Appendix I

METHODOLOGY OF ESTIMATION OF INCIDENCE OF INDIRECT TAXES IN INDIA 1973-74

As already explained, the study is confined to measuring the money burden of indirect taxes in India on different expenditure classes in the rural and urban sectors of the economy as a percentage of the aggregate expenditure of each class. The entire amount of indirect taxes collected has not been allocated to the households. The tax revenue attributable to purchases made by government administrative departments has been excluded from the total allocable yield from indirect taxes because it has been considered that the taxes collected on the purchase of goods by the Government represent only an accounting transfer within the government sector and not a transfer to the government sector from the private sector. Purchases made by government departemental and non-departmental enterprises are, however, treated analogous to private sector purchases. A brief note on the method of arriving at the share of tax yield from government purchases is given in Appendix II.

For working out the incidence, two types of information are necessary: (i) data on total expenditure as well as expenditure on different consumption goods by different expenditure groups; and (ii) commodity-wise tax yield (exclusive of the share attributable to government purchases). We have already indicated in Section II the nature and sources of information on taxes and expenditure.

National Sample Survey (NSS) data on consumption expenditure are available in terms of quantity as well as value. Quantity data have not been generally used for working out the incidence due to the fact that in most cases while money expenditure data are given, quantity data are not given in the NSS report probably because sample households could not give dependable information on the quantity of consumption.

Taxes are levied not only on consumer goods but also on intermediate and capital goods. One of the major problems in the study of the incidence of indirect taxes is to trace the burden of taxes on these non-consumption goods. If we had a detailed input-output table for the eco-

nomy we could have determined how different inputs are allocated for use in the manufacture of various kinds of final goods. Unfortunately, we could not get a detailed table and so we had to make use of the information obtained otherwise.

I CENTRAL EXCISES

For measuring the incidence of excise as well as import duties, we have classified commodities into (A) mostly in the nature of consumption goods; (B) mostly in the nature of intermediate goods; (C) capital and partly capital goods and (D) components of capital and partly capital goods. We shall now proceed to indicate the methodology adopted in the case of these four groups of commodities.

A. Commodities Mostly in the Nature of Consumption Goods

There are a number of commodities which are mostly in the nature of consumption goods which bear Central excise duties and also appear with more or less the same description as NSS items of consumer expenditure. In such cases, the methodology of estimation of incidence is very simple. Tax yield (after allowing for government contribution) has been allocated to different expenditure groups in rural and urban sectors in proportion to their expenditure on such commodities. Difficulties arise, however, in cases where the commodities can be classified into grades or types and are subject to different tax rates in view of differences in quality, because tax categories often do not correspond to NSS categories. These cases are taken up after dealing with the simpler cases. The items for which the incidence can be worked out readily on the basis of consumer expenditures as made available in the NSS report are given below along with the NSS matching items :

Items bearing taxes	*NSS items of consumption*
1. Khandsari (sugar)	1. Khandsari (sugar)
2. Sugar	2. Sugar, Sugar candy, Sugar (other)
3. Confectioneries and chocolate	3. Biscuit, confectioneries
4. Aerated water	4. Drinking beverages other than tea and coffee
5. Glucose dextrose and preparations thereof	5. Baby food

6. Vegetable oils and fats	6. Vanaspati, groundnut oil, etc.
7. Patent and proprietary medicines	7. Allopathic medicine, Homeopathic medicine, Ayurvedic medicine, Unani medicine, other medicines
8. Soap	8. Toilet soap, washing soap
9. Cosmetic and toilet preparations	9. Powder, snow cream, hair oil, hair cream, hair lotion and other toilet requisites
10. Tooth paste	10. Tooth paste
11. Safety razor, blades stainless steel	11. Shaving blades, other shaving requisites
12. Matches	12. Matches (sticks)
13. Gramophone and parts	13. Other musical instruments (other than harmonium, radio and tape recorders)
14. Pressure cookers	14. Pressure cookers
15. Playing cards	15. Amusement (other than cinema, theatre, mela, fair, sports goods, toys, etc.)
16. Domestic electrical appliances	16. Electric fan, iron, electric heater, etc.
17. Rayon and art silk fabrics including synthetic fibres, nylon yarn and clothes	17. Rayon and art silk fabrics
18. Prepared or preserved food	18. Bread
19. Food products	19. Salted refreshments, prepared sweets, jam and jellies, processed food and others
20. Paper	20. Newspapers, journals, magazines, books, etc., taken together

For each of the remaining consumer goods subjected to excise taxes we have evolved a separate methodology for working out the incidence.

