

### Supporting Indian Farms the Smart Way

ASHOK GULATI, MARCO FERRONI AND YUAN ZHOU (EDS.)

2018 • HB • 6¼ X 9¼ • 456P  
ISBN 13: 978-93-327-0472-5  
**Rs. 1495;** US\$ 79.95

Published by  
Academic Foundation  
in association with ICRIER

Most of the major agriculture producing countries in the world support their agriculture and farmers either to ensure food security and/or to enhance the income level of farmers. India is no exception. The overriding concern for India remains producing enough food supplies for its currently 1.35 billion people, which by 2024 is likely to surpass China's population (UN Population Projections, 2017).

The main policy instruments of supporting Indian farms remain that of subsidising key farm inputs (such as fertilisers, power for irrigation, canal waters, agri-credit and crop insurance) on one hand, and minimum support prices (MSP) for major (23) crops, on the other. But the way MSP regime has worked, and the way trade policy has intervened through myriad controls ranging from minimum export prices to outright bans on exports, the combined effect of input subsidies and output pricing regime, captured through PSEs (producer support estimates) has been negative, a sort of implicit tax on farmers. PSE was to the tune of (-)14.4 per cent of the value of gross farm receipts for the period 2000-01 to 2016-17, and minus (-) 6.4 per cent for more recent triennium average of 2014-15 to 2016-17 (OECD-ICRIER 2018).

This book recognises this negative PSE, but focuses on rising input subsidies and also looks at the investments in agriculture, especially public investments. Another defining part of this book is to estimate the marginal rates of return of a certain amount of public expenditure (say Rupees Million) on investment in agri-R&D, roads, irrigation or even education and compare them with marginal returns from the same public expenditure on input subsidies. The book also looks at the Chinese agri-system to some extent as Chinese agri-production and productivity are much higher than that of India- and that too from a lower gross cropped area and much smaller holding size. It may hold some lessons for India. Further, with increasing innovations and research coming from global private sector companies, this book also visits that landscape with a view to ensure that Indian farmers get access to best technologies at affordable prices.

### Key Findings

#### *Magnitude and Impact of Input Subsidies*

Among all the input subsidies to agriculture, fertiliser subsidy has been the most dominant amounting to Rs.71076 crore in FY15. The water sector receives subsidy mainly through two channels- power subsidy and irrigation subsidy. The irrigation subsidy according to government estimates (calculated as imputed irrigation charges minus depreciation of public irrigation system) was Rs.37246 crore in FY15 whereas power subsidy that goes to agriculture was about Rs.53889 crore.\* The expenditure on interest subvention scheme was Rs.6000 crore in FY15. Besides, premium subsidy on crop insurance was about Rs.2600 crore, which has risen drastically to more than Rs. 20,000 crore in FY18. The total value of input subsidies, therefore, accounts to Rs.170811 crore in FY15 (Graph 1), which is around 8 per cent of Agricultural GDP.

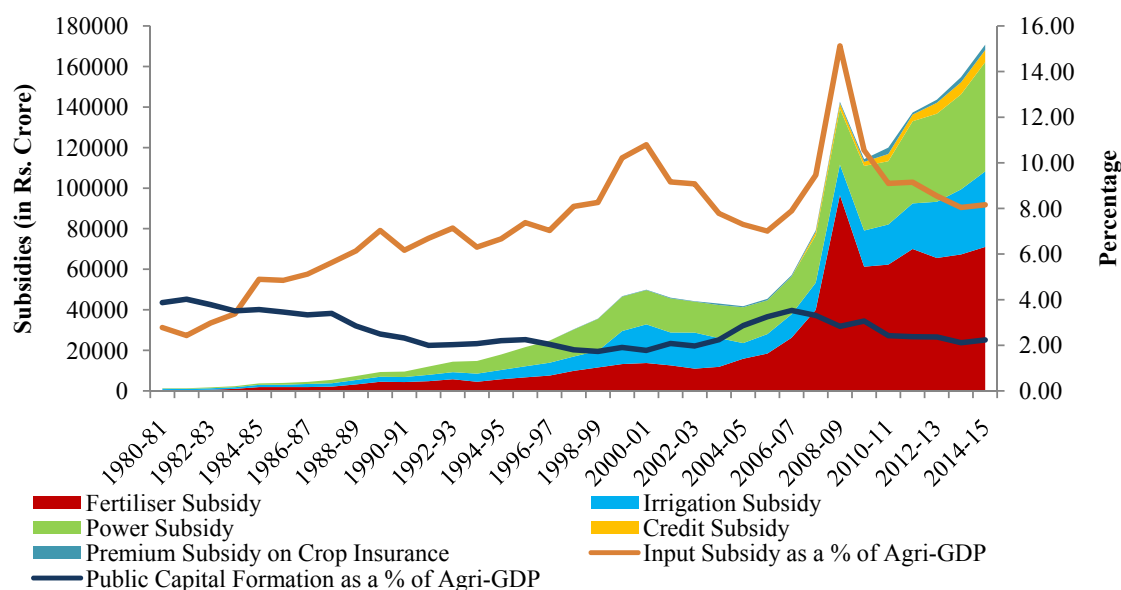
Large increases in fertiliser consumption, often driven by highly subsidised fertiliser prices, especially urea, have inflicted significant costs as unduly low pricing of urea has led to imbalanced use of soil nutrients. This has resulted in soil degradation and deficiency of secondary macronutrients and micronutrients in soil. Subsidy on water for agriculture has resulted in inefficient usage of water resource in India (for both surface and ground water). India cannot afford to be grossly inefficient in the use of water as it is already headed towards water scarcity. Cost (capital cost+working expenses) of constructing major and medium irrigation projects are very high (Rs. 5.12 lakh/ha at 2014-15

