
Trends in Input Subsidies in Indian Agriculture

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Abstract

The article discusses the trends and issues related to input subsidies in Indian agriculture. It takes into account five major subsidies-fertiliser, irrigation, power, agriculture credit and crop insurance. Results from the analysis shows that there is a significant increase in the level of input subsidies, as it has risen from Rs 1,345 crore in 1980-81 to Rs 1,81,424 crore in 2017-18 in current prices. It has undoubtedly helped the farmers to increase the food grain production. But the increase in subsidies have raised question regarding financial and environment sustainability. Fertiliser subsidy has severely degraded the soil quality, while power subsidy has led to excessive use of water in several parts of the country.

Keywords: Indian Agriculture, Input, Subsidies, Fertiliser, Irrigation.

JEL classification: I38, Q15, Q18.

1 Introduction

Agricultural producers in India obtain farm inputs at low prices through supply of subsidized fertilizer, electricity and water. Other inputs are also provided to farmers at subsidized prices-agricultural credit, crop insurance, seed and machinery.

This article discusses the magnitude of support Indian farmers receive for farm inputs-fertilizer, irrigation, power, agri-credit and crop insurance. Among the major input subsidies provided by the government, power and irrigation subsidy occupies the largest share, followed by subsidy on fertilizer, irrigation, credit and crop insurance. However, the steep increase in subsidies in recent years has come under severe criticism by economists as they argue that the growth in subsidies is obtained at the cost of driving out investment (Gulati et al., 2018).

Electricity is one of the major inputs required by farmers, mainly for pumping out groundwater through tube wells. Agricultural consumers are provided electricity at a very low cost and even for free in a few states like Punjab and Tamil Nadu, relative to other consumers. However, irregular and poor supply of power remains a major concern among farmers in the country (OECD, 2018). Surface water irrigation is available to farmers through major, medium and minor projects. The government is mainly involved in building

and maintenance of major and minor projects and they charge a nominal irrigation fee from farmers.

Fertilizer such as urea, phosphatic, potash, is supplied at a low market price to agriculture producer. Subsidy on urea depends on factors like the international prices of urea and natural gas. The government provides domestic urea manufacturers the difference between the cost of production and revenue from its sale at the fixed selling price. In case of phosphatic and pottasic fertilizer, the government introduced nutrient based subsidy (NBS) policy in 2010, where subsidy rates are set on the basis of nutrient (in rupee per kilogram) of fertilizer.

Subsidized agricultural credit in the form of interest subvention on short term loan is given to farmers for a period of six to twelve months. Debt waivers is another form of subsidy given to farmers and have become a common phenomenon in the recent past. Large scale debt writes off are usually announced during election years. This has come under serious criticism as it generates moral hazard and strategic loan default (RBI, 2018).

Subsidy on crop insurance is given as the difference between the actuarial rate and a premium rate fixed by the government (2 per cent or 1.5 per cent of the sum insured).

This article analyses the trend in input subsidies and issues related with each one of them. It is organized as follows: Section 2 discusses the literature review followed by Section 3 on research methodology and database. Section 4 deals with the magnitude and issues related to subsidy in fertilizer, power, irrigation, agri-credit and crop insurance. It also deals with the estimation of total subsidy and compares it with several macroeconomic indicators. Section 5 presents the main findings.

2 Literature Review

Studies show that during the 1970s and 1980s, subsidies helped farmers to increase food-grain production. It helped transform the country from a food deficient to a food surplus nation. In the subsequent decades, they were criticised for driving away resources away from investments, instances of their overuse, and adversely impacting the financial situation of the country (Gulati and Sharma, 1995; Gulati and Narayanan, 2003), and they were discouraged. It was also suggested by Gulati and Narayanan (2003) that provision of subsidies was a short-term measure to help achieve food security and hence should be rolled back in due course.

Since 2000s, the government of India again started reaching out to farmers through advancement of input subsidies. The main reasons for this renewed interest in input subsidies were related to concerns about food security, and food crisis in 2007-08 and a very slow progress in agricultural growth across several states. In fact, Chand and Pandey (2008) found fertiliser subsidies to increase agricultural productivity, and any decision on withdraw them could lead to a decline in the food grain production by 8 per cent per annum. Other studies reported subsidies are important in raising agricultural productivity in low-income states, and policy may differ on subsidy and investment across the states (Bathla, Joshi and Kumar, 2020).

