

ISSUE **Government Subsidies in India: Issues
and Approach***

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Introduction

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GOVERNMENT SUBSIDIES IN INDIA

ISSUES AND APPROACH

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I. Introduction

Subsidies and taxes are two key policy instruments that governments use to modify market outcomes. Taxes draw, while subsidies inject money into the expenditure stream. Subsidies as well as commodity taxes affect relative prices. Given other things, the relative price of the taxed good increases, and that of the subsidised good falls. Subsidies promote growth by increasing the level of critical inputs like health, education, and infrastructure. Subsidies can also hinder growth by drawing away resources like water and power from more productive uses, and by causing allocation distortions. Fiscal reforms in India, initiated in the early nineties, focused first on taxation issues. The reform of the subsidy regime was brought on agenda by a Discussion Paper (DP) which the government brought out in 1997. The DP not only presented estimates of subsidies emanating from the central and state budgets but also spelt out a course for reforms. Although extensive discussion did take place following the DP, effective reform actions have been few and far between.

This paper looks at the critical issues concerning budget subsidies in India. These issues are grouped into four sections, viz., rationale of subsidies, measurement issues, volume of subsidies, and quality of subsidies. An approach to subsidy reforms is subsequently developed in a separate section, followed by a concluding section.

II. Rationale of Subsidies

Issue 1: Are government subsidies in India being provided for the right reasons?

The central and state governments provide a wide range of goods and services. Some of these are in the nature of public goods like defence and law and order. Others are mainly private in nature, where the users are identifiable and the extent of use is measurable in most cases. Subsidies are justified if there are positive externalities in the public provision of non-public goods. With externalities, the benefit to the society is

more than the sum of individual benefits, and welfare is improved by inducing a higher level of demand through subsidies which lower the relative prices.

Two other sets of arguments often used for justifying subsidies pertain to distributional objectives and the infant industry argument. It is to serve a distributional objective that food subsidies are advocated for below poverty line (BPL) population. Incomes of poor farmers are also sought to be protected by offering minimum support prices for their outputs and subsidising inputs like fertilisers, irrigation water, power, and seeds. Subsidising kerosene or LPG helps poor households. In practice, however, in all these cases, subsidies have historically been extended to all households or farmers, rich and poor alike, and a distributional objective has rarely been served. Further, subsidies may not always be the best means of serving the distributional objectives.

The infant industry argument has been given to subsidise exports, or small scale industries, or other industries or sectors. The validity of this argument is doubtful from an efficiency viewpoint; at any rate, these subsidies could only be valid for temporary periods.

There is also much of self-serving subsidisation: subsidised travel for railway employees or public sector road transport employees; subsidised loans for government and bank employees; subsidised housing for government or public sector employees. For these, there is no valid reason. Subsidies implicit in Member of Parliament Local Area Development Schemes (MPLADS), and Member of Legislature Local Area Development Schemes (MLALADS) are also without any explicit justification. No services are identifiable in these cases, no cost-recoveries visible, and no case can be made out about externalities.

Conclusions: Variants of infant industry arguments for justifying subsidies cannot be held valid except for temporary periods; subsidies may not serve distributional objectives if extended to all sections of people; and self-serving subsidies for government or public sector employees are without any valid reason.

Issue 2: Are many wrong goods/services being subsidised?

In the extensive array of goods/services, under the categories of social and economic services, currently being subsidised, some deserve subsidisation, and others do not. The group of services where, for example, subsidisation may be justified are:

soil and water conservation, environmental forestry and wildlife, preventive health services, education, research and development, flood control and drainage, roads and bridges, and ecology. These are budget heads where there are *a priori* grounds to believe that there are positive externalities.

Many subsidies are being given for goods and services where there are no significant externalities. Thus, subsidies for manures and fertilisers, subsidies for specific crops like oilseeds and pulses, subsidisation of milk and fish, cannot be justified on grounds of externalities. There is no case for subsidising a vast array of industrial goods and services like power, irrigation, transport, chemicals, fertilisers, and transport. Subsidising iron and steel, cement, sericulture, chemicals and pesticides, textiles, paper and news print, and atomic fuels also cannot be justified on grounds of externalities. Posts and railways also are a matter of private consumption without any significant associated externalities.

In the DP (1997) and Srivastava and Sen, *et. al.* (1997), an attempt was made to divide publicly provided goods/services that do not fall into the category of public goods, into merit and non-merit goods, one deserving subsidisation, the other deserving either no subsidisation or limited subsidisation. The major heads/sub-major heads appearing on the two sides are listed below.

Merit Goods and Services	Non-Merit Goods and Services
Elementary education	Education, sports, arts and culture (other than elementary education)
Public health	Medical and family welfare
Sewerage and sanitation	Water supply and sanitation
Welfare of SC, ST and OBCs	Housing
Labour	Urban development
Social welfare	Social security and welfare
Nutrition	Other social services
Soil and water conservation	Agricultural and allied activities
Environmental forestry and wildlife	Cooperation
Agricultural research and education	Rural development
Flood control and drainage	Special area programme
Roads and bridges	Irrigation
Space research	Power
Oceanographic research	Industries
Other scientific research	Transport
Ecology and environment	Civil supplies
Meteorology	Other economic services

In the discussion that followed the publication of DP, several people argued that higher education should be placed on the merit side. Any binary classification leads to the possibility of exclusion error (i.e., items that should be listed on the merit side are excluded), and inclusion error (items that should not be included on the merit side are included). In the discussions that took place in the meetings of the Parliamentary Consultative Committee attached to the Ministry of Finance, a decision was taken to prepare a classification going further down to sub-major or minor heads where necessary. Such a list was prepared [see, Srivastava and Amar Nath, 2001 and Appendix 1]. In this study, the merit category was sub-divided into merit I and merit II categories, with the former having relatively larger externalities. Higher education was shifted from non-merit to merit II category. Detailed examination upto minor heads permitted a finer classification schemes. Barring some items, where there may be a classification related doubt, it is clear that there is a long list of items where large subsidies are not justified on grounds of externalities. The quantitative importance of any remaining exclusion and inclusion errors is likely to be very small.

Conclusion: There is a long list of goods/services where continued subsidisation is not warranted.

Issue 3: Can subsidies do harm?

One cannot remain indifferent to the provision of subsidies because apart from being costly, these can also do harm in many ways. The most important is their potential to damage environment. Over subsidisation of irrigation leads to careless use of water resulting in long term damage to the fertility of soil. Excessive and wrong subsidisation of different types of fertilisers leads to disproportionate use of one kind of fertiliser *vis-à-vis*, others leading to long-term damage of soil quality. Some estimates (see Pandey and Srivastava, 2001) indicate that the volume of environment promoting subsidies is small, and its impact is limited. On the other hand, the volume of the environmentally detrimental subsidies is large. Environmentally perverse subsidies have caused widespread international concern. For example, Myers and Kent (1998) estimate that perverse subsidies in the world may amount to as much as \$1.5 trillion, an amount larger than the economies of all but five countries in the world (using purchasing power parity for the GNPs of China and India). Their study indicates that perverse subsidies have the capacity to (i) exert a highly distortive impact on the economy, and (ii) inflict grand scale injuries on environment. They observe that many environmentally negative externalities including global warming are either underestimated or omitted in decision-making processes due to sheer lack of documentation of the economic costs entailed. Many

subsidies may have a beneficial impact initially but later become detrimental. For example, subsidy promoted resource exploitation has often degenerated into over-logging of forests, over-grazing of grasslands, depletion of watersheds, decline of biodiversity, and pollution of water and air, sometimes with toxic wastes. Yet many of the original subsidies promoting over exploitation are not discontinued, even though they may now be harmful to both the environment and the economy, at large.

More generally, subsidies may be harmful as they lead to allocation distortions. Excess subsidisation of power or water for agriculture makes it extremely costly for industry and commerce. Subsidies also do harm by hiding inefficiencies such as in the power or fertiliser sectors. In India, State Electricity Boards and Road Transport Corporations are subsidised by the governments, fertiliser and petroleum industries are ensured fixed returns on a retention price formulae financed by subsidies. Many of these organisations have become inefficient entities producing low quality goods/services at high cost, as efficiency promoting signals have been blocked by the subsidies.

One example of subsidy induced allocation distortion is the over use of nitrogenous fertilisers which is damaging the long term productivity of soil. At the national level, for food crops, the ratio of 4:2:1 has been suggested as ideal for nitrogen, phosphates, and potash (NPK). The optimum ratios differ for non-food crops and depend on the status of soil nutrients. In reality, induced by heavy relative subsidisation of nitrogenous fertilisers, the ratio tilted far away from the suggested ideal. In the mid-nineties the use of nitrogenous and phosphatic fertilisers had become much out of line with the optimal NPK ratio, becoming 10:2.9:1 (see Annexes A1 and A2).

Growth prospects are adversely affected from a majority of subsidies, if there is excess subsidisation and the relative prices are disturbed, leading to wastage of scarce inputs by subsidised users, while making these extremely costly for non-subsidised users. This is the prevalent situation for irrigation subsidisation and subsidisation of power for rural and non-commercial uses. Subsidies also harm growth prospects, when larger amounts of borrowing are required to finance subsidies. High fiscal deficits put pressure on the interest rates, adversely affecting investment growth. In the Indian situation, both central and state governments have cut on their capital expenditures in recent years while continuing to maintain large subsidy regimes, thereby undermining the growth performance of the economy.

Conclusion: Subsidies can be detrimental to environment, efficiency, and growth. Excessive subsidisation harms growth prospects in both micro and macro terms, by affecting relative prices as well as by exerting pressure on interest rates.