\* Figures for FY 15 are projected for irrigation and electricity subsidies. Also, as a rule of thumb, 30 per cent of total electricity sales to agricultural sector were assumed to be diverted to other, especially household sector. Hence 70 per cent of total electricity subsidy to agricultural sector was considered here.

prices for all-India) and delays in completion of several projects is causing further cost escalation. In power sector, charging agricultural sector much below the cost of supplying power or what other sectors have to pay, has led to excessive exploitation of groundwater, resulting in fast depletion of groundwater tables in several regions. This does not augur well for sustainability of Indian agriculture. Credit subsidy has been introduced by the government to provide cheap agricultural loans to farmers. Despite large amounts of credit disbursed to agricultural sector, non-institutional sources still accounted for 44 per cent of outstanding debt among cultivator households in 2013. There has also been an increase in the gap between budgetary provision and subvention amount required by the banking sector amounting to approximately Rs. 35000 crore in FY15.

The rapidly rising input subsidies to agriculture have squeezed public investments in agriculture. The trend shows that that public investments in agriculture as a percentage of agricultural GDP has declined from 3.9 per cent in 1980-81 to 2.2 per cent in 2014-15, while input subsidies as a percentage of agricultural GDP have increased from 2.8 per cent to around 8 per cent over the same period (Figure 1).

**Figure 1: Structure and Trend of Input Subsidies in Indian Agriculture vis-à-vis Trend in Public Investment**



#### Subsidies and Investments: Getting Big Bang for the Buck

If India wants to maximise agri-GDP growth or reduce poverty faster, what should be its strategy in terms of public expenditure? Should it give more through input subsidies or public investments related to agriculture? Keeping this in mind, an empirical exercise was conducted to estimate the impact of subsidies versus public investments on agricultural growth and poverty reduction. A single equation model cannot capture this appropriately, and therefore a system of nine equations has been developed, taking endogeneity of variables into consideration.

The results of the modeling exercise reveal that the marginal returns in terms of number of people brought out of income poverty or higher agri-GDP growth are almost 5 to 10 times more if the public money is spent through investments in agri-R&D, or roads, or irrigation, etc compared to if the same money is spent as subsidies on fertilisers or power or irrigation, etc. (Table 1). This clearly indicates that, at the margin, there is an urgent need to increase investments in agricultural and contain input subsidies for faster alleviation of poverty and boosting growth in agri-GDP.

**Table 1: Poverty and Growth Effects of Government Investments and Subsidies**

	Number of people brought out of Poverty Per million Rs.spent	Rank	Returns in GDP per Re. spent	Rank
Agricultural R&E	328	1	11.2	1
Roads	130	2	1.10	2
Education	42	3	0.97	3
Fertiliser subsidy	26	4	0.88	4
Power subsidy	23	5	0.79	5
Irrigation	10	6	0.31	6
Irrigation subsidy	n.s	7	n.s	7

## What Should Indian Policymakers Do?

To start with, there is need to shift from price policy (that is, supplying inputs at subsidised prices) to income policy approach for supporting farmers, which will reduce the negative impacts of input subsidies. Next, if the income support can be frozen in nominal terms, and at the margin, savings are geared towards investments, that will give much better results for Indian peasantry and Indian agriculture. Many OECD countries as well as some emerging economies are already moving in this direction. Lately, even China has started making direct benefits transfers to farmers. This shift in policy will address the problem of huge leakages and inefficiencies in the existing structure. To have that policy change in place, the use of JAM (Jan-Dhan accounts-Aadhar-Mobile) trinity and digitisation of land records will come handy. Apart from this, some specific measures have been recommended to tackle problems in individual input sectors.