3 Data and Methodology

Fertilizer subsidy is given to farmers on account of urea (N), phosphatic (P) and potassic (K). Subsidy payments for domestically manufactured urea are based on the difference between the maximum retail price (MRP) and manufacturing cost. Estimates on subsidies are obtained under the following headings indigenous urea, imported urea, and obtained

from Volume I, Demand No. 7, Expenditure Budget, Department of Fertilizers, Government of India.

Irrigation subsidy is estimated as the difference between gross receipts and working expenses of government on major, medium, minor irrigation and Command Area Development (CAD). This data is taken from Appendix II (Revenue Expenditure of States and Union Territories with Legislature – All States) and Appendix I (Revenue Receipts of States and Union Territories with Legislature – All States) in State Finances: A Study of Budgets (various issues), Reserve Bank of India.

Subsidy on electricity for agricultural purpose is taken to be the difference between the unit cost of supply and tariff charged to agricultural consumers, multiplied with power sales to agriculture. This difference is multiplied by the apparent supplies of energy for farming operations, which is assumed to equal 70% of the total supplies to rural areas (leaving 30% for domestic use in rural areas). Data is taken from Power Division, erstwhile Planning Commission, Government of India and, Power Finance Corporation Ltd.

Subsidy on agricultural credit extended to farmers is the difference between the market interest rates and interest rates charged from agricultural consumers. Data on interest subvention on short-term loan between 2007-08 and 2015-16 is available from the Department of Financial Services, Ministry of Finance. The Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture provides this information for 2016-17 and 2017-18.

Premium subsidy on crop insurance scheme is the difference between the actuarial rates of interest and premium rates charged from farmers. The data is taken from the Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture and Farmers' Welfare, Expenditure Budget, Government of India. GDP deflator is used to convert the subsidy at current price into real 2011-12 price.

4 Trends and Issues related to selected Input Subsidies in India

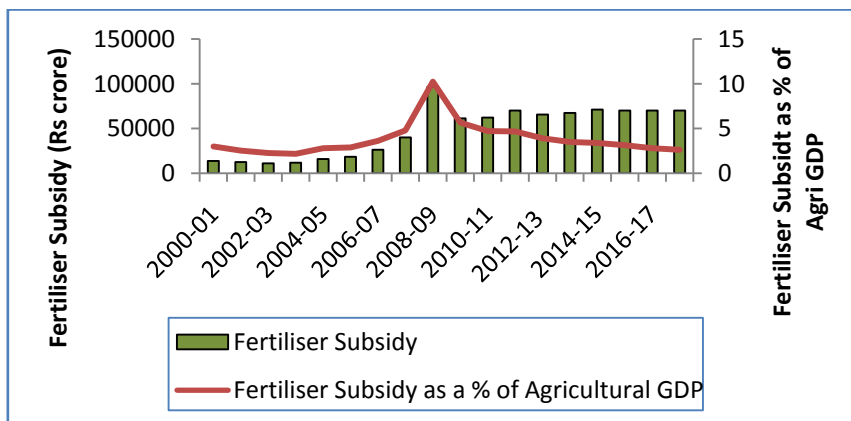
4.1 Fertilizer Subsidy

Fertilizer policies play an important role in determining its total consumption and food grain production in the country. In the wake of Green Revolution and adoption of HYV seeds, the demand for fertilizer grew immensely. Although, it is not possible to isolate the effect of HYV seeds, water and fertilizer on increased food grain production, the role of chemical fertilizer is significant in increasing food grain production in the country. An increase in consumption of fertilizer from 91 kg/ha in FY1961 to 123.41 kg/ha in FY2017 along with the usage of other inputs have resulted in significant increase in production of food grains from 82.02 MMT in FY1961 to 279.5 MMT in FY2018. Subsidy on fertilizer sector is provided by the Central government. The amount of fertilizer subsidy according to the revised estimate of the Union Budget of 2019-20 was Rs 70,000 crore and it has increased almost 5 times over the last 17 years at current prices in rupees (fertilizer subsidy was Rs 13,800 crore in 2000-01).

