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Rapporteur's Report on Subsidies in Agriculture and Their Implications on Trade and Environment

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I

INTRODUCTION

Seven set of issues were suggested for paper-writers on the subject of subsidies in agriculture. Briefly, these are (i) quantification/documentation of the various subsidies provided to agriculture, (ii) impacts on agricultural productivity, (iii) impacts on resource allocation within agriculture, (iv) detailed analysis of fertiliser subsidy, (v) detailed analysis of irrigation subsidy, (vi) detailed analysis of electricity subsidy, and (vii) export promotion measures and other forms of indirect subsidy for agricultural exports.

In all ten papers were received on this subject. These papers can be grouped into four broad areas, viz., (i) Macro level studies that are concerned with the quantum of subsidies provided to agriculture / the extent of protection that agriculture receives, and the related issues of concern with the WTO; (ii) Subsidies and input usage in agriculture; (iii) Subsidies and investment in sustainable technologies/ infrastructure; and (iv) Sectoral impacts of subsidies – in particular relating to the Sugar industry and rural Self-Help Groups (SHGs). A brief summary of these papers is presented first under these four broad heads, followed by a description of some research issues for discussion.

II

MACRO LEVEL STUDIES - QUANTUM OF SUBSIDY / PROTECTION AND WTO ISSUES

Four papers have examined the quantum of subsidy provided / protection offered to agriculture, and the WTO related issues of concern here. Madan Mohan *et al.* seek to address the issue of subsidisation of the Indian farmers. The magnitude and dimension of input and output subsidies for Indian agriculture are estimated by comparing their world reference prices. They find that input subsidies have not kept pace with the value of agricultural output. They also find that not all inputs are subsidised; in fact some are even net-taxed. Power and fertiliser subsidies constitute the major chunk of input subsidies. However, seed and potassic fertiliser have often been net taxed rather than subsidised. They also find a negative relationship between

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price and utilisation of fertiliser. They suggest that to offset the adverse impact of frequent hike in fertiliser prices, the government should check the downward trend on fertiliser subsidy. Also, they find that, in terms of product-specific support, Indian agriculture is heavily net taxed. So, compared to the base period they find that aggregate measurement of support is negative for Indian agriculture. Additionally, they also find that the benefits of input subsidies have either passed on to the consumers or input supplying agencies and Indian farmers remain exploited in spite of all the subsidies. Hence, they suggest that to protect the farmers, Government of India must lift the rice and wheat export ban and allow tariff free import of farm inputs. Further, to reduce the burden of subsidies, India needs to enhance the efficiency of input supplying agencies.

Arimardan Singh Rajput *et al.* have examined the effective protection and subsidies in Indian agricultural trade policy. Input subsidies like fertilisers, irrigation, electricity and credit as a percentage of the value of agricultural outputs have come down in the recent years. They measure three variants of protection coefficients, namely, normal protection coefficient (NPCs), effective protection coefficient (EPCs) and effective subsidy coefficients (ESCs). NPC is defined as the ratio of domestic price of output received by producers to reference price of output in case of free trade. EPCs are defined as the ratio of value added of the specific crop at domestic prices to its reference prices and ESCs are derived from EPCs after adjusting the subsidies and taxes on their respective non-trade able inputs. From their analysis, they conclude that on the basis of NPCs, Indian wheat and rice cultivators are more or less unprotected from international reference prices and within wheat and rice, rice cultivators are more unprotected than wheat cultivators. However, ESCs confirm that wheat cultivators in Punjab and Haryana seem to have acquired some degree of protection through subsidies but the rice cultivators continue to face anti-protection policies. Interestingly, they find a bias in favour of advanced regions like Punjab, Haryana and Andhra Pradesh.

Sachin Kumar Sharma examines the domestic support especially aggregate measurement of support of Agreement on Agriculture (AOA) and finds that the outcome of AOA has not been beneficial to the developing countries due to several reasons. Domestic support measures in developed countries led to artificial comparative advantage for the exporters of these countries in international agriculture trade whereby they could afford to sell goods at cheaper price than the actual cost of production. In case of India, there is no obligation to reduce domestic support to the agricultural sector. He suggests that India will have more policy space if product-specific support is calculated by considering excessive inflation under Art 18.4 of AOA. However, domestic support in developed countries is mainly concentrated only on a few crops, which is a major concern for the developing countries. The developed countries are seeking special provisions so that no limit is proposed on product-specific supports. Hence, developing countries should oppose these special provisions to safeguard the interests of millions of farmers in the developing countries.