III. Estimating Subsidies: Measurement Issues

Issue 4: Why explicit subsidies and national account estimates are inadequate in measuring the total volume of budget subsidies?

In India, government subsidies have been looked at in three distinct ways. First, there are the explicit subsidies stated as subsidies in the budget; second, there is a national accounting approach; and third, subsidies are estimated as unrecovered costs of public provision of non-public goods.

In the national income accounts, indirect taxes are deducted and subsidies are added to derive gross domestic product (GDP) at factor cost from the GDP at market prices. Indirect taxes do not create incomes for factors of production; on the other hand, subsidies received by the firms become part of the income of the factors of production. The Central Statistical Organisation (CSO), in its national income accounting approach, takes subsidies as covering grants on current account which private industries, public corporations and government enterprises receive from the government. These may take the form of direct payments to producers or differentials between the buying and selling prices of government trading organisations. The grants may be based on the amount of value of commodities produced, exported or consumed, the labour and capital employed in production or the manner in which production is organised and carried on. Under certain circumstances subsidies include the grants made by government to public corporations in the form of **compensation for operating losses**, especially if the loss is clearly the consequence of the policy of the government to maintain prices at a level at which the proceeds of public industry will not cover the current cost of production.

Neither the explicit subsidies nor the NIA estimates cover budget subsidies fully, although the latter is larger since it includes estimates over and above the explicit budget subsidies. The problem is that there are many hidden subsidies which are implicit because public provision of goods and services is priced below cost. Since the costs are incurred by the taxpayers, and the benefit of use is private, unrecovered costs amount to subsidisation of individual consumers of the publicly provided private goods and services.

Conclusion: There are hidden subsidies not captured by explicit subsidies and National Account estimates of subsidies.

Issue 5: What are the problems in estimating hidden subsidies?

Subsidies need to be measured as unrecovered costs of governmental provision of goods and services other than public goods. In particular, the goods and services under reference are those that are categorised as social services and economic services. The unrecovered costs are measured as the excess of aggregate costs over receipts from the concerned budgetary head.

The aggregate costs comprise three elements: (i) current costs (RX); (ii) annualised capital cost (opportunity cost of funds used for capital assets and imputed depreciation costs; and (iii) opportunity cost of funds invested in the form of equity or loan for the service (including those given to the PSE's).

In terms of symbols, these costs are:

$$C = RX + (i + d^*) K_0 + iZ_0$$

where RX = revenue expenditure; i = effective interest rate; d^* = depreciation rate; K_0 = aggregate capital expenditure at the beginning of the period; and Z_0 = sum of loans and equity investment at the beginning of the period.

Receipts are:

$$R = RR + (I + D)$$

where RR = revenue receipts; I = interest receipts; and D = dividends.

Subsidy may be defined as: $S = C - R$

It may be noted that in calculating current (revenue) expenditures, transfers to funds are deducted as these do not result in actual expenditure; and transfer from funds are added, as these add to actual expenditure on a service head. Transfers to individuals are separated out as these are not specific to any service and amount to income augmentation. All intergovernmental transfers are not taken into account. Expenditure on secretariat services are also not taken into account as being part of administration, i.e. in the nature of public goods.

The depreciation rate is to be calculated with reference to the stock of capital at the beginning of the year. This stock of capital is the sum of nominal investments in previous years. Since these are additions of nominal figures, all at heterogeneous prices (prevailing in different years), the calculation of depreciation rate has to take this into account. The depreciation rate has been derived as dependent on a number of parameters like the average life of assets, the inflation rate, the effective rate of interest on government borrowing, and the rate of growth of government investment (*see*, Srivastava and H. K. Amar Nath for a discussion).

Some additional problems in measurement are:

- i. not all assets have the same life; some depreciate faster;
- ii. land as an asset may actually appreciate;
- iii. an additional term on accumulated equity investment may be added to reflect appreciation of value of equity. Since most PSE's which get counted on the subsidy side are loss making enterprises, there can be little appreciation of equity; and
- iv. a part of capital expenditure in the immediate previous years may not be included if the concerned asset has not started yielding service.

Conclusion: Budget subsidies may be more comprehensively measured as unrecovered costs in the public provision of non-public goods and services.

IV. Volume and Extent of Subsidisation

Issue 6: Are subsidies too large relative to resources?

Table 1 provides four comprehensive estimates to subsidies pertaining to 1987-88, 1992-93, 1994-95, and 1998-99 covering central as well as state budgets. The basic approach in these studies are similar, although there are various methodological differences and their results are not strictly comparable. In each case, the estimated subsidies have been shown as percentage to the GDP, and to the combined revenue receipts of the central and state governments, and aggregate fiscal deficit. The GDP at market prices is from CSO, National Accounts Statistics, July 2000, which gives [in statement S1.1] 1993-94 base GDP at current market prices. These GDP numbers are different from those used in the respective studies originally. As such, the size of subsidies relative to the GDP indicated here is different from the corresponding numbers

given in the respective studies. It is shown that the volume of subsidies was 13.55 percent of GDP in 1994-95, and had possibly increased from just below 12 percent in 1987-88, although, as noted, the results are not strictly comparable, because of methodological differences. In 1994-95, subsidies were nearly twice the size of the combined fiscal deficit of the centre and states. In the earlier years also, these were significantly more than the fiscal deficit of the centre and states. In 1998-99, there is small decline in the ratio of subsidies to GSDP. It is clear that one cannot maintain a large subsidy programme based on borrowing because subsidies are currently consumed with very little asset creation, and the borrowing has to be serviced by future tax payers who are not inheriting corresponding assets. Table 1 shows that as percentage of revenue receipts, subsidies have continued to rise in successive years covered in these studies.

Table 1: Comprehensive Estimates of All India Budget Subsidies: Estimates for Selected Years

Study	Year	Estimated Subsidies	GDP at Market Prices	Combined Revenue Receipts	Combined Fiscal Deficit	Subsidy as % of		
						GDP	Revenue Receipts	Fiscal Deficit
M-R (1992)	1987-88	42324	355417	66838	32182	11.91	63.32	131.51
Tiwari (1996)	1992-93	95373	747387	135422	50726	12.76	70.43	188.02
NIPFP (1997)	1994-95	136843	1009906	178012	70062	13.55	76.87	195.32
NIPFP (2001)*	1998-99	235752	1758276	274769	155760	13.41	85.80	151.36

Source: Mundle and Rao (1992); Tiwari, A.C. (1996); Srivastava and Sen, *et. al.* (1997); *Indian Public Finance Statistics* (various issues); *National Accounts Statistics (2000)*; and Press Note on Quick Estimates, CSO, Jan. 30, 2001.

* Provisional estimates from an ongoing study (Srivastava, C. Bhujanga Rao, *et. al.* 2001).

Table 2 gives estimates of central budgetary subsidies for six selected years. The methodology for the two latter years 1995-96 and 1996-97, differs marginally from the one used for the 1994-95 estimates, but similar to that for 1998-99. The level of subsidy appears to have gone down in 1995-96 and 1996-97 relative to the earlier years, although the results are not strictly comparable. Still in 1996-97, 3.5 percent of the GDP and nearly 38 percent of the central revenue receipts were accounted for by the budget subsidies of the centre. Central subsidies have used up more than roughly 70 percent of the fiscal deficit in the nineties. It is thus clear that subsidies are too large in the case of centre as well as the states. Estimates for 1998-99, however, indicate an increase in the central budgetary subsidies relative to the GDP.

Table 2: Comprehensive Estimates of Central Government Subsidies: A Comparison*(Rs. crore)*

Year	Subsidies	Revenue Receipts	Fiscal Deficit	GDP	Subsidies as % of		
					Revenue Receipts	GDP	Fiscal Deficit
1987-88 (M-R)	16065	37037	27044	355417	43.38	4.52	59.40
1992-93 (Tiwari)	36829	74128	47103	747387	49.68	4.93	91.68
1994-95 (NIPFP)	43089	91083	57703	1009906	47.31	4.27	74.67
1995-96 (NIPFP)	42941	110130	60243	1181961	38.99	3.63	71.28
1996-97 (NIPFP)	47781	126279	66732	1361952	37.84	3.51	71.60
1998-99* (NIPFP)	79828	149485	113349	1728276	53.40	4.54	70.43

Source: As in Table 1; Srivastava and H.K. Amar Nath (2001); GoI (1995); and GoI (2000).

* Provisional estimates from an ongoing study (Srivastava, C. Bhujanga Rao, *et. al.* 2001).

Conclusion: Government subsidies are large relative to resources and depend heavily on borrowing.

Issue 7: Are many subsidies hidden?

Subsidies explicitly mentioned in the budgets are few and far between although the central budgets do a little better in this respect than the state budgets which hardly ever mention subsidies explicitly. A few states like Maharashtra, however, have taken the initiative of bringing out a separate document detailing the implicit subsidies in their budgets. Uttar Pradesh has also carried out an exercise recently to work out implicit subsidies in their budget expenditures.

The share of explicit subsidies in the total central subsidies appears to be in the range of 30 to 37 percent (Table 3). Over time, the share of hidden subsidies appears to have gone up. However, even if the results are not comparable over time, the range of 63 to 70 percent of hidden subsidies appears to be high. In the case of states, hidden subsidies are even higher. This is because only a few subsidies are mentioned explicitly in the state budgets. The Report of the Eleventh Finance Commission has provided an estimate of identified subsidies in the state budgets amounting to Rs. 8969 crore for 1998-99 and a growth rate of 20.64 percent estimated over 1987-88 to 1998-99 although individual year figures are not given. Working backwards the figures of identified subsidies may be estimated for the earlier relevant years. In Table 3, hidden subsidies in the state budgets are indicated to be about 95 percent.