There are five key issues related to fertilizer subsidy in India. Firstly, amount of fertilizer subsidy in the budget has been rising and there are questions regarding its financial sustainability. In the past financial years, the budget estimate of fertilizer subsidy has been hovering at Rs 70,000 crore. Secondly, the amount of unpaid subsidy bills to the producers is rapidly increasing. It is estimated at Rs 45,000 crore for 2015-16. This is leading to difficulty in continuing production process for many fertilizer plants. Thirdly, extremely low price of urea is causing imbalanced use of N, P and K. This in turn, is causing degradation of soil quality. The ideal ratio of NPK fertilizers (4:2:1) is being distorted due

to faulty pricing. As the prices of urea is outside the ambit of NBS scheme, the price of DAP and MOP have increased steeply in comparison with urea. The states wise ratio of Punjab, Haryana and Rajasthan are even more alarming. In addition, there is deficiency of micro nutrients like sulphur, zinc, manganese and boron. On an all-India basis, deficiency of sulphur has been found to be 41 per cent, zinc 48 per cent, boron 33 per cent, iron 12 per cent and manganese 5 per cent. Among them, deficiency of zinc is particularly worth mentioning since the deficiency of zinc in the soil leads to its deficiency in food, which results in stunted growth and impaired development of infants. Fourthly, since the price of urea in India is less as compared to its international price and India's neighboring countries, it has raised suspicion on its use for non-agricultural purposes. Last but not the least, there is lack of investment, leading to a rise in imports.

Figure 1: Total Fertilizer Subsidy and Fertilizer Subsidy as % of Agricultural GDP



Source: National Accounts Statistics and Volume 1 of Expenditure Budget, Government of India

4.2 Irrigation and Power Subsidy

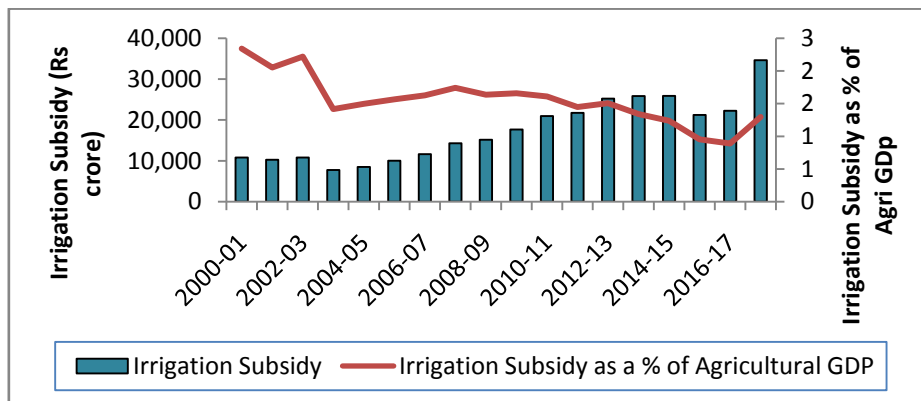
One of the most critical inputs to increase productivity in agriculture is water. Without adequate water, the potential of seeds and fertilizer would be underutilized. The role of irrigation is critical in this aspect as the productivity of irrigated land is much higher than unirrigated land (Gulati and Narayanan, 2003). However, India's per capita availability has decreased from about 5200 cubic meters (m^3) in 1951 to 1544 m^3 in 2011. Skewed distribution of water, both spatially and temporally, makes the problem even graver (Gulati and Banerjee, 2015). India is already a water stressed country and the situation could worsen if appropriate steps are not taken in a timely manner.

The total area irrigated in the country has increased from 55.20 million Hectare (Mha) in 2000-01 to 65.26 Mha in 2011-12, accounting to only 46 percent of Net Sown Area (NSA). But, the ultimate irrigation potential (UIP) is estimated to be 139.89 million hectare (Mha). Out of this, 58.47 Mha (42%) is from major and medium irrigation (MMI) and the rest is from minor irrigation. Of 81.43 Mha of minor UIP, 64.09 Mha is from groundwater and only 17.34 Mha is from surface irrigation.

Irrigation sector in India comprises MMI (major and medium irrigation) through canals or surface water and ground water. Subsidy is given in the form of lower water charges for MMI and lower power tariff for agricultural users for extracting groundwater. Irrigation subsidy is calculated by subtracting working expenses (O&M costs) of public major, medium, minor irrigation schemes and CAD from the gross receipts from these schemes.

