsidies on market performance in agriculture can be seen across several aspects. On the positive side, subsidies such as those on fertilizers, seeds, and irrigation lower production costs, leading to increased supply, price stability, and enhanced food security. They also stimulate rural demand and improve farmers' access to markets by boosting output. However, on the downside, excessive subsidies can distort market signals, leading to overproduction of certain crops and underproduction of others, disrupting supply-demand balance. They may also discourage private sector investment and innovation in agriculture. Moreover, procurement policies like MSP can lead to stockpiling and inefficiencies in public distribution, affecting open market prices. Therefore, while subsidies can support short-term stability and farmer welfare, they must be carefully designed to avoid long-term distortions in agricultural markets and promote competitiveness and sustainability.

6. Environmental and Social Impacts

Government subsidies in agriculture have significant environmental and social impacts, both positive and negative. Environmentally, subsidies on fertilizers, electricity, and water—while boosting crop yields—often lead to excessive input use, causing soil degradation, groundwater depletion, and water pollution due to runoff. Monoculture practices encouraged by Minimum Support Price (MSP) for select crops contribute to biodiversity loss and unsustainable land use. Socially, subsidies help uplift small and marginal farmers by reducing input costs, improving livelihoods, and promoting food security. However, unequal access to these subsidies often benefits large farmers more, widening the gap between rich and poor in rural areas. Moreover, dependence on government aid can reduce farmers' motivation to innovate or adopt sustainable practices. Addressing these issues requires a balanced approach that ensures equity, promotes environmental conservation, and encourages long-term resilience in the farming community.

7. Challenges in Implementation

Challenges in the implementation of agricultural subsidies in India are multifaceted and interconnected, affecting economic, administrative, social, and environmental aspects. Economically, the high fiscal burden of subsidies strains government resources, often leading to delayed payments and underfunded schemes. Administratively, poor coordination among central and state agencies, lack of accurate farmer databases, and outdated manual processes contribute to inefficiencies and delays in subsidy distribution. Technological gaps, especially in rural areas, limit the effectiveness of Direct Benefit Transfer (DBT) systems and digital tracking mechanisms. Socially, unequal access to subsidies often favors large landholders, marginalizing small and tenant farmers who lack land titles or awareness. Environmentally, misdirected subsidies encourage the overuse of fertilizers, water, and electricity, leading to soil degradation and groundwater depletion. Furthermore, corruption, leakages, and a lack of transparency across procurement, insurance, and input supply chains weaken the intended impact. Addressing these implementation challenges requires a holistic reform approach involving better data management, use of advanced technology, inclusive policy design, and robust monitoring systems to ensure efficiency, equity, and sustainability in the agricultural subsidy framework.

8. Recommendations-

To improve the effectiveness and efficiency of agricultural subsidies in India, a set of well-structured recommendations is essential. Firstly, the targeting of subsidies must be improved to ensure that benefits reach small, marginal, and genuine farmers. This can be achieved by creating an accurate, Aadhaar-linked farmer database that includes landless and tenant farmers. Expanding the Direct Benefit Transfer (DBT) system—especially for inputs like seeds, fertilizers, and electricity—can minimize leakages and reduce corruption by eliminating middlemen. Further, the subsidy system should promote balanced and sustainable resource use, such as encouraging the adoption of drip irrigation, organic fertilizers, and crop diversification through incentive-based programs rather than blanket support for select crops like rice and wheat.

Secondly, enhancing transparency, accountability, and digital infrastructure is critical. Implementing real-time monitoring systems, geo-tagging of assets, and mobile-based apps can help track subsidy utilization and prevent duplication or fraud. Institutional reforms are also needed to improve coordination between central and state governments for timely release of funds and execution of schemes. Capacity-building programs for farmers—covering financial literacy, sustainable farming techniques, and awareness about available

subsidies—can empower them to make informed decisions. Finally, linking subsidies with performance metrics like soil health, water usage efficiency, and crop rotation practices can promote long-term sustainability. Overall, the subsidy framework should shift from being purely consumption-driven to being outcome-oriented, ensuring both productivity enhancement and environmental conservation.

9. Conclusions- Agricultural subsidies in India play a vital role in supporting farmers, improving productivity, and ensuring national food security. They help reduce input costs, stabilize incomes, and encourage the adoption of modern farming practices. However, the current system faces significant challenges, including leakages, inefficiencies, unequal distribution, environmental degradation, and a growing fiscal burden. Poor targeting and weak implementation often prevent the intended beneficiaries—small and marginal farmers—from receiving full benefits. Moreover, excessive dependence on subsidies can lead to unsustainable farming patterns and resource misuse. Therefore, there is an urgent need for comprehensive reforms that include better targeting through digitization, enhanced transparency via Direct Benefit Transfer (DBT), and a shift toward performance-based and environmentally sustainable support systems. Only through a balanced, transparent, and inclusive approach can subsidies truly empower farmers, promote equitable rural development, and ensure the long-term resilience of India's agricultural sector.

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