Table 3: Ratio of Identified Explicit Subsidies in Total Subsidies: Centre and States

Study	Year	Total	Explicit	(Rs. crore)
				Explicit as % of Total
<i>Central Subsidies</i>				
M-R (1992)	1987-88	16065	5980	37.22
Tiwari (1996)	1992-93	36829	11995	32.57
NIPFP (1997)	1994-95	43089	12932	30.01
<i>State Subsidies</i>				
M-R (1992)	1987-88	26259	1139	4.34
Tiwari (1996)	1992-93	58544	2909	4.97
NIPFP (1997)	1994-95	93754	4234	4.52

Source: As in Table 1 and Report of the Eleventh Finance Commission.

Conclusion: The share of hidden subsidies is in the range of 63 to 70 percent in the central budget. For the states, considered together, hidden subsidies are about 95 percent of total subsidies.

Issue 8: Are there other subsidies beyond what is included in the budget-based estimates?

There are many subsidies that are off the budget. A significant example of *off budget subsidies* is on the oil pool account. This account is maintained in the public account and administered by the oil coordination committee (OCC) with the objective of providing stable prices to the consumers and reasonable retention margins for the oil companies. If prices are periodically revised in a systematic manner, reflecting changes in the international prices, the oil pool accounts would be self balancing in the long run. However, the administered price regime has been used to subsidise selected petroleum products, particularly, kerosene, LPG, and diesel (see Annex A3). These subsidies are partly financed by cross subsidisation from other petroleum products like motor spirit (petrol), and aviation turbine fuel (ATF). The remaining subsidies are absorbed by the oil pool accounts which accumulate deficits. In 1996-97, these subsidies amounted to Rs. 18,440 crore, and in 1999-00, to Rs. 17,853 crore, i.e. just a little less than 1 percent of the GDP.

Subsidies are also implicit in government extending guarantees to public sector enterprises for raising loans without guarantee fees; and not recovering guarantee fees, even when these are levied.

Transfers, which are straight income supplements are not included in some of the budget-based estimates referred to estimates above. Although transfers are in some

respects different from subsidies, these are given to serve similar purposes. If these are included, the estimates would be higher. An unconditional transfer to an individual would augment his income and would be distributed over the entire range of his expenditures. A subsidy, however, refers to a specific good, the relative price of which has been lowered because of the subsidy with a view to changing the consumption/allocation decisions in favour of the subsidised good. In this sense, transfers and subsidies can be considered respective obverses of direct and indirect taxes.

Some people have also argued that tax expenditures should be taken as subsidies. Tax expenditures arise out of various exemptions and incentives in the tax structures. This amounts to subsidising the recipients of these tax benefits. The whole process can be viewed as if the concerned beneficiaries paid the taxes to the government at the normal rates and the government subsequently spent these back on them. In practice, however, the related amounts are not known. Had the benefits been given through explicit subsidies, these could have been debated in the legislatures. These implicit subsidies are also not included in the subsidy estimates.

Sometimes environment subsidies have been defined as consisting of "the value of uncompensated environmental damage from any flow of goods and services" (e.g., Stephan Barg, 1996). Thus, harvesting of forest without reforestation involves an unpaid cost and amounts to subsidisation of these harvesters by the society. Similarly, pollution of environment by industrialists or motorists amounts to uncompensated damage to society, and may be considered as subsidisation of polluters by the society. These subsidies are also outside the estimates of the budget-based subsidies given earlier.

As such, even the comprehensive estimates are in fact under estimates.

Conclusion: Transfers, off budget subsidies, government guarantees, uncompensated damage to environment, and tax expenditures are examples of subsidies not included in the comprehensive estimates. Even while being large, these estimates should be taken only as underestimates.

Issue 9: Have subsidies risen relative to the GDP in recent times, especially since the publication of the DP?

After the publication of the DP in 1997, it was expected that the subsidy regimes would be reformed at the level of the centre and states. A first step to this reform would be a lowering of the volume of subsidies. While necessary evidence is still being

gathered, there are *a priori* reasons to believe that subsidies might actually have gone up since then.

Since central explicit subsidies are the most visible, we examine these first. Table 4 gives growth rates of the major central explicit subsidies for selected periods. The main explicit subsidies relate to food, fertiliser, export, and interest. Looking at the decadal trend growth rates, a fall is visible in most cases in the nineties as compared to the earlier decades. Looking within the nineties, however, the growth rates increased in the case of fertilisers, export, railways, and interest subsidies in the latter half.

Table 4: Explicit Subsidies of the Centre: Period-wise Trend Growth Rates

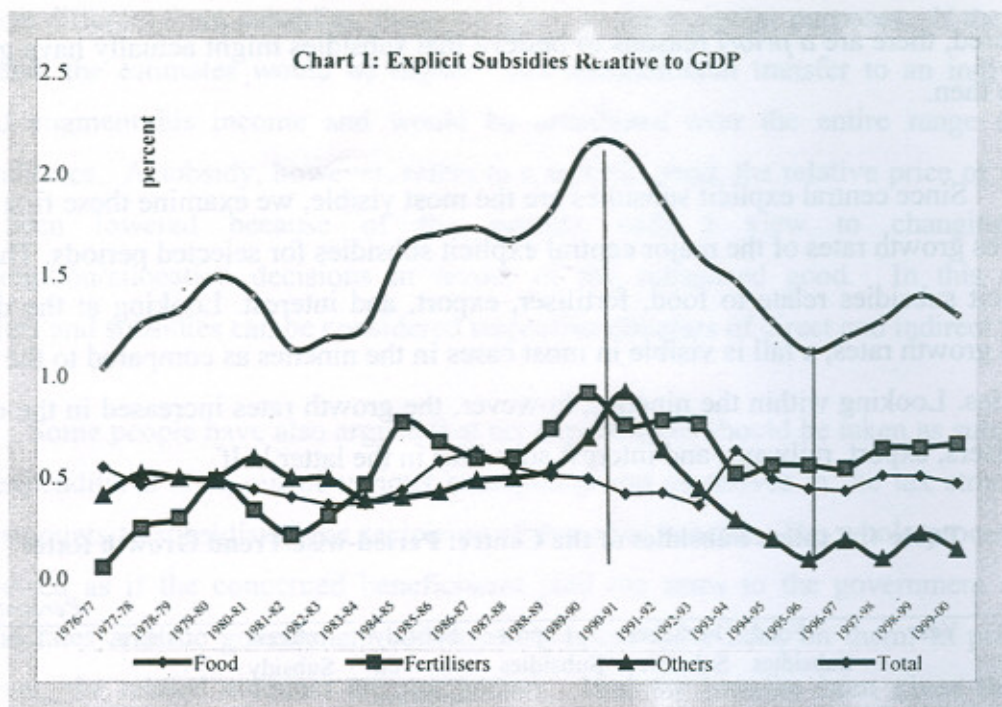
Year	Food Subsidies	Fertiliser Subsidies	Export Subsidies	Subsidy on		Interest Subsidy	Others	Total
				Railways				
1971-80	32.26		33.38			39.98	31.33	38.50
1980-90	18.67	29.66	17.98	14.45		17.46	9.72	21.06
1990-00	16.91	12.85	-15.77	9.50		17.62	-3.31	9.45
1991-95	23.74	4.28	-31.80	11.27		-34.57	-15.17	-15.17
1995-00	10.78	15.31	13.78	14.79		30.72	-4.66	12.95

Source (Basic Data): *Indian Public Finance Statistics; Budget Documents and Economic Survey:2000-01.*

In Annex A4 and Chart 1, a longer term view of the explicit central subsidies as percentage to GDP is taken. Aggregate explicit central budgetary subsidies peaked in 1989-90 (Chart 1), fell upto 1995-96, and rose again upto 1998-99.

Preliminary estimates of central budget subsidies for 1998-99, considering explicit and implicit estimates together, indicate a sharp rise as compared to the 1996-97 estimates. There are also *a priori* reasons to believe that state budgetary subsidies have also increased since the 1994-95 because of revision of salary payments 1996-97 onwards without any increase in user charges.

Conclusion: There are reasons to believe that subsidies actually increased in the latter part of the nineties, in spite of the findings of DP and recommendations contained therein.



Issue 10: Are services oversubsidised? What is the extent of oversubsidisation?

It is not enough to identify services that deserve subsidisation. The appropriate degree of subsidisation also needs to be determined. Since the main justification of subsidies comes from the existence of externalities, information regarding social and private demand functions, cost functions, and the weights a society may attach to distributional objectives is required for determining the appropriate degree of subsidisation.

Brent (1995), using Indian data, provides a pricing rule as given below:

$$P^* = wC' + P(1 - \alpha)$$

where, P^* is the desirable price, P is the actual user charge, C' is marginal cost, and α is a composite parameter dependent on price elasticity of demand, and w indicates distributional weights [see, Appendix 2 for an extended discussion]. In the numerical illustrations worked out by Brent, certain benchmark values for the parameters have been used. While an approach like this is useful, the following features are notable:

- i. In the absence of measured elasticities, certain benchmark values based on broad judgement become necessary – for demand elasticities, as also the distributional weights;

- ii. In the absence of quantity units, service-wise per capita expenditures need to be used as units of measurement; and
- iii. The optimal price depends on the actual user charges.

Given these features, it might be practicable to use this approach for deriving pricing rules/norms for broad groups of services only.