Deepak Shah finds that India shows a steady rise in agricultural subsidy over the last four decades which is accompanied by substantial rise in production due to higher capacity utilisation of existing units or by creation of new capacities. In case of inputs they find that the rise in subsidy outgo is noticed to be matched with significant increase in indigenous production of fertiliser and stimulating fertiliser consumption. However, the increased use of fertiliser in India is also accompanied by disproportionate use of indigenously produced urea since other fertilisers are mainly imported. The major problem with input subsidies is that they reduce public investment in agriculture apart from causing other harmful effects like intensive use of inputs leading to reduced productivity of inputs and lowering of water table. Another issue is related to the delivery of fertiliser subsidy, which should be directly given to the farmers and not through priority allocation of natural gas to fertiliser units as this will help the farmers to decide which fertiliser to buy and not rely wholly on urea based fertiliser. Further, the government continues to extend large amounts of food subsidies, which is already well known for administrative inefficiency, corruption and wastage. Moreover, the outreach of food subsidy in India has been highly inadequate and has concentrated more in the relatively developed and less poor states. Therefore in order to improve the system, he suggests that it is necessary to improve its outreach, especially in the northern states. Further, there is a need to make the subsidies transparent, targeted and short term in nature.

III

SUBSIDIES AND INPUT USAGE

Since bulk of the subsidies to agriculture is on fertiliser and electricity, it is natural to expect these subsidies to influence the usage of these two inputs. Two papers examine these impacts of electricity subsidy on water use efficiency in agriculture and fertiliser usage. Does the rising subsidies on electricity and increasing use of electric pumps as compared to diesel pumps all over India result in water use inefficiency? O.P. Singh *et al.*, study this issue for three states of India namely, Uttar Pradesh, Bihar and Punjab using primary and secondary data. They measure physical water productivity (kg/m3) as average yield of the crop (kgs.) per unit water used for irrigation (m3). Net economic productivity (Rs./m3) is measured in terms of net income (in Rs.) from the crop per unit water used for irrigation(m3). They find that in Bihar and Uttar Pradesh, diesel pump owners were using less irrigation water as compared to electric pump users. Except in the case of paddy, diesel pump owners were achieving higher physical and economic water productivity as compared to electric pump owners. In Punjab, they found that farmers were using less groundwater for all crops as compared to canal water. The physical water productivity was found to be higher for all crops grown with canal irrigation. The physical water productivity was higher in case of groundwater irrigation for paddy, maize and wheat and net economic value of water productivity was higher for

groundwater irrigated crops like maize, bajra and wheat. They suggest that introduction of pro-rata pricing of electricity supply to farm sector may be the best option for better management of groundwater. This would help in equitable, efficient and sustainable use of groundwater and reduce the burden of gigantic electricity subsidy to farm sector. They also suggest that pre-paid metering to the farm sector may also increase water use efficiency.

Abhijit Ghosh studies the trend and pattern of chemical fertiliser use in India from 1962-63 to 2003-06. He finds evidence of non-uniform and inefficient use of chemical fertilisers in Indian states. Data Envelopment Analysis technique was used to gauge input-oriented technical efficiency in districts of Andhra Pradesh, Gujarat, Punjab and West Bengal. The states were chosen such that one state each from northern, southern eastern and western India could be controlled in the study. The results show that there is substantial scope of reducing fertiliser use and this reduction will have strong policy implications as this could lead to minimisation of cost of production and prevention of environment degradation. This suggests that there is a huge potential to increase the yield by introducing efficient management of inputs use in general and fertilizer use in particular.

IV

SUBSIDIES AND INVESTMENT IN SUSTAINABLE TECHNOLOGIES / INFRASTRUCTURE

A somewhat less explored area in research is the usefulness of subsidies to promote sustainable technologies and agriculture-oriented infrastructure development. Two papers touch upon these issues. They both bring forth a case for reorienting subsidies towards activities that make agriculture sustainable and add value to the farmers. Indira Devi *et al.*, test the factors determining the adoption behaviour of bio-fertilisers and bio-control agents using data collected from secondary sources and primary survey of 840 farmers in Kerala. Through a logistic regression analysis they find that the education level of farmers, farming experience, returns from farming and extent of technical support received by the farmers are the major factors responsible for adoption of Bio-Fertilisers (BF) and Bio-Control Agents (BCA). However, adoption of BF was less that 1 per cent while that of BCA was around 11 per cent. They conclude that though subsidies facilitate economic access to the technology, it did not ensure the sustained adoption and scientifically proper application practices. The analysis supports the statistically significant influence of technical support in the adoption of the technology which underlines the importance of infrastructural and technological support mechanism in the wider spread of the technology. Thus the authors conclude that subsidies can be considered as a necessary condition but not a sufficient condition for the sustained technology adoption.