According to this method, irrigation subsidy has increased more than three times—from Rs 10,327 crore in 2000-01 to Rs 32,578 crore in 2018-19 (Figure 2). This data is obtained from State Finance Budgets published every year by RBI. As a percentage of Agri GDP, it increased from 2.3 per cent in 2000-01 to 1.3 per cent in 2017-18.

Figure 2: Total Irrigation Subsidy and Irrigation Subsidy as % of Agricultural GDP



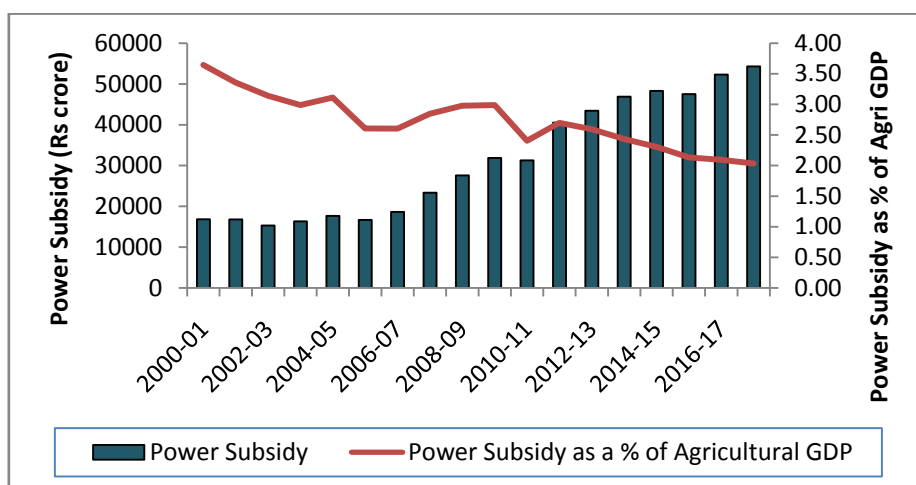
Source: National Accounts Statistics and State Finance: A Study of Budgets, RBI

Low irrigation coverage (49 per cent of GCA) is a major issue faced by agriculture in the country. The gap between IPC (irrigation potential created) and IPU (irrigation potential utilised) has been increasing over time. Up to the end of Eleventh Plan, the gap between IPC and IPU widened to 26 Mha. This implied that resources spent in creating irrigation potential are ultimately not being used properly. Secondly, per hectare cost of irrigation potential creation is very high. For the years 2002-03 to 2011-12, average per ha cost of potential creation for all India was Rs 5.12 lakh at 2014-15 prices. Insufficient cost recovery and high administrative costs incurred in major and medium project is another issue in irrigation sector. In the year 2017-18, gross receipts from MMI projects were merely 22 per cent of working expenses. Fourthly, unfinished ongoing projects cost a lot to the government. There are 337 unfinished projects spilled over to the Twelfth Plan. According to the official estimates, the overall financial requirements for spillover and new projects amount to Rs 1,84,000 crore. Unfortunately, even after incurring such enormous expenditure, most of the area irrigated is by flood irrigation and it has an efficiency of only 65 per cent (Gulati and Banerjee, 2018).

Surface water is not able to ensure adequate supply of water for agriculture and farmers resort to utilization of groundwater. But, cheap supply of power has led to decline in water level in most of the states and India has been declared as one of the three countries (include China and USA) as water risk hotspots country for agricultural production (OECD, 2017). Power subsidy in agriculture sector is estimated by calculating the difference between unit cost of supply and tariff for agricultural consumers. This is then multiplied with the agricultural sales to arrive at the total electricity subsidy for agricultural sector. Supply of electricity to agriculture is not metered in many states and taken as residual figure in agricultural consumption, led to overestimation of power supplied in this sector. Seventy per cent of the amount estimated in this manner is considered as power subsidy and 30 per cent of agricultural sale is considered as overestimation due to non-metering.

It has been observed that electricity subsidy for agriculture has increased by 2.8 times over past 18—from Rs 16,852 crore in 2000-01 to Rs 54,329 crore in 2017-18. As a percentage of Agri-GDP, it has declined from 3.6 percent to 2 percent in the same period (Figure 3).