1. Coffee

Production, clearance and tax yield data are available from the *Statistical Year Book-Central Excise* (1973-74), Vol. I (henceforth termed

'*Central Excise Year Book*'). NSS data on consumption of coffee in quantity are available both in terms of number of cups consumed by the households and the quantity purchased in kilograms. Estimates of coffee powder purchased are given in terms of kilograms. From the publication, *Indian Customs and Central Excise Tariff* (hereafter termed '*Excise Tariff Book*'), we have the information on rates of duty in respect of different grades of coffee other than instant coffee.

Because of the difference in the price of coffee between the rural and urban sectors and also between different parts of the urban and rural sectors it has been considered desirable not to allocate the duty on this item on the basis of total expenditure on coffee by the different expenditure groups. Instead an attempt has been made in this case to allocate the tax yield on the basis of quantity consumed. As data on quantity are available in terms of both number of cups and kilograms, it is necessary to convert them into one standard unit. For this purpose, the quantity of powder purchased in kilograms was converted into quantity consumed in cups. On the basis of information available directly from the Coffee Board, it was assumed that 100 cups of coffee could be prepared from one kilogram of coffee powder. The tax yield on coffee, other than instant coffee, has been allocated to different expenditure groups in rural and urban areas on the basis of the total number of cups consumed. The yield from instant coffee has been allocated on the assumption that it is consumed exclusively by the groups with per capita expenditure of Rs. 100 and above in the urban sector.

2. Tea

Information on production, clearance and tax yield is available from *Central Excise Year Book*; rates of duty from *Excise Tariff Book* and consumption data from the NSS. Production, clearance and tax yield data are available separately for loose leaf tea and package tea. Consumption data are available in terms of number of cups for tea and in terms of kilograms for loose leaf tea. Tax rates are available separately for loose leaf tea, package tea and instant tea. Duty on package tea is higher than on loose leaf tea. The rate of duty on instant tea is still higher.

As in the case of coffee, we have first tried to work out consumption in terms of cups of tea. For this purpose, the quantity of tea leaves has been converted into tea cups on the assumption that from one kilogram of tea 600 cups of tea could be prepared. This assumption is

based on the estimates supplied by the Tea Board. In the case of loose leaf tea, we have assumed that the consumption proportions (tea cups) found for urban and rural sectors and for different expenditure groups will hold good for the allocation of tax yield also. A difficulty is faced, however, in the allocation of yield from package tea. It is tea of a superior quality. In a similar exercise done by the Ministry of Finance (*Incidence of Indirect Taxation*, 1963-64, published in 1969), it was assumed that 57.2 per cent of the package tea was consumed in the rural sector and 42.8 per cent in the urban sector. In the absence of any statistical evidence it has been considered simpler to assume that the rural and urban sectors consume 50 per cent each. The difficulty arises in determining the proportions of package tea consumed by different expenditure groups in the two sectors. We have made an assumption here that the bottom four expenditure groups do not consume package tea and the next three expenditure groups consume 20 per cent, 30 per cent and 50 per cent, respectively, of total package tea. After this, the incidence of the tax on tea was worked out as follows.

First, the estimates of consumption of package tea (in cups) for different expenditure groups in the rural and urban sectors were worked out and, accordingly, the incidence of tax yield attributable to package tea was estimated. Then, from the total number of cups of tea consumed by different expenditure groups in the rural and urban sectors, the number of cups of tea prepared from package tea was deducted. The remaining number of cups has been taken as tea prepared out of loose leaf tea and, accordingly, the tax yield from it was distributed.

The tax yield from instant tea has been wholly allocated to groups with per capita expenditure exceeding Rs. 100 per month in the urban sector.

3. Art silk, rayon and synthetic textiles

The data on consumption under this head relate to various items like dhoti, saree, cloth for shirt, pyjama, salvar, coat, suit, trousers, chaddar, headwear, lungi, bedsheet and knitted garments. There are marginal differences in the rates of duty on these items and the tax yield data are not available separately. The total tax yield therefore has been allocated to different expenditure groups in the urban and rural sectors on the basis of total expenditure on all these items taken together for each category.