Conclusion: Given the difficulties in estimating demand elasticities and cost functions for a wide range of publicly provided services, a broad-based approach needs to be followed for indicating the appropriate degree of subsidisation.

V. Quality of Subsidies

Issue 11: Are many subsidies input-based?

Many subsidies are administered through inputs. Important examples are power, diesel, transport, fertilisers, and irrigation water. Table 5 indicates that out of some major items that serve mainly as inputs, nearly 49 percent of central non-merit economic subsidies, and about 66 percent of state non-merit economic subsidies are input-based. These numbers should be taken only as rough indicators.

Table 5: Important Input Based Subsidies: 1994-95

Services	Centre	As % of Economic (Non-Merit) Subsidies	States	As % of Economic (Non-Merit) Subsidies	<i>(Rs. crore)</i>	
					All India	As % of Economic (Non-Merit) Subsidies
Irrigation	132.72	0.39	14213.04	36.60	14345.76	19.80
Power	3928.94	11.68	8034.84	20.69	11963.78	16.51
Industries	10877.95	32.35	2593.99	6.68	13471.94	18.59
Transport	1485.40	4.42	833.93	2.15	2319.33	3.20
Total	16425.01	48.84	25675.80	66.11	42100.81	58.10
Total Non-Merit						
Eco. Serv. Subsidies	33627.59	100.00	38837.37	100.00	72464.96	100.00

Source: As in Table 1.

It may be noted that input subsidies included here are only broad categories, and some of the subsidies within these may be administered to final goods. On the other hand, some other input subsidies are not included here.

Conclusion: A significant proportion of budget subsidies in economic services are input-based.

Issue 12: Are subsidies badly targeted?

Since many subsidies are input based, the incidence of the subsidy cannot be controlled. Even in those cases like the food subsidy where subsidies are administered with respect to the final good, the targeting is very poor. This has been brought out in several studies undertaken from time to time. For example, in Shikha Jha (1994), in respect of targeting through the PDS, a distinction was made between the proportion of poor beneficiaries in all beneficiaries and the proportion of poor beneficiaries using the PDS among all the poor. These ratios were referred to as targeting ratios TR1 and TR2. The first ratio indicates the extent to which the poor are covered by the PDS. The obverse of this ratio (100-TR1) indicates inclusion error, i.e. coverage of non-poor who ought to be excluded but are included. The obverse of the second ratio (100-TR2) indicates exclusion error from the PDS, i.e. percentage of people who ought to be covered but in effect remain excluded from the PDS. Jha found that the exclusion error for different commodities in the PDS ranged between 30 and 90 percent and was higher than the inclusion error which ranged between 30 and 60 percent. Targeting is bad also because of a clear urban bias in the PDS and because of the remoteness of many backward areas. Further, it is not only the number of poor covered by the PDS but also the lower magnitude of the benefit derived by the poor which indicates inadequate targeting. Jha had observed: "per capita subsidy to the poorest consumers is much below the average. The aggregate subsidy is only about Rs. 2.50 per capita per month—a meagre five percent of the mean expenditure of a person in the poorest decile".

In recent years, some attempts were made to improve the targeting of PDS by introducing a revamped public distribution scheme (RPDS). Some states have also made a distinction between the consumers above and below the poverty line (APL/BPL) by using coloured cards. The central government has introduced a differentiation between the extent of subsidy for APL and BPL beneficiaries. However, most of the APL quota is not lifted and it is the BPL quota which may be getting distributed among the poor and non poor alike owing to lack of effective identification and implementation. The Expenditure Reforms Commission citing a major independent survey in its recent report (July, 2000) observed, that "in rural India, 17 percent do not own ration cards" and that "18 percent of the below poverty households do not hold ration cards". Lack of adequate targeting is also reflected in the case of fertiliser subsidies. Several studies [e.g. Gulati

(1990), Mazumdar (1993)] have indicated that nearly half of the fertiliser subsidy is appropriated by the industry. Of the remaining half, the benefits are available to both rich and poor farmers, but with their greater purchasing power larger benefits are appropriated by the richer farmers. The benefit of the fertiliser subsidy is available to both poor and rich farmers.

The bigger problem, however, is the targeting of the implicit subsidies. Here, no targeting can be done by definition. The benefits of these subsidies are distributed according to the pattern of consumption of subsidised goods (inputs/outputs). Since this pattern reflects the pattern of income distribution, the effect is likely to be highly regressive.

Conclusion: Most explicit as well as implicit subsidies are badly targeted.

Issue 13: Are subsidies regressive?

Some evidence is provided in Srivastava and Sen, *et. al.* (1997) about the overall regressivity of the state subsidies. The higher per capita income of a state, the higher tends to be the per capita subsidy. This is especially noticeable in the case of non-merit subsidies. Table 6 shows estimated income elasticities of per capita subsidies. The results relate to 15 major states. Income elasticities are positive for merit as well as non-merit subsidies but the magnitude is much higher for non-merit subsidies.

Table 6: Income Elasticity of Per Capita Subsidies

Variables	Intercept*	Coefficient*	R ²
Total	0.073 (0.061)	0.77 (5.708)	0.69
Merit	0.527 (0.364)	0.575 (3.537)	0.45
Non-Merit	-0.902 (-0.775)	0.842 (6.429)	0.74

Note: * Figures in parentheses refer to t-values. The variables are taken in logarithms.

More generally, the issue of equity needs to be considered keeping in view the impact of the entire fiscal and regulatory system comprising taxes, subsidies, fiscal deficit, government expenditures, and administered prices. But subsidies in India have a significant impact on the overall equity of the fiscal regime because of their size and spread.

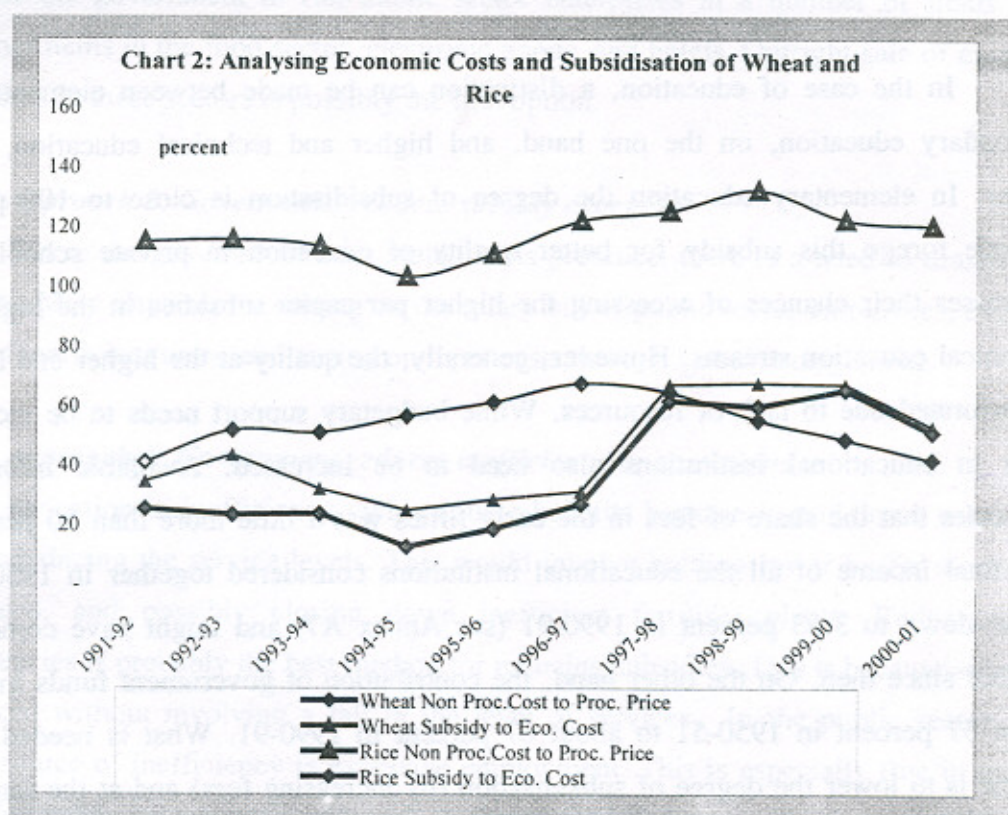
Conclusion: There is evidence to suggest that the incidence of subsidies is regressive.

Issue 14: Do subsidies hide and promote inefficiencies?

Inefficiency leads to a higher cost of production. This creates a wedge between subsidies that are actually received by the user of the service, and subsidies that are borne by the budget. The difference between the two only subsidises inefficiency. Government's participation in providing services is attended by several types of inefficiencies. Apart from direct costs like overstaffing, poor maintenance of assets, procedural delays, and delays in taking critical decisions, there are systemic inefficiencies. Subsidy interventions by the government distort market prices and often lead to sub-optimal use of inputs in the economy, thereby raising overall costs in the system. As a result of these and other inefficiencies, the costs associated with the governmental provision of services tend to be high.