Figure 3: Power Subsidy and Power Subsidy for Agriculture as a Percentage of Agricultural GDP



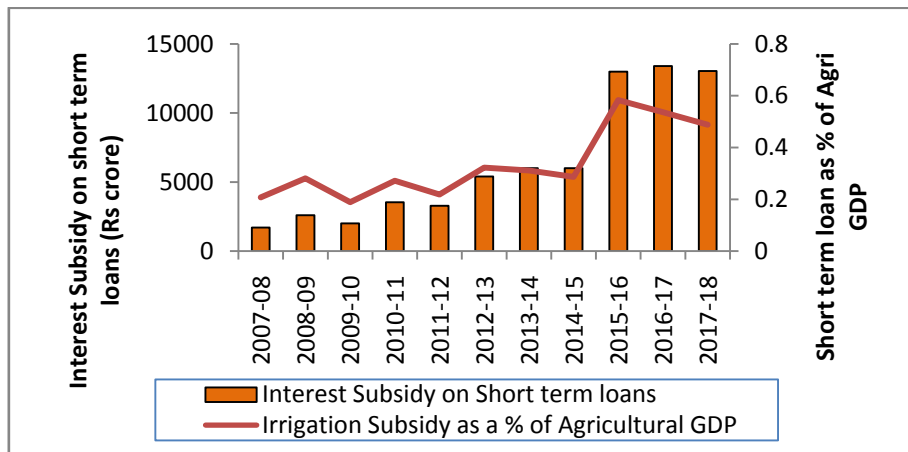
Source: Constructed using data from Power Division, erstwhile Planning Commission, 2012, 2014; Performance of State Power Utilities, Power Finance Corporation and National Accounts Statistics, CSO

There are several issues related to the power supply for irrigation purpose. Firstly, erratic supply of electricity forces farmers to use diesel as an alternative means for irrigation, substantially raising the cost of cultivation. Secondly, absence of metering in most parts of the country leads to overestimation of electricity used for agricultural purposes. Thirdly, poor plant load factors of power plants of India and high T&D (transmission and distribution) losses adversely affect the quality of electricity. T&D loss was close to 21 per cent in 2013-14 (Planning Commission).

4.3. Credit Subsidy

Rural credit policy began in India in the 19th century to address the problem of financial constraints faced by the farming sector. Lack of adequate agricultural finance to the rural economy and exploitation perpetrated by moneylenders and informal sources of rural finance has remained a perpetual feature of the Indian agricultural credit scenario.

One of the major policies taken by the government in the recent years was the introduction of the interest subvention scheme. The Budget in 2006-07 announced that the government would provide interest subvention of 2 percent to public sector banks, regional rural banks and co-operative banks in order to enable farmers to receive short-term credit at 7 per cent (against the prevailing rate of 9 per cent), with an upper limit of Rs.3 lakh on the principal amount. The policy came into force from the 2006-07 kharif crop seasons. This has been further brought down to 5 percent on account of timely payments by the farmers, making short term credit available at 4 percent. The allocation towards interest subvention scheme has increased from Rs.1700 crore in 2007-08 to Rs. 13,000 crore in 2017-18 (Figure 4). As a percentage of agricultural GDP, it has increased from 0.21 to 0.5 per cent in the same period.

Figure4 Interest Subvention on short term loans to Agriculture Sector

Source: National Accounts Statistics and Volume 1 of Expenditure Budget, Government of India

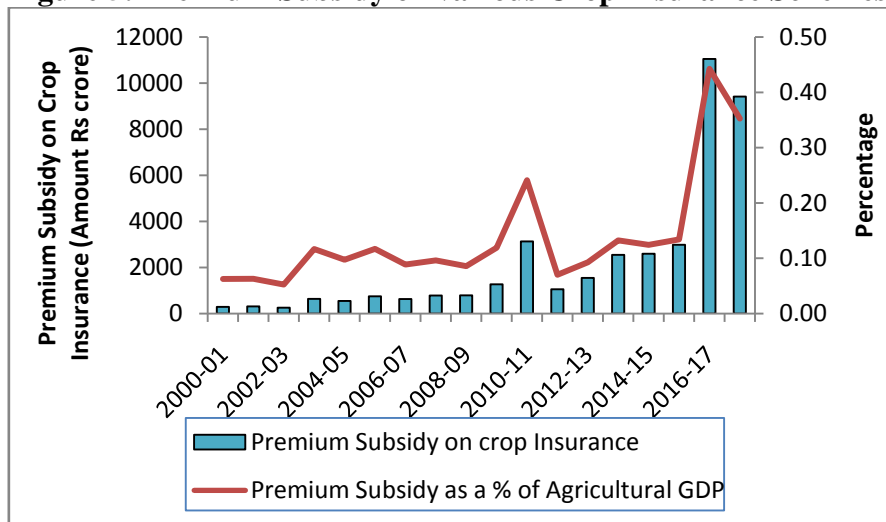
Although, the government has taken successive measures to increase the flow of institutional credit, non-institutional sources for agricultural credit remains as high as 36 per cent in 2013. According to the latest AIDIS Survey, as much as 71 per cent of the outstanding dues from non-institutional sources attracted interest rates of more than 15 per cent in 2013, whereas the corresponding figure for institutional sources was only 10 per cent. The introduction of credit subvention scheme led to a steep rise in short term agricultural credit. But studies show that this growth in short term credit has outpaced the rise in use of farm inputs.