4. Tobacco (unmanufactured and manufactured)

Data on tax yields and the rates of duty on different kinds of manufactured tobacco are available from *Central Excise Year Book* and *Excise Tariff Book*, respectively. Similarly, data on consumption of different kinds of tobacco could be obtained from the NSS. Estimates of tax yields by kind of tobacco are as follows :

			1973-74 (*Rs. lakh*)
1.	Cigarettes		23,826.0
2.	Smoking mixtures		84.0
3.	Unmanufactured tobacco		9,548.8
	of which		
	(a) flue cured and used in the manufacture of smoking mixtures for pipes and cigarettes	7.7	
	(b) flue cured and used in the manufacture of cigarettes	1,878.5	
	(c) flue cured and not otherwise specified	201.9	
	(d) other than flue cured used for the manufacture of cigarettes	867.0	
	(e) other than flue cured and not used for the manufacture of cigarettes	6,593.7	
	of which		
	(i) Snuffs	93.2	
	(ii) *Hukkahs*	499.8	
	(iii) Chewing	1,129.9	
	(iv) Cigars and cheroots	299.6	
	(v) *Biris*	2,647.5	
	(vi) Goods of special importance	1,499.8	
	(vii) Others	423.9	
	TOTAL		33,458.8

Sources : (i) *Statistical Year Book-Central Excise* 1973-74.
(ii) *Indian Customs and Central Excise Tariff*

1. Cigarettes—In 1973-74, there was a uniform duty for all types of cigarettes (200 per cent *ad valorem* plus an additional duty of 100 per cent *ad valorem*). Hence, the tax yield has been allocated to the various expenditure groups in the rural and urban sectors on the basis of their expenditure on cigarettes.

2. Smoking mixtures—Smoking mixtures are used by the urban people and there is little use of them in the rural sector. The tax yield from this item is therefore attributed to the group with per capita expenditure of Rs. 100 and above in the urban sector only.

3. Unmanufactured tobacco—In the case of item 3(a), for the same reason as given above in (2) the entire revenue has been attributed to the group with per capita expenditure of Rs. 100 and above in the urban sector. This is one of the costlier products which is taken to be beyond the pockets of people belonging to groups with per capita expenditure of less than Rs. 100 in the urban sector. The rate of duty is as high as Rs. 40 plus an additional duty of Rs. 5.50 per kilogram.

Tax yields from items 3(b), 3(c) and 3(d) are attributed to different expenditure groups in the rural and urban sectors on the basis of their expenditure on cigarettes. The rates of duty in these three cases do not vary much.

In the case of yields from items 3(e)(i)snuffs and 3 (e)(ii) *hukkah*, the allocation has been done on the basis of NSS estimates of consumption of snuffs and *hukkah* tobacco, respectively; yields from chewing tobacco on the basis of expenditure on *zarda*, *kamam* and *surti*. The yield from tobacco used for cigars and cheroots of special importance has been allocated to the group with per capita expenditure of Rs. 100 and above in the urban sector. The yield from *biris* has been allocated to different expenditure groups on the basis of proportions of expenditure on *biris*. The yields from others have been allocated on the basis of household expenditure on other tobacco products.

5. *Cotton fabrics*

There may be two methods of estimation :

1. We may work out the quantity of clearance of cloth and tax yield according to fineness of cloth (superfine, fine, medium and coarse); make certain assumptions about the proportions in which different grades of cloth have been consumed (in quantity) by each expenditure group in the urban and rural sectors; and accordingly, allocate tax yield to different expenditure groups.

2. We may proceed from the expenditure side and work out the aggregate amount of expenditure on cotton cloth for the rural as well as urban sectors on the basis of NSS data; adjust the urban expenditures for price differential in the two sectors; make assumption about the proportions of expenditure on different grades of cloth by different expenditure groups in the rural and urban sectors; work out for each sector the total expenditure on cloth of each quality; and accordingly allocate the tax yield estimated to be derived from each type of cloth.

The second method has been adopted for mainly four reasons: (a) Data on the quantity of cloth cleared by types of cloth (according to fineness) are available for composite mill products but not for powerloom products. All units which have less than 49 looms installed paid a compounded levy based on the number of looms only and not on the quantity and grades of cloth produced. (b) *Indian Textile Bulletins* give data on the production of powerlooms and handlooms together. But separate data on the production flowing from powerlooms according to the quality of cloth are not available. Very crude etimates of cloth produced by powerlooms according to fineness can be worked out on the basis of yarn data but the conversion ratios of yarn into cloth may not be dependable. (c) The total quantity of cloth consumed as worked out on the basis of NSS data far exceeds the data on the total quantity produced and released. It may be pointed out that for 1973-74, NSS gives an estimate of 11410 million metres (exclusive of ready made cloth) while *Central Excise Year Book* and *Indian Textile Bulletins* give an estimate of 7770 million metres only. (d) In many cases quantity data on consumption are not given in NSS tables while for the corresponding expenditure groups value data are available. Basic assumptions that have been made can be explained as follows.