Some of the better known subsidies like those in food and fertilisers, are large because of inefficiencies. For food, subsidy is the difference between economic cost and FCI's average sales realisation. The economic cost consists of two elements: (i) cost of procurement, and (ii) cost of FCI operations involving handling, storage and transportation. Economic costs for wheat have grown at a TGR of 8.46 percent, the procurement price at a TGR of 8.29 percent, and FCI's operational costs at a TGR of 8.76 percent (Annex A5). In fact, the operational costs nearly tripled between 1991-92 and 1997-98. Since then, for wheat, the operational costs marginally came down. For rice, however, these have continued to increase, the overall TGR being 10.17 percent. The economic cost consists of two components, procurement price and FCI's operational cost. Both represent inefficiencies in some ways. Artificially high procurement price leads to excess buffer stocks while states may not be lifting the foodgrains for their PDS. At the same time, there are higher cost for unnecessarily carrying these extra stocks, which is also subjected to waste. FCI's operational cost for wheat increased from 42 percent of procurement price in 1991-92 to more than 68 percent by 1996-97. After that, spurts in the procurement price were mainly responsible for the additional economic cost. In the case of rice, the FCI's operational costs were 116 percent of the procurement price in 1991-92 which was increased to more than 133 percent by 1998-99. Chart 2, indicates the pattern of growth of procurement prices and operational costs for wheat and rice.

More generally, except a few surplus sectors like telecommunications, public sector enterprises, especially at the state level, show massive losses, due to operational inefficiencies and survive only through budgetary support. Subsidies also lead to allocation inefficiencies resulting in output loss. For example, to provide cheap electricity to agriculture, a large part of it is made costlier for industry (Annex A6) through cross-subsidisation.



One question that often comes up is as to who should pay for the inefficiencies—the taxpayer or the user? The taxpayer may be asked to pay for public goods or partially for goods with positive externalities. Since inefficiency is neither a public good nor a merit good, cost-escalation due to inefficiency cannot be passed on to the taxpayer. Inefficiency costs are integral to the public provisioning of goods/services in India. Since, in effect, when the user does not pay enough to cover either the legitimate costs or the inefficiency costs, it is the taxpayer who subsidises both types of costs. This component of the subsidy, when it does not reach the targeted beneficiaries, amounts to subsidisation of intermediate agents involved in the production process.

Conclusion: Much of subsidies actually subsidise only governmental operational inefficiencies.

Issue 15: Are there sectors where subsidies are less than desirable?

There are two sectors namely, health and education, where the level of service provided by the government may be less than desirable. Both these sectors suffer from under financing and low quality of services. In these sectors, the degree of subsidisation is more than required but the volume of subsidies is less than required. Because of the poor quality of services, public provisioning of these services remains under used whereas most of the demand shifts to the private sector.

In the case of education, a distinction can be made between elementary and secondary education, on the one hand, and higher and technical education, on the other. In elementary education the degree of subsidisation is close to 100 percent. People forego this subsidy for better quality of education in private schools. This increases their chances of accessing the higher per capita subsidies in the higher and technical education streams. However, generally, the quality at the higher end has also deteriorated due to lack of resources. While budgetary support needs to be increased, fees in educational institutions also need to be increased. Available information indicates that the share of fees in the early fifties was a little more than 20 percent of the total income of all the educational institutions considered together in 1950-51. It came down to 3.53 percent in 1990-91 (see Annex A7) and might have come down further since then. On the other hand, the contribution of government funds increased from 57 percent in 1950-51 to about 87 percent in 1990-91. What is needed in this sector is to lower the degree of subsidisation (by increasing fees) and at the same time increase the level of subsidisation by giving additional budgetary support. Properly identified poorer segments of population can be supported through direct subsidies to meet the higher fees.

Conclusion: In education and health the level of per capita subsidies may be increased, while the degree of subsidisation may be lowered except for well-identified poor segments of population.

VI. Approach to Subsidy Reforms

In this section, we consider possible approaches towards subsidy reforms. No single approach is likely to suffice by itself, and a multi-pronged approach is needed. The primary objectives of reforms would be to construct a subsidy regime that is small in

size, and promotes equity as well as efficiency. Some of the possible approaches are delineated below.

Approach 1: Government withdraws from providing some services

There are certain sectors/services, especially on the economic side, where the withdrawal of the government from the sector may be the best approach. There is no need for the government to run public sector enterprises in a number of fields like consumer items in the food sector, electronic goods, and hotels. Outright sale of existing enterprises in these sectors is possibly the best option.

Approach 2: Government reduces subsidy expenditures

Where the government does maintain its presence, there is a need to drastically cut costs. Most important is cutting on the salary bill of public sector employees, closing down of inefficient units, and saving on input costs through better management.

Approach 3: Government reduces inefficiency in operations

Reduction in inefficiency yields double benefits because it cuts down subsidies without reducing the service levels. This would involve holding lower buffer stocks of foodgrains, and possibly closing down inefficient fertiliser plants. Reduction in inefficiencies is probably the best method for reducing subsidies. This is because subsidy is reduced without involving a fall in the level of services. In the public sector, the largest source of inefficiency is excessive employment. This is especially true in major state level public enterprises particularly in the power and transport sectors. A policy of rationalisation in public sector employment would lead to a reduction in costs without reducing the output/service levels.

Approach 4: Subsidies are made transparent and explicitly stated

The best antidote to uncontrolled growth of subsidies is to make them transparent and explicitly stated in the budget so that legislatures discuss their continued validity year after year.

Approach 5: User charges are uplifted in line with broad norms of cost-recovery

Increasing user charges would directly reduce the subsidy bill. User charges have become far out of line with the corresponding costs. Services need to be divided into some broad groups by the centre and each state, and broad norms for cost recovery need

to be set up. A concrete plan would require fixing recovery targets in three phases: (i) short-term (immediate increase); (ii) medium-term (in a period of five years); and (iii) long-term (ten to fifteen years). The long-term targets would need to be determined on the basis of desired or optimum degree of subsidisation worked out for broad groups of services. The short-term targets should look at recovering a portion of the variable (current) costs.

Table 7 gives an example of short and medium-term targets of additional recoveries for the central subsidies, worked out in Srivastava and Amar Nath (2001). Using the 1996-97 data, the potential for additional recoveries was worked out for the short-term and medium-term, making a distinction between provision of direct services and investment. The targets were determined at the disaggregated level of services (minor or sub-minor heads). Targets for direct services are lower than that for investment. In fixing the targets, a distinction has been made between the three categories of services: merit I, merit II, and non-merit. For merit I services, recovery target of 5 percent in the short run, and 10 percent in the medium-term with respect to current cost was set. For merit II services, a short-term target of recovering 30 and 40 percent of current costs, respectively, for the social services, and economic services, and for the medium-term, targets of 50 and 70 percent respectively for the social and economic services, have been set. In certain cases (where recoveries are already higher than these targets), higher targets were specified. For non-merit services, a short-term target of recovering 70 percent of current costs in the short run, and 90 percent in the medium-term for both services were provided. Examining the structure of the present recovery rates, in the case of selected services, somewhat higher targets were set. For returns on investment covering both equity investment and loans, the following short and medium-term targets (as percentage of average cost of borrowing funds) have been set: merit I (40 and 60), merit II (50 and 70), and non-merit (60 and 90) percent. It was estimated that with reference to the 1996-97 figures, in the short-term, additional recoveries of about Rs. 15,000 crore can be achieved. In the medium-term this can be increased to nearly Rs. 27,000 crore (at 1996-97 prices).

Table 7: Additional Annual Recoveries: Short and Medium-Term Targets*(Rs. crore)*

	Additional Recoveries at 1996-97 Prices					
	Short-Term			Medium-Term		
	Direct Services	Investment	Total	Direct Services	Investment	Total
Social and Economic Services	13398.9	1633.3	15033.0	24310.2	2490.2	26801.3
Social Services	1827.3	58.4	1886.4	3108.1	79.3	3188.2
Education, Sports, Art and Culture	476.9	1.2	478.2	812.9	1.6	814.5
Health and Family Welfare	271.9	1.5	273.4	378.3	2.0	380.3
Housing and Urban Development	454.8	23.6	479.2	839.2	32.9	873.1
Information and Broadcasting	415.7	0.0	415.7	767.1	0.0	767.1
Other Social Services	208.0	32.1	240.1	310.5	42.7	353.3
Economic Services	11571.6	1575.0	13146.6	21202.1	2411.0	23613.1
Agriculture and Allied Activities	4331.1	110.3	4441.4	7726.2	227.6	7953.8
Rural Development	247.5	0.0	247.5	433.3	0.0	433.3
Irrigation and Flood Control	90.9	2.8	93.7	166.2	4.1	170.3
Energy	470.3	700.1	1170.4	303.7	1159.9	1463.6
Industry and Minerals	1725.2	504.6	2229.8	2485.4	783.9	3269.3
Transport (excluding Railways)	224.0	256.6	480.5	318.8	343.3	662.0
Postal Services and Satellite Systems	535.1	0.0	535.1	732.9	0.0	732.9

Source: Srivastava and Amar Nath (2001).

Approach 6: User charges are cost linked

From any given starting point, the degree and volume of subsidies have an inherent tendency to increase because of the different ways in which costs and receipts grow over time. Input costs, determined as a result of diffused and multiple market processes, increase in the normal course. User charges, on the other hand, being more exposed to public scrutiny, and upward revisions in them being processed through public bodies and authorities (executive and legislature), tend to remain glued to old nominal levels. The gap between costs and receipts associated with publicly provided goods thus keeps widening. The recognition and reversal of this process is vital for keeping the subsidy volume in check. It is best if user charges are linked to costs and are subjected to automatic revisions at fixed intervals.