4.4 Crop Insurance

With back to back droughts, unseasonal rains and hailstorms in certain pockets, agriculture is becoming a risky business in India. These vagaries in weather conditions lead to intense crop damage and uncertainty in crop production. Thus, farmers are exposed to agricultural risks resulting in low farm profitability. One of the most effective mechanisms to mitigate agricultural risks is through the adoption of a robust insurance system. Although crop insurance scheme is present in India since 1985, according to estimates of 2015-16, it has covered only 51.44 million hectare and 46.3 million farmers leaving a large number of farmers outside this safety net. Even those who are covered under this scheme are not adequately protected due to low sum insured, high actuarial based premium rates and delay in settlement of claims. Realizing the importance of providing adequate protection to the farmers, the government launched PM Fasal Bima Yojna from Kharif, 2016. The main objective of this new scheme is to make crop insurance affordable to farmers while providing sufficient financial coverage in case of crop failure. An allocation of Rs.13,000 crore was given towards this scheme in the 2017-18. (Figure 5). The new crop insurance scheme, PMFBY, has provided coverage to 57.2 million farmers in 2016-17 compared to 47.5 million farmers in 2015-16, an increase of 20.4 per cent. With the removal of capping on premium rates, there has been a quantum jump in gross premium and it has increased from Rs 3,627 crore in kharif 2015 to Rs 16,351 crore in kharif 2016. The first year of PMFBY witnessed remarkable increase in farmers' coverage as well as area insured. However, several challenges such as speedy assessment of damage of crops and settlement of claims into farmers account, extension of cut off dates, insufficient number of CCEs and lack of infrastructure and technology, still remain in the system. As a result, subsequent

years have proved to be rather challenging for this scheme. Area insured and farmers coverage have both gone down falling below the target coverage.