1. $C = C^R + C^U$

   where C = total consumption expenditure on cloth
   C^R = total expenditure for the rural sector on cloth
   C^U = total expenditure for the urban sector on cloth

2. $C = C_1^R + C_2^R + C_3^R + C_4^R$

   where C_1 = consumption expenditure for the group with per capita expenditure of Rs. 0-28,
   C_2 = consumption expenditure for the group with per capita expenditure of Rs. 28-55,
   C_3 = consumption expenditure for the group with per capita expenditure of Rs. 55-100,

C_4 = consumption expenditure for the group with per capita expenditure of Rs. 100 and above.

3. $C_1^R = C_{1c}^R + C_{1m}^R$

where C_{1c}^R = consumption of coarse cloth in rural areas by the group with per capita expenditure of Rs. 0-28,

C_{1m}^R = consumption of medium cloth in rural areas by the group with per capita expenditure of Rs. 0-28.

C_{1c}^R is assumed to be equal to 0.5 C_1^R

and C_{1m}^R is assumed to be equal to 0.5 C_1^R

4. $C_2^R = C_{2c}^R + C_{2m}^R$

where C_{2c}^R is assumed to be equal to 0.4 C_2^R

and C_{2m}^R is assumed to be equal to 0.6 C_2^R

5. $C_3^R = C_{3m}^R + C_{3f}^R$, subscript ^{f} representing fine cloth

where C_{3m}^R is assumed to be equal to 0.6 C_3^R

and C_{3f}^R is assumed to be equal to 0.4 C_3^R

6. $C_4^R = C_{4m}^R + C_{4f}^R + C_{4sf}^R$, subscript ^{sf} representing superfine cloth

where C_{4m}^R is assumed to be equal to 0.2 C_4^R

C_{4f}^R is assumed to be equal to 0.2 C_4^R

C_{4sf}^R is assumed to be equal to 0.6 C_4^R

Similarly,

7. $C^U = C_1^U + C_2^U + C_3^U + C_4^U$

8. $C_1^U = C_{1c}^U + C_{1m}^U$

where C_{1c}^U is assumed to be equal to 0.5 C_1^U

and C_{1m}^U is assumed to be equal to 0.5 C_2^U

9. $C_2^U = C_{2c}^U + C_{2m}^U$

where C_{2c}^U is assumed to be equal to 0.3 C_2^U

and C_{2m}^U is assumed to be equal to 0.7 C_2^U

10. $C_3^U = C_{3m}^U + C_{3f}^U$

where C_{3m}^U is assumed to be equal to 0.5 C_3^U

and C_{3f}^U is assumed to be equal to 0.5 C_3^U

11. $C_4^U = C_{4m}^U + C_{4f}^U + C_{4sf}^U$

where C_{4m}^U is assumed to be equal to 0.4 C_4^U

C_{4f}^U is assumed to be equal to 0.3 C_4^U

C_{4sf}^U is assumed to be equal to 0.3 C_4^U

It may be noted that a separate treatment of cotton yarn is not necessary. Collection of duty for cotton yarn is done along with the cloth itself (according to fineness). Thus, the yield from yarn may be added to the yield from cloth to work out the incidence. The methodology adopted here (expenditure approach rather than quantity approach) takes care of ready-made cotton garments also.

Data on cotton yarn and cotton fabrics are available from the following sources: (1) Production and clearance data (in metres and square metres) are available for composite mills according to fineness of cloth (superfine, fine, medium and coarse) in *Central Excise Year Book*, 1973-74. (2) Yield from basic duty according to fineness of cloth is also available from the same source. (3) Yield from additional duty and handloom cess according to grades of cloth could be obtained from the Directorate of Statistics and Intelligence (DSI).

In the following cases, information is not available in the needed detail. (1) Information on the yields from differential duty, according to fineness of cloth is not available but it was suggested by DSI that they could be allocated to different grades of cloth in proportion to the yields from the basic duty. (2) The breakdown of yield from miscellaneous duties, according to fineness of cloth, is also not available; hence their yield has been allocated in proportion to the yield from the basic duty. (3) Non-availability of similar breakdown in respect of tax yield from embroidery in strips and motifs and embroidery impregnated with cellulose has necessitated its allocation also in the same manner.