M.S. Jairath *et al.*, examine the status of subsidy released and storage infrastructure created, distribution of subsidy released across states, impact of subsidy

encouraged investment in storage on enhancing the value of output, price stabilisation and smooth flow of arrivals. The information collected from government publications have been used to construct an index to evaluate the uniformity in the distribution of subsidy released across states along with descriptive statistics and regression. The study reveals the existence of imbalance in release of subsidy under the scheme across states. The benefits under the scheme have been availed by a few states. On the impact of investment in storage on growth of agriculture evaluated in terms of growth in agriculture per unit investment in storage infrastructure, the authors find that developing states have shown better response as compared to the developed states. They suggest that there is a need to encourage the investment in the sector and ensure focussed release of the subsidy taking into consideration the need of the state and potential to translate the investment in growth of agriculture. The study suggests that further momentum to storage infrastructure may be given by fine tuning legal, taxation laws and other infrastructure that supports investment. Agri-business people need a reasonable degree of certainty and predictability in order to invest. The government needs to take steps to create a more attractive environment for infrastructure investment for example single window approvals and sense of urgency around getting the job done.

V

SECTORAL IMPACTS OF SUBSIDIES

Three papers have examined the sectoral impacts of subsidies. An interesting question that often arises is the fallout of agricultural subsidies on other sectors. One such case relating to the sugar industry is the focus of the study by Sangeeta Shroff and JayantiKajale. They ask the question whether sugar sector has been surviving with the help of agricultural subsidies, and they find that it is indeed the case. Subsidies have sustained inappropriate use of fertiliser and excessive water use under canal and lift irrigation systems. These have made the soil alkaline adversely affecting productivity. They suggest that policy must be addressed towards liberalising this sector from several controls and increasing the yield of sugarcane, which has shown no improvement over the decades. Hence, increasing productivity through scientific practices will enable sugar mills to obtain sufficient raw material at competitive prices. That would also enable the sugar mills to operate for more number of days and reap economies of scale.

Tarannum Bano *et al.*, study the issue of sustainability of Self-Help Groups (SHGs) with the help of an empirical data set generated through primary survey of SHGs. They study if subsidy has impacted the operational and financial sustainability of SHGs. Along with secondary data, a primary data set of 389 SHGs operating in the state of UP under SGSY scheme over three years from 2008-09 to 2010-11 are used for the study. On the basis of sustainability indicators and other efficiency parameters like grading status of SHGs, profitability position, operating expenditure as a

percentage of total cash inflows and coverage of operating and financial expenditure, they find that the subsidy based SGSY scheme seems to be running reasonably well in the present scenario. However, the negative impact of subsidy is also visible as in the long run SHGs might find it difficult to sustain their operation without subsidy. The poor recovery rate and small reduction with loan portfolio quality can affect sustainability of these SHGs. They suggest that the government should slowly phase out the subsidy and some of the unnecessary expenditure must be curtailed.

VI

RESEARCH ISSUES FOR DISCUSSION

Most of the papers have based their analysis on primary data, supplemented with secondary data where relevant. The use of primary data is very encouraging as it provides field level perspective that is missing from secondary data. However, in the present version of the papers, the analysis in most of the papers is largely descriptive, though a couple of them have attempted to develop an empirical model. It is hoped that the authors would take their analysis to the next logical step, wherein they set up an econometric model to be estimated. This would be especially useful for the papers where primary data have been used. Pending that, the conclusions drawn here should be viewed as preliminary.

The papers on fertiliser and water use efficiency on one hand, and those on the adoption of sustainable technologies and investment in storage infrastructure on the other hand, provide a clear contrast on what different types of subsidy can do. Input subsidies lead to input use inefficiencies, while subsidies for new technologies and infrastructure can be beneficial. The reality, however, is that the subsidies for technology and infrastructure are miniscule compared to the massive amounts of input subsidies. The larger question is how to bring about a transformation in the overall subsidy regime, especially, given the deeply entrenched lobbies for various input subsidies? A discussion that lays down a roadmap for such a transformation in the subsidy regime would be useful.

Most of the studies have argued for removal of subsidies for agricultural inputs. Even the paper on SHGs makes a similar recommendation. This conclusion, while appearing logical within the context of the papers, is a bit of leaping into the unknown. While the negative effects of subsidies are increasingly self-evident, the potential costs and benefits of reducing subsidies are largely unknown. In the short-run, removal of input subsidies could translate into higher agricultural prices, which could hurt food security and also trigger a general inflation in the economy via the wage-goods channel. On the other hand, there are hardly any estimates on the potential long-run benefits of removal of these subsidies. These fallouts of subsidy removal need further research.