Figure 5: Premium Subsidy on various Crop Insurance Schemes

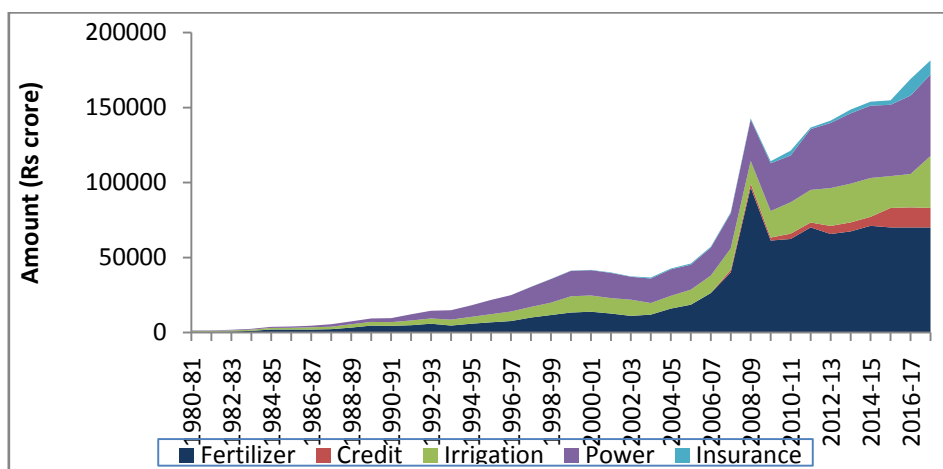


Source: Expenditure budget, Government of India

4.5 Estimate of Total Input Subsidies

The trend in input subsidy is analysed for a period of 38 years—1980-81 to 2017-18. In this period, fertilizer subsidy occupied the largest share except for a period of twelve years—from 1994-95 to 2004-05 when subsidy on power exceeded fertilizer subsidy. This is followed by subsidy on power, irrigation, agri-credit and crop insurance. Overall subsidies increased from Rs 1,345 crore in 1980-81 to Rs 1,81,424 crore in 2017-18 in current prices (Figure 6). In constant prices (2011-12 prices), this figure has increased from Rs 10,656 crore in 1980-81 to Rs 1,61,986 crore in the same period, a jump of more than 15 times.

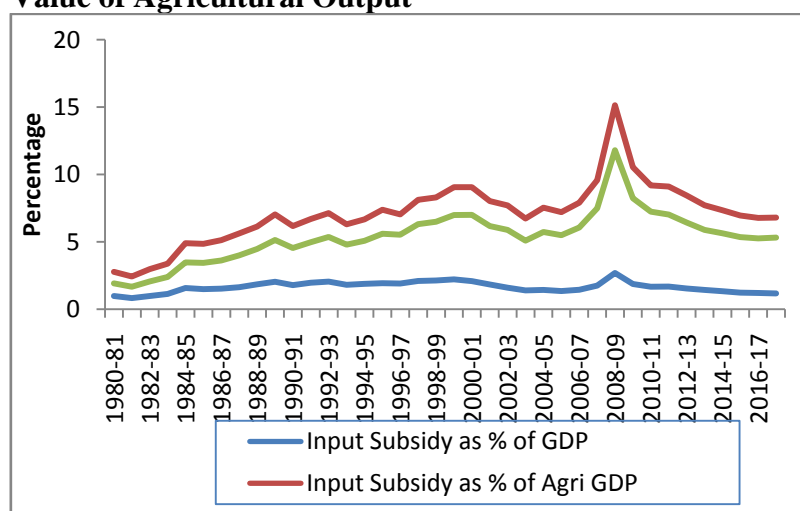
Figure 6: Aggregate Subsidies on Fertilizer, Power, Irrigation, Agri credit and Crop Insurance in India



Source: Author's Calculation

Input subsidies with respect to a few macro economic variables like GDP, agri-GDP and value of output are also analyzed in the study. As a per cent of GDP, total input subsidies at current prices increased from 0.98 per cent in 1980-81 to 1.17 per cent in 2017-18. As a per cent of agri-GDP, it increased from 2.8 per cent in 1980-81 to 7.8 per cent in 2017-18. As a percentage of value of output, it rose from 1.9 per cent to 5.3 per cent of the value of agricultural output. With respect to GDP, agri-GDP and value of agricultural output, total input subsidy was highest in 2008-09. It was 2.7 per cent, 15.1 per cent and 11.8 per cent of GDP, agri-GDP and value of agricultural output, respectively in 2008-09 (Figure 7).

Figure 7: Total Agricultural Subsidy as Percentages of GDP, Agricultural GDP and Value of Agricultural Output



Source: Author's Calculation

6 Conclusion

The article examines the magnitude of support given to Indian farmers through input subsidies-fertilizer, power, irrigation, agri credit and crop insurance. It is found that over the years there is substantial increase in the level of input subsidies disbursed by the government. The aggregate expenditure incurred on all these subsidies combined increased from Rs 1,345 crore in 1980-81 to Rs 1,81,424 crore in 2017-18 in current prices. There is no doubt that access to subsidized inputs have contributed significantly to rise in the production of food grains in the country. However, in the recent years it has come under severe criticisms by the policymakers.

High input subsidy on fertilizer has resulted in extremely low price of urea causing imbalanced use of N, P and K resulting in degradation of soil quality. Availability of cheap supply of electricity to agricultural consumers is leading to over exploitation of ground water in a few states, and India has been declared a water risk hotspot for agricultural production. Despite a huge expenditure on irrigation projects, low irrigation coverage (49 per cent) is a matter of concern. Interest subvention on short term loan to farmers has led to diversion of loans for non-agricultural purposes. Subsidy on premium of crop insurance has increased after the launch of PMFBY in 2016. However, efficacy of this scheme depends on timeliness and adequacy in settlement of claims to farmers.

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