Approach 7: Subsidies are better targeted and administered to final goods

Untargeted subsidies waste scarce resources. Properly targeted subsidies achieve the desired results with a limited draft on the budgetary resources. The beneficiary of a subsidy must ultimately be a person rather than a commodity or sector although a subsidy, in contrast to a transfer, is administered through the market of a good or service. As such, even on first principles, the incidence of the benefit of a subsidy becomes difficult to control. The problem is further compounded, if they are administered through commodities that are inputs. Many subsidies in India, as highlighted in DP 1997, are administered through inputs like fertilisers, power, irrigation water, and diesel. Even

when a final good like food is involved, the subsidy regime remains poorly targeted. The same is true of educational and medical subsidies. As a result, the distributional pattern of subsidies evinces a regressive pattern in many cases. Also, subsidies in agriculture, industries, and other sectors are distributed according to the pattern of consumption of the concerned products. Since, the pattern of consumption reflects the pattern of income, segments of population with a higher purchasing power are able to appropriate relatively larger benefits of subsidies. Subsidies imply the provision of a good/service at a price lower than what would have prevailed without the subsidy intervention. Every price reduction has a substitution effect (increasing the demand for the good, the price of which has gone down, relative to others) and an income effect (increasing the demand for the concerned good as also that of others). It is because of the income effect, that the targeting of subsidies becomes absolutely essential. If the demand of a good is inelastic with respect to price/income, any income effect through subsidisation would lead to an increase in demand for goods other than the subsidised good.

Approach 8: Major subsidies are reviewed periodically

It is important to review subsidies periodically and weed out unnecessary subsidies. This review should be undertaken by the central government and each state government, and should go beyond measuring the volume of subsidies. In each case, the rationale, the intended life of subsidy programme, identification of beneficiaries, history of user charges, profile of increase in input-costs should be spelt out. The future course of action regarding the specific services should be delineated.

Approach 9: Dealing with harmful subsidies

Excess subsidisation is not just an unwarranted fiscal cost. It can do significant damage. For example, over-subsidisation of fertilisers, leads to excessive use of fertilisers, pesticides and other agricultural inputs that have environmentally detrimental effects leading to erosion, compaction, and identification of top soil. Similarly, excess subsidisation of water causes drying up of rivers, declining water tables and soil erosion. Excess subsidisation of diesel compounds environmental pollution. The right amount of subsidy per unit of cost should be determined and oversubsidisation must be avoided.

VII. Conclusions

Budget subsidies in India are large, largely hidden, mainly input-based, and generally regressive. These subsidies hide and promote inefficiencies. In spite of a

Discussion Paper stating government's intention to curb unwarranted growth of subsidies, there is evidence that these may have sharply risen in the late nineties. Subsidies have grown because of excessive participation of governments in the provision of goods and services where there are no clear externalities. At the same time, critical areas like health and education have suffered where per capita expenditures have remained low although the degree of subsidisation may be high. The primary remedy is for the government to disengage itself from several sectors where its presence is not required, and in the remaining sectors, reasonable user charges should be charged and changes in user charges should become linked to increases in costs.

Annex A3: Fertiliser Production, Imports and Subsidies

Year	Food Fertiliser	Export	Industry	Domestic	Total	Total as % to GDP
1971-72	27	24	5	5	61	3.2
1972-73	111	28	13	13	155	8.1
1973-74	142	28	28	28	226	12.0
1974-75	153	28	28	28	237	12.5
1975-76	165	28	28	28	249	13.1
1976-77	165	28	28	28	249	13.1
1977-78	165	28	28	28	249	13.1
1978-79	165	28	28	28	249	13.1
1979-80	165	28	28	28	249	13.1
1980-81	165	28	28	28	249	13.1
1981-82	165	28	28	28	249	13.1
1982-83	165	28	28	28	249	13.1
1983-84	165	28	28	28	249	13.1
1984-85	165	28	28	28	249	13.1
1985-86	165	28	28	28	249	13.1
1986-87	165	28	28	28	249	13.1
1987-88	165	28	28	28	249	13.1
1988-89	165	28	28	28	249	13.1
1989-90	165	28	28	28	249	13.1
1990-91	165	28	28	28	249	13.1
1991-92	165	28	28	28	249	13.1
1992-93	165	28	28	28	249	13.1
1993-94	165	28	28	28	249	13.1
1994-95	165	28	28	28	249	13.1
1995-96	165	28	28	28	249	13.1
1996-97	165	28	28	28	249	13.1
1997-98	165	28	28	28	249	13.1
1998-99	165	28	28	28	249	13.1
1999-00	165	28	28	28	249	13.1
2000-01	165	28	28	28	249	13.1
2001-02	165	28	28	28	249	13.1
2002-03	165	28	28	28	249	13.1
2003-04	165	28	28	28	249	13.1
2004-05	165	28	28	28	249	13.1
2005-06	165	28	28	28	249	13.1
2006-07	165	28	28	28	249	13.1
2007-08	165	28	28	28	249	13.1
2008-09	165	28	28	28	249	13.1
2009-10	165	28	28	28	249	13.1
2010-11	165	28	28	28	249	13.1
2011-12	165	28	28	28	249	13.1
2012-13	165	28	28	28	249	13.1
2013-14	165	28	28	28	249	13.1
2014-15	165	28	28	28	249	13.1
2015-16	165	28	28	28	249	13.1
2016-17	165	28	28	28	249	13.1
2017-18	165	28	28	28	249	13.1
2018-19	165	28	28	28	249	13.1
2019-20	165	28	28	28	249	13.1
2020-21	165	28	28	28	249	13.1
2021-22	165	28	28	28	249	13.1
2022-23	165	28	28	28	249	13.1
2023-24	165	28	28	28	249	13.1
2024-25	165	28	28	28	249	13.1
2025-26	165	28	28	28	249	13.1
2026-27	165	28	28	28	249	13.1
2027-28	165	28	28	28	249	13.1
2028-29	165	28	28	28	249	13.1
2029-30	165	28	28	28	249	13.1
2030-31	165	28	28	28	249	13.1
2031-32	165	28	28	28	249	13.1
2032-33	165	28	28	28	249	13.1
2033-34	165	28	28	28	249	13.1
2034-35	165	28	28	28	249	13.1
2035-36	165	28	28	28	249	13.1
2036-37	165	28	28	28	249	13.1
2037-38	165	28	28	28	249	13.1
2038-39	165	28	28	28	249	13.1
2039-40	165	28	28	28	249	13.1
2040-41	165	28	28	28	249	13.1
2041-42	165	28	28	28	249	13.1
2042-43	165	28	28	28	249	13.1
2043-44	165	28	28	28	249	13.1
2044-45	165	28	28	28	249	13.1
2045-46	165	28	28	28	249	13.1
2046-47	165	28	28	28	249	13.1
2047-48	165	28	28	28	249	13.1
2048-49	165	28	28	28	249	13.1
2049-50	165	28	28	28	249	13.1
2050-51	165	28	28	28	249	13.1
2051-52	165	28	28	28	249	13.1
2052-53	165	28	28	28	249	13.1
2053-54	165	28	28	28	249	13.1
2054-55	165	28	28	28	249	13.1
2055-56	165	28	28	28	249	13.1
2056-57	165	28	28	28	249	13.1
2057-58	165	28	28	28	249	13.1
2058-59	165	28	28	28	249	13.1
2059-60	165	28	28	28	249	13.1
2060-61	165	28	28	28	249	13.1
2061-62	165	28	28	28	249	13.1
2062-63	165	28	28	28	249	13.1
2063-64	165	28	28	28	249	13.1
2064-65	165	28	28	28	249	13.1
2065-66	165	28	28	28	249	13.1
2066-67	165	28	28	28	249	13.1
2067-68	165	28	28	28	249	13.1
2068-69	165	28	28	28	249	13.1
2069-70	165	28	28	28	249	13.1
2070-71	165	28	28	28	249	13.1
2071-72	165	28	28	28	249	13.1
2072-73	165	28	28	28	249	13.1
2073-74	165	28	28	28	249	13.1
2074-75	165	28	28	28	249	13.1
2075-76	165	28	28	28	249	13.1
2076-77	165	28	28	28	249	13.1
2077-78	165	28	28	28	249	13.1
2078-79	165	28	28	28	249	13.1
2079-80	165	28	28	28	249	13.1
2080-81	165	28	28	28	249	13.1
2081-82	165	28	28	28	249	13.1
2082-83	165	28	28	28	249	13.1
2083-84	165	28	28	28	249	13.1
2084-85	165	28	28	28	249	13.1
2085-86	165	28	28	28	249	13.1
2086-87	165	28	28	28	249	13.1
2087-88	165	28	28	28	249	13.1
2088-89	165	28	28	28	249	13.1
2089-90	165	28	28	28	249	13.1
2090-91	165	28	28	28	249	13.1
2091-92	165	28	28	28	249	13.1
2092-93	165	28	28	28	249	13.1
2093-94	165	28	28	28	249	13.1
2094-95	165	28	28	28	249	13.1
2095-96	165	28	28	28	249	13.1
2096-97	165	28	28	28	249	13.1
2097-98	165	28	28	28	249	13.1
2098-99	165	28	28	28	249	13.1
2099-00	165	28	28	28	249	13.1
2100-01	165	28	28	28	249	13.1

ANNEXURES

Annex A1: Consumption Ratio of Fertilisers

Year	Nitrogen	Phosphates	Potash
1960-61	7.2	1.8	1.0
1970-70	6.5	2.0	1.0
1980-81	5.9	1.9	1.0
1990-91	6.0	2.4	1.0
1996-97	10.0	2.9	1.0
1997-98	7.9	2.8	1.0
1998-99	8.5	3.1	1.0
1999-00	6.9	2.9	1.0
2000-01	6.4	2.7	1.0
Ideal Ratio	4.0	2.0	1.0