### *For Fertiliser Sector:*

- Switching to direct cash transfers to farmers on per ha basis, liberalising the fertiliser sector (especially urea sector), and letting domestic prices of fertilisers be determined by demand and supply forces in open markets.
- Seriously pursuing the soil health card programme that is in place, and if possible, making cash transfers conditional upon regular soil health check-up; and
- Encourage Indian investments in nitrogenous fertilisers in Gulf countries (e.g., Iran, Kuwait, Oman, etc.) where gas prices are typically less than in India, with some medium to long-term agreements for imports. Some other suggestions include encouraging better fertiliser application technologies like fertigation, digitisation of land and ensuring timely reach of both fertilisers and income support to farmers.

### *For Water Sector:*

- Bridging the gap between irrigation potential created and utilised through command area development. The involvement of private sector could facilitate faster creation of field channels;
- Using latest technologies adopted by countries like Israel (drip irrigation, recycling of water), China (trace irrigation) and Japan (solar sharing) to increase the water use efficiency;
- Incentivise optimal extraction of groundwater by rewarding farmers per unit of power saved (as done in China);
- Ensuring timely, good quality and adequate power supply
- Discourage the production of water intensive crops in water scarce areas (like rice in Punjab and sugarcane in Maharashtra) to arrest fast depleting groundwater in these regions. To tackle the depleting ground water problem, artificial recharge of ground water could be considered.

### *For Agricultural Credit Subvention and Crop Insurance:*

- Making loan waivers and credit subventions part of a comprehensive package of income policy. This would increase efficiency of public expenditure;
- Requirement of infrastructure like weather stations, drones and Low Earth Orbit (LEOs) for effective implementation of crop insurance scheme. In order to cover the entire country on block level, approximately 25,000 AWS and 170,000 rainfall data loggers, in addition to 9,000 AWS that is already in place are required. Although the guidelines state that insurance claims would be settled in 15 days from crop damage, the technology required to operationalise this process will take time. The issue of tenancy and owner has to be resolved by continually upgrading the land records and freeing up land lease markets so that the benefits of insurance are passed to the intended beneficiary.

However, all the changes cannot happen in one go, and our recommendation is to go gradually but steadily, at the margin. On the whole, the revival of Indian agriculture calls for prioritising investments, rationalising and converting subsidies into direct income transfers and invest in changing requirements of the modern agriculture, especially agri-R&D. Tapping the fruits of agri-R&D by global private sector players would require creating a conducive environment (IPR regime) so that Indian farmers can access the best technologies in the world at affordable prices.

## CONTENTS

- List of Tables, Figures and Boxes  
About the Editors/Contributors  
List of Abbreviations  
Foreword  
Preface
1. Introduction  
ASHOK GULATI
  2. Supporting Farmers—Global Snapshot:  
OECD and Selected Countries  
ASHOK GULATI, PRERNA TERWAY  
and PRITHA BANERJEE
  3. Supporting Indian Farmers:  
Saga of Input and Output Pricing  
ASHOK GULATI and PRITHA BANERJEE
  4. Fertiliser Pricing and Subsidy in India  
ASHOK GULATI and PRITHA BANERJEE
  5. Irrigation and Power Subsidy in India  
ASHOK GULATI and PRITHA BANERJEE
  6. Agriculture Credit Subsidy in India  
ANWARUL HODA and PRERNA TERWAY
  7. Crop Insurance in India: Key Issues and Way Forward  
ASHOK GULATI, PRERNA TERWAY  
and SIRAJ HUSSAIN
  8. Trends in Input Subsidies and  
Investments in Indian Agriculture  
ASHOK GULATI, PRERNA TERWAY  
and PRITHA BANERJEE
  9. Impact of Investments and Subsidies on Agricultural  
Growth and Poverty Reduction in India  
ASHOK GULATI and PRERNA TERWAY
  10. Private Agricultural R&D in India, Farm Productivity  
and the Agricultural Transformation  
MARCO FERRONI and YUAN ZHOU
  11. China's Agricultural Subsidy Policy and Reforms  
YUAN ZHOU
  12. Summary and Way Forward  
ASHOK GULATI, PRITHA BANERJEE  
and PRERNA TERWAY
- References

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