Negative Subsidies in Agriculture

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There are primarily two ways to measure the level of support a country provides to agriculture: the Aggregate Measure of Support (AMS) and the Producer Support Estimate (PSE). The idea behind both measures of subsidies is similar. One must compute a price gap reflecting the difference between international and domestic prices and then multiply the price gap by the quantity of production of the commodity. This resulting quantity, called the market price support, reflects the total level of "implicit" subsidies that governments give to farmers through trade restrictions, government procurement programmes and restrictions on output. If we add the amount of explicit subsidies, such as cash payments and input subsidies, to this quantity, we arrive at a measure of overall subsidies to agriculture. The difference between the two methods involves how international and domestic prices are measured.

If there were a free market in agriculture, theoretically, prices around the world would differ only by an amount equal to the cost of shipping produce from one country to another. Instead, prices of agricultural goods vary greatly from one country to another because of government intervention in agriculture. Examining the AMS or PSE tells us to what degree agricultural policies help or harm agriculture for a given country. We will show that despite the fact that India subsidises agriculture, the level of subsidies in the past was not sufficient to outweigh all the costs borne by agriculture due to restrictions on export, transport and sale.

The table below compares the two different methods of calculating support to Indian agriculture.

AMS	**PSE**
Compares administered prices to 1986-88 world prices	Compares current domestic prices to current world prices
Uses annual international prices	Uses international price of a commodity when that commodity is in season
Assumes all production of a given commodity is sold at administered price	Assumes that the influence of the administered price will be reflected in the final market price

The AMS is the more common method and is preferred by the WTO. However, it is apparent that there are several problems with using the AMS as an accurate measure of support. Prices for the years 1986-88 are used in AMS computations because the prices prevailing at this time were supposedly free-market prices[1]. However, as economic conditions change over time, it makes less and less sense to use such outdated prices in calculating support. Also, as agricultural prices were unusually low during this period, AMS may tend to overstate the level of support. As international prices change from year to year, it makes the most sense to use a changing value for international prices which is what PSE does.

Therefore, we will use the Producer Support Estimate (PSE) rather than AMS in this paper to determine the net level of subsidies to Indian agriculture.

A negative AMS or PSE implies that instead of farmers receiving some positive amount of money from the government or from consumers through government policy (such as price support) farmers actually earn less than if they could freely market their produce in the global economy. Clearly import restrictions play at least some role in these "negative

[1] Joshi (2001)

subsidies" as tariffs or other trade restrictions would tend to lower the price of Indian produce below what the international price is. Sharad Joshi suggests that another reason why India has negative subsidies is that even though India provides input subsidies (for example, sells fertiliser at subsidised prices) the prices that Indian farmers pay for these inputs is much higher than what farmers in other countries must pay.

Previous AMS and PSE estimates

Sharad Joshi's AMS calculations, using price data provided by the Ministry of Commerce, show that Indian farmers have not received any net subsidies for 1986-89 and 1995-97:
(-) 47.26% in 1986-89 1990 estimate (Table 1)
(-) 71.82% in 1986-89 1993-revised estimate (Table 2)
(-) 80.86% in 1995-96
(-) 86.53% in 1996-97
Note: Numbers reflect the level of negative subsidies divided by the total value of agricultural production

Ashok Gulati and Sudha Narayanan have also made independent estimates of AMS for Indian agriculture which are given below:

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000
AMS %	-49.99	-39.77	-45.39	-31.77	-34.43	-33.19	-26.32	-33.76	-25.62

Source: Gulati and Narayanan (2003)

Gulati has also calculated the PSE for India between the years 1986 and 2000 and these estimates also support the conclusion that India has been giving negative subsidies to agriculture. PSE tends to vary much more over time than AMS because it uses varying prices as opposed to fixed and administered prices. Therefore, the range in these estimates goes from –5.93 percent in 1987 to –101.85 percent in 1997. Decreasing world food prices dramatically cut the computed level of negative subsidies in the late 90s until 2000 when the value of PSE was –26.55 percent.