Source: *Economic Survey, 2000-01*

Annex A2: Fertilisers: Production, Imports and Subsidy

Year	Production			Imports N+P+K	Fertilisers Subsidy (Rs. crore)				
	Nitrogen	Phosphate	Total		Imported	Domestic	Decon- trolled	Total as % of GDP	
	('000 tonnes)								
1980-81	2164	841	3005	2759	335	170		505	0.35
1981-82	3144	949	4093	2041	100	275		375	0.22
1982-83	3424	980	4404	1132	55	550		605	0.32
1983-84	3485	1048	4533	1355	142	900		1042	0.47
1984-85	3917	1263	5181	6324	727	1200		1927	0.78
1985-86	4328	1428	5756	3399	324	1600		1924	0.69
1986-87	5410	1660	7070	2310	197	1700		1897	0.60
1987-88	5466	1665	7131	984	114	2050		2164	0.61
1988-89	6712	2252	8964	1608	201	3000		3201	0.76
1989-90	6747	1796	8543	3114	771	3771		4542	0.93
1990-91	6993	2052	9045	2758	659	3730		4389	0.77
1991-92	7301	2562	9863	2769	1300	3500		4800	0.73
1992-93	7430	2306	9736	2988	996	4800		5796	0.78
1993-94	7231	1816	9047	3166	600	3800		4400	0.51
1994-95	7945	2493	10438	2965	1166	4075		5241	0.52
1995-96	8777	2558	11335	3955	1935	4300	500	6735	0.57
1996-97	8599	2556	11155	1975	1163	4743	1672	7578	0.56
1997-98	10086	2976	13062	3174	722	6600	2596	9918	0.65
1998-99	10480	3141	13621	3145	124	7473	3790	11387	0.65
1999-00	10890	3399	14289	4075	74	8670	4500	13244	0.68
2000-01	11209	4041	15250	2203	500	8058	4093	12651	0.58
TGR	7.39	7.16	7.34	2.30	6.26	17.45		17.70	

Source (Basic Data): *Economic Survey and Expenditure Commission, 2000.*

Annex A3: Subsidies in Petroleum Products ✓

(Rs. crore)

	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00
Kerosene (PDS)	3740	4190	6350			8123
LPG (Domestic)	1410	1630	1950	1520	2700	4730
Diesel	430	2180	8340			5000
Other Products	980	1360	1800			
Total	6560	9360	18440			17853

Source: For 1999-00, *Economic Survey 2000-01*, p. 138.

For 1994-95 to 1996-97, Srivastava, D.K., Tapas K. Sen, *et. al.* (1997).

Annex A4: Explicit Subsidies in Central Budget ✓

(Rs. crore)

Year	Food	Fertiliser	Export	Subsidy on Railways	Interest Subsidy*	Debt Relief to Farmers	Others	Total	Total as % to GDP
1971-72	47		54		5		34	140	0.285
1977-73	117		62		12		14	205	0.378
1973-74	251		66		20		24	361	0.548
1974-75	295		80		30		14	419	0.538
1975-76	250		149		47		24	470	0.562
1976-77	506	60	241		66		74	947	1.051
1977-78	480	266	324		88		129	1287	1.261
1978-79	570	342	375		59		129	1475	1.333
1979-80	600	603	361	56	92		109	1821	1.500
1980-81	650	505	399	69	253		152	2028	1.405
1981-82	700	381	477	78	102		203	1941	1.145
1982-83	711	603	477	97	217		157	2262	1.198
1983-84	835	1042	463	93	118		198	2749	1.251
1984-85	1101	1928	518	100	135		256	4038	1.636
1985-86	1650	1924	603	128	271		220	4796	1.711
1986-87	2000	1898	785	144	229		395	5451	1.738
1987-88	2000	2164	962	174	393		287	5980	1.683
1988-89	2200	3201	1386	207	406		332	7732	1.826
1989-90	2476	4542	2014	233	881		328	10474	2.147
1990-91	2450	4389	2742	283	379		1915	12158	2.138
1991-92	2850	5185	1758	312	316	1425	407	12253	1.876
1992-93	2800	5796	818	353	113	1500	615	11995	1.605
1993-94	5537	4562	665	412	113	500	893	12682	1.476
1994-95	5100	5769	658	420	76	341	568	12932	1.281
1995-96	5377	6735	318	388	34		520	13372	1.131
1996-97	6066	7578	397	468	1222		633	16364	1.202
1997-98	7900	9918	429	536	78		644	19505	1.287
1998-99	9100	11596	573	602	1452		1463	24786	1.410
1999-00(RE)	9435	13250	520	687	1378		422	25692	1.313
2000-01(BE)	8210	12651	630	791	115		403	22800	1.046
TGR	16.91	21.33	8.90	13.36	11.05		15.80	18.97	

Source: *Indian Public Finance Statistics, Budget Documents and Economic Survey 2000-01*.

Notes: *Does not include subsidy to: (i) Shipping Development Fund Committee which was treated as grant in the economic classification in the absence of the details available then (upto 1977-78) and States and Union Territories for Janata Cloth in the handloom sector which is treated as grants to States in the economic classification. Food subsidy includes subsidy on sugar for the years 1997-98 to 2000-01.

**Annex A5: Subsidising Wheat and Rice through the Central Government:
Inter-Temporal Pattern**

(Rs. Per Quintal)

Year	Economic Cost	Procurement Price	Excess of Economic Cost Over Procurement Price	Non-Procurement Cost as % of Procurement Price	FCI's/ Average Sales Realisation	Consumer Subsidy	Subsidy as % of Economic Cost
<i>Wheat</i>							
<i>Below Poverty Line</i>							
1991-92	390.79	275.00	115.79	42.11	251.68	139.11	35.60
1992-93	504.10	330.00	174.10	52.76	279.36	224.74	44.58
1993-94	532.03	350.00	182.03	52.01	355.88	176.15	33.11
1994-95	551.17	350.00	201.17	57.48	407.89	143.28	26.00
1995-96	583.95	360.00	223.95	62.21	411.94	172.01	29.46
1996-97	640.16	380.00	260.16	68.46	433.20	206.96	32.33
1997-98	786.35	475.00	311.35	65.55	250.00	536.35	68.21
1998-99	797.16	510.00	287.16	56.31	249.57	547.59	68.69
1999-00	824.74	550.00	274.74	49.95	261.29	563.45	68.32
2000-01	830.00	580.00	250.00	43.10	415.00	450.00	54.22
TGR	8.46	8.29	8.76		0.51	17.65	
<i>Above Poverty Line</i>							
1997-98	786.35	475.00	311.35	65.55	450.00	336.35	42.77
1998-99	797.16	510.00	287.16	56.31	449.57	347.59	43.60
1999-00	824.74	550.00	274.74	49.95	693.29	131.45	15.94
<i>Rice #</i>							
<i>Below Poverty Line</i>							
1991-92	497.04	230.00	267.04	116.10	365.58	131.46	26.45
1992-93	585.27	270.00	315.27	116.77	442.40	142.87	24.41
1993-94	665.10	310.00	355.10	114.55	500.42	164.68	24.76
1994-95	694.71	340.00	354.71	104.33	600.75	93.96	13.53
1995-96	762.82	360.00	402.82	111.89	613.34	149.48	19.60
1996-97	847.69	380.00	467.69	123.08	610.57	237.12	27.97
1997-98	939.33	415.00	524.33	126.34	450.00	589.33	62.74
1998-99	1,026.67	440.00	586.67	133.33	401.81	624.86	60.86
1999-00	1,095.03	490.00	605.03	123.48	366.77	728.26	66.51
2000-01	1,130.00	510.00	620.00	121.57	565.00	590.00	52.21
TGR	9.49	8.69	10.17		0.39	25.56	
<i>Above Poverty Line</i>							
1997-98	939.33	415.00	524.33	126.34	673.68	265.65	28.28
1998-99	1,026.67	440.00	586.67	133.33	751.81	274.86	26.77
1999-00	1,095.03	490.00	605.03	123.48	921.77	173.26	15.82

Source (Basic Data): *Economic Survey 2000-01* and earlier issues.

Note: # Procurement price of paddy is for common variety.

Annex 6: Subsidisation of Power Through SEBs

(Rs. crore)

	Subsidy Agricultural Consumers	Domestic	Total Consumers	Cross Subsidy from Other Users#	Tariff * Increase Required to Achieve Break Even
Andhra Pradesh	2500.0	699.2	3199.2	686.8	105.1
Assam	11.0	148.3	159.3	-160.3	156.6
Bihar	508.0	199.6	707.6	-142.4	99.0
Delhi (DVB)	25.0	435.4	460.4	-595.4	110.1
Gujarat	2950.0	185.4	3135.4	2104.5	63.6
Haryana	1090.0	140.0	1230.0	18.4	132.8
Himachal Pradesh	2.0	71.4	73.4	33.7	17.7
Jammu & Kashmir	119.0	166.4	285.4	-304.2	240.0
Karnataka	1708.0	93.8	1801.8	1083.6	41.8
Kerala	56.0	483.8	539.8	28.2	55.5
Madhya Pradesh	2241.0	689.6	2930.6	1147.5	70.6
Maharashtra	3217.0	424.6	3641.6	3267.7	7.8
Meghalaya	0.0	17.1	17.1	-18.1	86.3
Orissa	49.0	369.4	418.4	-95.9	80.7
Punjab	0.0	291.4	291.4	203.1	84.8
Rajasthan	1447.0	370.1	1817.1	610.8	78.1
Tamil Nadu	1741.0	375.6	2116.6	1209.5	34.4
Uttar Pradesh	2164.0	1422.3	3586.3	1008.8	93.3
West Bengal	403.0	411.0	814.0	33.4	74.5
Total	20231.0	6994.4	27225.4	10119.7	
Average					66.9

Source: Planning Commission (2000).