6. *Footwear*

Footwear was exempted from duty in the following cases : (1) the entire output of those factories (precincts) which employ less than 49 workers; (2) the output of those establishments in which the total of power used in the process of manufacturing footwear does not exceed the equivalent of two horse power; (3) footwear if made out of artificial or synthetic resins or plastic materials or both; (4) footwear made in Government Harness Factory and Saddlary Factory, Kanpur for consumption by the members of the armed forces, and (5) all samples (not exceeding 3 pairs of each variety) for exports. Because of these exemptions, we have been forced to make certain assumptions on the basis of subjective judgement. We have assumed that (a) in the rural areas all the expenditure on footwear by groups with per capita expenditure not exceeding Rs. 75 per month is incurred on the purchase of footwear

which is free of duty; (b) in the case of groups in the rural sector with per capita expenditure of Rs. 75 and above per month, only 25 per cent of the expenditure on footwear is on the kind which is free of duty; (c) for the urban sector in the case of groups with per capita expenditure not exceeding Rs. 75 per month, 50 per cent of the expenditure on footwear is on such footwear as is free from duty and (d) in the urban sector in the case of groups with per capita expenditure exceeding Rs. 75 per month, 75 per cent of the expenditure on footwear is on the kind which is subject to duty. On the basis of the above assumptions, we have worked out the expenditure on footwear by each expenditure group in the rural and urban sectors which can be said to contain tax elements. These figures form the basis of allocating the tax burden on footwear.

7. Woollen fabrics and knitting wool

The incidence in this case has been worked out on the basis of separate estimates of expenditure on woollen fabrics and knitting wools. It might be indicated that the NSS records no expenditure on wool by groups with per capita expenditure not exceeding Rs. 43 in the rural sector as well as by groups with per capita expenditure not exceeding Rs. 55 in the urban sector.

It has been assumed that even rural folk make most of their purchases of woollen fabric and knitting wool from urban shops and hence the problem of price differential does not arise.

8. Mechanical lighters and vacuum flasks

The tax yield from vacuum flasks and mechanical lighters was Rs. 49 lakh and Rs. 1 lakh, respectively. In both cases it has been decided to allocate the yield entirely to the group with per capita expenditure of Rs. 100 and above in the urban sector only. The tax on vacuum flasks is distributed in proportion to the expenditure on manufactured goods and that on mechanical lighters in proportion to the expenditure on cigarettes.

B. Commodities Mostly in the Nature of Intermediate Goods

As indicated earlier, more serious problems arise in estimating the incidence of taxes on intermediate goods because these goods are not directly used by consumers. One has therefore to find out into what

final goods and in what proportions each of the taxed intermediate products gets embodied.

1. Jute manufactures and yarn

Data on production, clearance and tax yield are available from *Central Excise Year Book*, Vol. I, 1973-74. The necessary breakdown of yield, according to different jute manufactures and yarn, is available only in respect of the basic duty. Hence the tax yield from auxiliary and miscellaneous duties has been allocated to hessian and others in the same proportions as the basic duty.

For working out the incidence we have made the following assumptions: (i) hessian is used for packing, etc., of manufactured goods and hence the tax yield from this item may be allocated to different expenditure groups on the basis of their expenditure on manufactured goods; (ii) sacking is used for transporting foodgrains, etc., and can therefore be allocated on the basis of expenditure on foodgrains by different expenditure groups in the urban sector; and (iii) tax yield from others may be allocated to different expenditure groups on the basis of their expenditure on manufactured goods.

2. Fertilisers

Production, clearance and tax yield data are available in *Central Excise Year Book*. We have data on consumption of fertiliser according to type of crops for 1970-71 from the publication by National Council of Applied Economic Research (NCAER), entitled *Fertiliser Use on Selected Crops in India* (1974).

We have distributed the total quantity of clearance among the various crops on the basis of proportions obtained in 1970-71, as given in the NCAER publication mentioned above. The yield of tax on fertilisers has been attributed to the different crops on the basis of the above proportions, as shown in Table A-1.

TABLE A-1

Crop-wise Pattern of Use of Fertilisers—1970-71

Crop	Consumption of fertilisers during 1970-71 ('000 tonnes)	Percentage of total consumption	Yield from excise tax during 1973-74 (Rs. '000)
1. Rice	726.9	17.4	66193.4
2. Wheat	443.3	10.6	49324.7
3. Maize	92.3	2.2	8369.3
4. Sugarcane	420.9	10.0	38042.2
5. Cotton	181.7	4.4	16738.6
6. Pulses	2314.1	55.4	210753.8
TOTAL	4179.2	100.0	380422.0

Source : *Fertiliser Use on Selected Crops in India* (1974), NCAER.