This is not, however, the whole story. When we compute the PSE we must use the current international price of any given commodity. When we look at international prices, there are two different prices we could potentially use: free on board (f.o.b.) or cost, insurance and freight (c.i.f.) prices. The difference between these two prices represents the cost of transporting goods from one country to another. Therefore, if we assume that an importer pays the full cost of transportation, the international price we should use should be the f.o.b. price for goods a country exports and c.i.f. prices for goods a country imports.

The estimates given above for PSE assume that all of the commodities included in the computation are importable goods. Therefore, the higher c.i.f. prices are used which might tend to exaggerate the level of negative subsidies. If we relax this assumption and assume that all of the goods are exportable goods instead, we find that the PSE turns positive in 2000. According to Gulati, this is because world prices of grains have fallen while domestic prices of wheat and rice have increased.

PSE calculations for 2000 and 2001

We computed our own estimates for PSE from 2000 through 2002. For the years 2000 and 2001 we used domestic price data from FAOSTAT for wheat, rice, maize and soyabean seeds. Domestic price data for sugar is from Directorate of Sugar (2004). Our international price data comes from Patnaik (2003). When we compare domestic and international prices

for these commodities, we find there is little difference between the two and that domestic prices are, in most cases, higher than international prices.

	2000					
	International ($/ton)	Domestic (Rs/metric ton)	Domestic ($/ton)	Gap ($)	Production (metric tonnes)	PSE ($)
Wheat	114.6667	6,649	134.3232	19.6565	76,368,896	1,364,677,458
Maize	92.5	4,981	100.6263	8.1263	12,043,200	88,969,687
Rice	239	8,450	170.707071	-68.2929	127,464,896	-7,913,591,936
Soyabean seed	199	10,504	212	13	5,275,800	62,350,364
Sugar	204	14,800	299	95	299,230,016	25,839,844,541

	2001					
	International ($/ton)	Domestic (Rs/metric ton)	Domestic ($/ton)	Gap ($)	Production (metric tonnes)	PSE ($)
Wheat	119	6,930	140	21	69,680,896	1,330,271,651
Maize	86	5,590	112.9293	26.9293	13,160,200	322,177,249
Rice	235	7,470	150.909091	-84.0909	140,008,192	-10,703,105,587
Soyabean seed	178	11,399	230	52	5,962,700	281,873,091
Sugar	184	14,600	295	111	295,956,000	29,851,062,479

Except for rice and sugar, there is no appreciable difference between domestic and international prices. The domestic price of rice is, in contrast to the other four commodities covered in the tables above, much lower than the international price. However, if we sum up all of the individual PSE values, we arrive at a net positive figure.

Conclusion

Our PSE calculations suggest that the level of support to Indian agriculture may have become positive in 2000. This would be a continuation of the upward trend in market price support over the past several years due to falling international prices and rising Indian prices.

However, this begs the question as to what caused international and domestic prices to converge over the years prior to 2000. One possible explanation is that the relaxation of regulations on exports of food grains has brought domestic prices more in line with international prices. India experimented with loosening export restrictions in the mid-1990s as a way to dispose off surplus wheat and rice held by the Food Corporation of India (Gulati 1999). Export regulations were again introduced in 1996. Then in the official year 2001-02, India introduced a new Export-Import Policy focused on increasing agricultural exports (India's export-import policy).

Exports of wheat and rice have also risen since 2000, supporting the notion that liberalisation and increased exports have benefited India's agricultural sector and reversed India's net taxation of agriculture (Indian Wheat & Rice Exports 2002). When India first pursued a policy of economic liberalisation, it excluded the agricultural sector while

liberalising many other sectors. More recently, however, Indian agricultural markets have opened up leading to a convergence of international and domestic prices which has benefited Indian farmers.

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