Notes: # mainly industrial and commercial users; * paise per kwh.

Annex A7: Sources of Income of all Educational Institutions: Relative Shares

(Percent)

Year	Govt. Funds (Centre and States)	Local Bodies Funds	University Funds	Total Funds (2+3+4)	Fee Endowments and Other Sources	Contribution from Non- Government Sources (4+6+7)	Total	
1	2	3	4	5	6	7	8	
1950-51	57.06	10.93		67.99	20.39	11.62	32.01	100.00
1960-61	67.97	6.53		74.50	17.14	8.35	25.49	100.00
1970-71	75.65	4.34	1.36	81.35	12.81	5.85	20.02	100.00
1980-81	81.70	4.71	1.37	87.78	8.20	4.03	13.60	100.00
1983-84	81.51	5.61	1.61	88.73	7.50	3.78	12.89	100.00
1984-85	79.98	5.40	2.08	87.46	6.47	6.07	14.62	100.00
1985-86	80.29	5.23	2.15	87.67	6.27	6.06	14.48	100.00
1986-87	81.36	5.12	3.35	89.83	6.17	4.00	13.52	100.00
1987-88	85.92	6.49	0.01	92.42	4.25	3.33	7.59	100.00
1988-89*	83.08	6.72	0.04	89.84	6.08	4.08	10.20	100.00
1989-90**	83.51	9.89	0.01	93.41	3.55	3.04	6.60	100.00
1990-91**	87.87	6.22	0.01	94.10	3.53	2.37	5.91	100.00
1991-92**	86.35	7.08	0.01	93.44	3.82	2.74	6.57	100.00

Source: Ministry of Human Resource Development.

Notes: * Excludes affiliated institutions of Higher Education; ** School Education only

Appendix 1: Classification of Service Groups

Sectors	Major	Merit I	Merit II	Non-Merit	
Education, Sports, Arts and Culture	General Education	Elementary education	Secondary education University & higher education Adult education Language development General		
			Technical education Sports and youth welfare Art and culture		
Medical and Public Health and Family Welfare	Medical and Public Health	Primary health centres Prevention and control of diseases		Urban health services Rural health services Medical education, training and research	
		<i>Family Welfare</i>			
	Water Supply and Sanitation	Rural water supply programmes	Sanitation Services	Urban water supply programmes	
	Housing		Building planning & research Rural housing	Government residential build. Urban housing General [other than building planning and research]	
<i>Urban Development</i>					
Welfare of SC, ST, & OBCs				<i>Information and Publicity Broadcasting</i>	
		<i>Welfare of SC. & STs.</i>		Other social services	
Agriculture and Allied Activities		<i>Social welfare and nutrition</i> Soil and water conservation		Labour and labour welfare Crop husbandry Animal husbandry Dairy development	
	Fisheries		Extension & training	Mechanisation & improvement of fish crafts Inland fisheries Marine fisheries Processing, preservation and marketing Other expenditure	
	Forestry and Wild Life		Afforestation and ecology dev. Communication and building Social and farm forestry Environmental forestry and wild life	Forest cons., development and regeneration	
	Food Storage and Warehousing		Zoological parks	Food (below poverty line)	Food (above poverty line)
					Procurement and supply food processing storage and warehousing

Appendix 1: Classification of Service Groups (contd.)

Sectors	Major	Merit I	Merit II	Non-Merit	
Agriculture and Allied Activities			Agr. research and education Special progr. for rural dev. Land reforms Special area programmes North eastern areas prog. Other agricultural programmes Rural development Other rural dev. programmes MPs local area dev. scheme	Agr. financial institutions Plantations Cooperations	
	Irrigation and Flood Control	Major and Medium Irrigation	Major irrigation non-commercial Medium irrigation non-commercial	Major irrigation commercial	
			Command area development Flood control and drainage	Minor irrigation	
Industry and Minerals			Village and small industries	Power Coal and lignite	
	Other Outlays on Industries and Minerals		Development of backward areas	Industry Other industries Non ferr. mining & metal ind. Industrial financial institutions Others	
				Inland water transport Roads and bridges Light houses and light ships	Ports and light houses (excluding light houses and light ships) Shipping Civil aviation Road transport Other transport services
					Satellite systems Postal services
Transport (excluding Railways)					
Communications					
Science Technology and Environment		Ecology and Environment	Atomic energy research Space research Oceanographic research Other scientific research		
General Economic Services			Census surveys and statistics Meteorology	Foreign trade and export prom. Tourism Civil supplies Other general economic services	

Appendix 2: Determining Optimum Subsidy Rates Using Cost Benefit Analysis

A critical issue in the context of subsidies is the determination of appropriate degree of subsidisation for each specific good or service that is provided by public authorities. This calls for information regarding social and private demand functions, cost functions, and the weights that a society might attach to distributional objectives. Cost benefit analysis offers a framework in which optimal subsidy rates can be derived. In this context, several useful contributions are available in the works, for example, of Kirkpatrick (1979), Squire and van der Tak (1975), Thobani (1984) and Brent (1990, 1993 and 1995).

User prices may vary across the spectrum of goods which are publicly provided. The difference between the cost and the user price indicates the desired unit subsidy. From this, the service specific optimum subsidy rates can also be worked out. However, in most cases in the publicly provided services, a quantity unit may not be available. In such a case, per capita expenditure and receipts may be used. Brent (1995) utilises such a framework for analysing within the Indian context, identification of optimal user charges and by implication, optimal subsidy rates. The assumption is that each rupee of per capita expenditure provides an equal unit of output of service to the recipients.

The supply of each good/service is seen as a project, which leads to benefits B and the associated costs are indicated by C . Both are measured in nominal terms and referred to as annual quantities. The provision of the service leads to an annual welfare level for the society of W . This welfare depends on whether the private or the public sector provides the service and the income group which is affected. It is assumed that the benefits go to the private sector and that the sector has a weight of a_b . The costs are incurred by the public sector which has a sector weighting of a_c . It is further assumed that these costs are met by taxing the high income group and that the benefit goes to the low income group. The relative distributional weight is given by $\delta = a_2/a_1$. Here, a_2 is the weight attached to the low income group and a_1 is the weight attached to the high income group. The welfare function can then be defined as:

$$W = a_b \delta B - a_c C, \text{ where } \delta = a_2/a_1$$

$$W = a_b \delta (B-R) - a_c (C-R)$$

Defining W^* as $W/a_b \delta$, we have

$$W^* = B - R (a_c/a_b \delta) (C - R)$$

Defining $w = a_c/a_b \delta$, we have

$$W^* = B - R - w (C - R)$$

The first order condition for maximisation requires:

$$dW^*/dQ = B' - R' - w(C' - R') = 0$$

where $B' = aB/dQ$

B is the area under the inverted social demand curve.

$B = \int P^* \cdot dQ$, where P^* is the social demand price.

Thus, $dB/dQ = P^*$, i.e., $B' = P^*$

Hence $P^* = R' + w(C' - R')$

or, $P^* = wC' + (1-w) R'$

Further price and marginal revenue are related by

$R' = P(1-1/n)$ where n is the price elasticity of demand,

then $P^* = wC' + (1-w) P (1-1/n)$

$$P^* = wC' + P\{(1-w)(1-1/n)\}$$

$$wC' = P\{w+1/n(1-w)\} + P$$

$$P^* - P = wC' P\{w+1/n(1-w)\}$$

$$P^* - P = wC' P \gamma \text{ where } \gamma = \{w+1/n(1-w)\}$$

This provides the policy rule

$$P^* = wC' + P(1-\gamma)$$

where

$w = (a_c/a_b \delta)$, C' = marginal cost, and $\gamma = \{w+1/n(1-w)\}$

In order to utilise this rule, information on the following parameters is needed.

n : price elasticity of demand; δ : a_2/a_1 relative weight; $a_c/a_b = \theta$

Brent (1995) applied this analysis to economic services. He assumed that each rupee of per capita expenditure provides an equal unit of output of service to the recipients. The distributional weights are taken as inversely proportional to per capita incomes across states measured relative to the highest per capita income among the

states. The demand elasticities are set at three benchmark values of 0.5 (inelastic), 1.0 (unit elastic) and 2.0 (elastic). Brent identifies that from efficiency point of view 78 projects were underpriced, and 6 overpriced. Economic services were divided into six groups. Each service in a state was taken as a project. Brent worked out that the average desirable recovery rate would be 94.22 percent.

The pricing rule can be used to also derive the extent of “excess” subsidisation, relative either to per unit price or per unit cost.

Relative to the price, it is given by

$$P^* - P = P^* \left(\frac{\gamma}{1-\gamma} \right) + \frac{wC'}{1-\gamma}$$

which can also be written as

$$\frac{P^* - P}{P} = \frac{P^*}{P} \left(\frac{\gamma}{1-\gamma} \right) + \frac{w}{1-\gamma} \left(\frac{C'}{P} \right)$$

Relative to the cost, excess subsidisation can be written as

$$\frac{P^* - P}{C'} = w - \gamma \left(\frac{P}{C'} \right)$$

The main difficulty in practice is in obtaining the relevant elasticities and distributional weights. However, some broad judgement may be used for placing services into certain ranges of elasticities. While distributional weights were obtained for state subsidies, from the relativity of the per capita income of a state with the highest per capita income, a similar approach is not possible for central subsidies.

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