3. Petroleum-domestic production

Data on tax yield (Central excise) from different petroleum products for 1973-74 are available from *Central Excise Year Book.*

TABLE A-2
Tax Yields from Petroleum Products (1973-74)

(Rs. lakh)

		Tax yields
1.	Furnace oil	3001
2.	Refined diesel oil and vaporising oil, diesel oil not otherwise specified	31406
3.	Asphalt bitumen and coal tar	1602
4.	Petroleum products not otherwise specified	4684
5.	Blended or compounded lubricating oils and greases	1737
6.	Calcined petroleum coke	120
7.	Motor spirit	30725
8.	Kerosene oil	14112
	TOTAL	87387

Source: *Statistical Year Book-Central Excise.*

The publication *Indian Petroleum and Petro-Chemicals Statistics*, (1973) issued by the Economics and Statistics Division of the Ministry of Petroleum, New Delhi (1973) (hereafter referred to as *Petroleum Statistics*), contains information on domestic production, imports, consumption and sales. It is possible to allocate the estimates of clearance (quantity) of different types of petroleum production to different broad uses on the basis of information contained in the above-mentioned publication.

The methodology used in each case is explained below.

(**a**) Furnace oil—We have obtained information about the broad uses of furnace oil from the Ministry of Petroleum. The estimates of the quantities used for different purposes in absolute terms as well as in terms of percentages are indicated in the following table:

TABLE A-3

Uses of Furnace Oil in India

Sectors of use	Quantity ('000 tonnes)	Per cent of total
Transport	417	7.0
of which		
Road transport	2	Neg.
Railways	61	1.0
Waterways	354	6.0
Agriculture/plantation	222	3.7
Power generation	1648	27.8
Other industries	3138	53.0
of which		
Iron and steel	438	7.4
Textile fibre	650	11.0
Cement	204	3.4
Ceramics and glass	218	3.7
Chemicals and allied	795	13.4
Fertilisers	266	4.5
Aluminium	110	1.9
Sugar	59	1.0
Mining and quarrying	35	0.6
Engineering	363	6.1
Other miscellaneous	507	8.5
TOTAL	5932	100.0

Source: *Indian Petroleum and Petro-Chemical Statistics* (1974).

In the NSS list of consumption items we have separate information on the expenditure of the households on road transport, railways and waterways. The tax yield attributable to transport has been distributed among the different expenditure groups in rural and urban sectors accordingly. We recognise that transport is also used for the carrying of goods.

But since the amount involved is not large, the approximation we have used may not significantly distort the total picture.

The tax yield attributable to agriculture/plantations can be allocated to different expenditure groups on the basis of their total expenditure on the following items indicated in the NSS list of consumption items: (i) total cereals, (ii) total pulses, (iii) total vegetables, (iv) fresh fruits, (v) tea and tea leaves, and (vi) coffee and coffee powder.

For other items, the basis of allocation is as follows :

(i) Power generation—total expenditure on consumption of electricity and manufactured goods with equal weight.

(ii) Iron and steel—total expenditure on consumption of manufacured goods.

(iii) Textile fibre—according to tax-yield from cotton and woollen fabrics allocated to different expenditure groups.

(iv) Cement ceramics and glasses—the total tax yield was divided into two broad categories:

(a) residential buildings, and

(b) others on the basis of the aggregate value of construction obtained in respect of each of the two groups from the CSO. The share of residential building has been distributed on the basis of household expenditure on house rent as given in the NSS and the share of 'others' on the basis of expenditure on manufactured goods.

(v) Chemicals—the method of allocation is the same as for the tax on chemicals to be discussed later.

(vi) Fertilisers—as in the case of tax on fertilisers.

(vii) Aluminium engineering, mining and quarrying and other miscellaneous—on the basis of total expenditure on manufactured goods.

(viii) Sugar—according to the methodology used for sugar.

(**b**) Refined diesel oil, and vaporising oil, diesel oil, not otherwise specified—This group of petroleum products mostly consists of high speed diesel oil (H.S.D.) and light diesel oil (L.D.O.). The uess of these two products have been worked out by the Ministry of Petroleum as follows:

High speed diesel	Quantity ('000 tonnes)
(i) State transport	599
(ii) Other road transport (including agriculture)	3359
(iii) Railways	581
(iv) Bunkers	28
(v) Miscellaneous	626
	5193

Similarly, for LDO the distribution according to end uses has been worked out as follows:

Light diesel oil	Quantity ('000 tonnes)
(i) Power	158
(ii) Bunkers	45
(iii) Rest (including agriculture and small scale industries)	1145
	1348

As no separate tax yield is available in respect of HSD and LDO, we have decided to club them together and classify their joint use as follows:

	Quantity of HSD and LDO used ('000 tonnes)
(i) Road transport	3958
(ii) Railways	581
(iii) Bunkers (steamship)	73
(iv) Power	158
(v) Others (agriculture and small scale)	1771
	6541

The tax yield has been allocated to various uses in proportion to the quantities consumed as given above. The yield attributed to items

(i), (ii) and (iii) has been apportioned on the basis of expenditure on railways, road and steamship fares, respectively; and the yield attributed to item (iv) on the basis of consumption of electricty. In the case of the yield attributed to item (v), 50 per cent is distributed on the basis of expenditure on manufacturing products and the remaining 50 per cent on that on agricultural products. The consumption of diesel oil for the purpose of transport (road, railways and steamship) would not be entirely for carrying passengers. A part would go also towards the transportation of goods. Hence, we made an alternative assumption that 50 per cent of the diesel oil was consumed for the transportation of passengers and the remaining 50 per cent for the transportation of goods. The share of tax yield attributable to the transportation of goods was allocated on the basis of household expenditure on manufactured goods. Surprisingly, the results thus obtained were almost the same. Only in the case of one or two expenditure groups the incidence came out to be different, and only at the second decimal point.

(c) Asphalt, bitumen and coal tar—These materials are used mainly in construction (including road making) activity. We can divide the total value of construction into (i) government construction, (ii) residential buildings (private), (iii) non-residential buildings, and (iv) roads and bridges.

We have obtained estimates in respect of each of the above categories of construction from CSO. The share of residential buildings can be distributed on the basis of rent on dwellings as given in NSS. The share of non-residential buildings is distributed on the basis of expenditure on manufactured items and the share of roads and bridges is distributed on the basis of expenditure on road transport.

(d) Petroleum products not otherwise specified—On the basis of information contained in *Central Excise Year Book* this item is split into:

	Quantity ('000 tonnes)
(i) Liquified petroleum gas	263
(ii) Waxes	47
(iii) Other mineral turpentine oil	699
	1009

According to the information given by the Ministry of Petroleum, liquified petroleum gas is used almost entirely for domestic purposes. It is assumed that this is used entirely by the groups with per capita expenditure of Rs. 100 and above in the urban sector. In the case of waxes, about 50 per cent goes to candle manufacturing (c.f. *Petroleum Statistics*) and the remaining 50 per cent to water proofing, match industry, paper waxing and hard board industry. The latter part is apportioned to manufacturing and the tax on it is allocated on the basis of expenditure on manufactured goods.

(**e**) Blended or compounded lubricating oils and greases—From the publication *Petroleum Statistics* (1973), the following breakdown of the use of compounded lubricating oils and greases has been obtained for the year 1972-73.

	Quantity ('000 tonnes)
(i) Automotive oils (automotive)	211
(ii) Railways oil/axle oil	19
(iii) Industrial lubricating oil	643
	873

The share of item (i) in the tax yield is attributed to road transport. The share of item (ii) to railway transport and the remaining item (iii) to manufactured items.

(**f**) Calcined petroleum coke—The whole of the tax yield has been distributed on the basis of expenditure on manufactured items.

(**g**) Motor spirit—The use of motor spirit is split into

	Quantity ('000 tonnes)
(i) ATF (aircraft turbine fuel)	798
(ii) Others (motor cars, etc.)	791
	1589

First, we have divided the total tax yield from motor spirit into two parts (i) 50 per cent is apportioned to use by aeroplanes, (ii) the remaining 50 per cent is apportioned to use in cars, motor-cycles, etc. Then,

70 per cent of the share attributable to item (i) is taken to be from commercial use of aeroplanes and is distributed among various expenditure groups on the basis of proportions of aggregate household expenditure; of the remaining 30 per cent, 10 per cent is attributed to governmental use of air-services, and 20 per cent is taken to be used by groups with per capita expenditure exceeding Rs. 100 per month, in the urban sector.

The share of tax yield attributed to motor spirit used for cars, motor-cycles, etc., is distributed as follows : *Estimates of Capital Formation in India*, 1969, published by the CSO, gives the percentage shares of the number of cars used for industrial and commercial purposes and of those used for private purposes. We have assumed the same proportions. The share of tax on motor spirit assumed to be used for industrial and commercial purposes is distributed on the basis of proportion of expenditure on manufactured goods. The share attributable to private use of cars is entirely allocated to groups with per capita expenditure exceeding Rs. 100 per month in the urban sector.

(**h**) Kerosene oil—The estimates of use of kerosene oil have been obtained from *Petroleum Statistics*. The uses in 1973-74 were as follows:

	Quantity ('000 tonnes)	Percentage of the total
(i) Domestic	3328	96.3
(ii) Industrial and commercial	129	3.7
	3457	100.0

The share attributable to domestic use is allocated on the basis of expenditure on kerosene oil by the households. The share attributable to industrial and commercial uses is distributed on the basis of total expenditure on manufactured items.

4. Iron and steel

Central Excise Year Book gives the estimates of tax yield from the various categories of iron and steel being produced in the country. They are reproduced below:

	(Rs. lakh)
(a) Iron and steel in any crude form	602
(b) Steel ingots	1141

(c) Iron and steel products	15585
(d) Steel furniture	373
(e) Others (including slotted angles and channels of steel wire-ropes)	82
	17783

Item (c) iron and steel products can further be broken into the following:

(Rs. lakh)

	Total yield	Basic duty	Auxiliary duty
(i) Semi-finished steel (including blooms, billets, etc.)	4742	2710	2032
(ii) Bars and rods, wires, etc.	3244	1854	1390
(iii) Plates and sheets	3453	1973	1480
(iv) Flats, skelps and strips	3579	2045	1534
(v) Pipes and tubes	94	54	40
(vi) Other steel castings	144	82	62
(vii) Rails and sleepers	326	186	140
(viii) Others	3	2	1
TOTAL	15585	8906	6679

On the use of steel, we were able to obtain two studies: (1) *The Iron and Steel Industry of India* (1964) by Mr. Choudhuri, and (2) an unpublished study by the Steel Authority of India (SAIL) for the year 1975. Choudhuri's book gives data on the demand for steel for the years 1956-57 to 1960-61 by different Industrial sectors. The information obtained from the SAIL is more up-to-date and, therefore, we have made use of the SAIL data.

SAIL have divided iron and steel products into eight major groups as against five groups availble in *Central Excise Year Book*. These major groups are (i) pig iron, (ii) semi-finished steel, (iii) railway materials, (iv) structures, (v) bars and rods, (vi) plates, (vii) sheets and (viii) skelp and H. R. strips. Each of the above iron and steel products has been apportioned by SAIL among twenty-nine uses; namely, steel and coal, defence, power, other government departments, railway wagon,

ports (ship yards), Posts and Telegraphs, Public Works Department, auto-manufactures, bright bar electric manufactures, re-rollers, tube manufactures, wire drawings, basic metals, main fabricators, furniture makers, drum, barrel, fastner industries, foundry, corporate bodies and agro-industries, trade, etc.

First, we have tried to match SAIL's eight major groups of iron and steel with the five major groups of iron and steel given by *Central Excise Year Book* indicated earlier. This has been done in the following manner. Iron in any crude form given in *Central Excise Year Book* is taken to represent pig iron. Similarly, steel ingots have been taken to include plates and sheets structures and iron and steel products; the remaining important groups given in *Central Excise Year Book* are taken to include the remaining groups of items in the SAIL report.

The many uses for each of the above mentioned groups have then been reclassified into seven major uses: (i) Government services, (ii) furniture makers, (iii) irrigation, (iv) manufacturing, (v) power, (vi) transport and communication and (vii) others.

The share attributable to government services has not been allocated to households. Furniture makers make steel furniture and structurals partly for permanent fitting in the buildings. This part is to be treated as capital formation and the remaining part as household consumption. Following the CSO estimates given in the *Estimates of Capital Formation*, 1969, 50 per cent is treated as part of capital formation in non-residential construction and 50 per cent as household consumption of furniture. The share going to non-residential construction has been distributed on the basis of household expenditure on manufactured goods. The share going to household consumption of furniture is distributed on the basis of expenditure on furniture by different expenditure groups. The share going to irrigation has been allocated on the basis of expenditure on agricultural goods. Similarly, shares of manufacturing and power have been distributed on the basis of expenditure on manufactured goods and electricity, respectively. Transport and communication has been broken up into Posts and Telegraphs, auto-manufacturers, railway wagons, trade and ports. The share of Posts and Telegraphs has been allocated on the basis of household expenditure on postage and telephone; the aggregate share of railway wagons, trade and ports, on the basis of expenditure on manufactured goods; the share of item (vii) 'others' on the basis of expenditure on manufactured goods.

5. *Chemicals*

(A) Paints and varnishes—On the basis of the information contained in *Input-Output Table For India*, 1963 prepared at the Gokhale Institute of Politics and Economics and published in *Artha Vijnan*, March 1972 (hereafter referred to as *Input--output Table For India*, (1963) and in *Draft Fourth Plan, Material and Financial Balances*, published by the Planning Commission in September 1966, (hereafter referred to as *Material and Financial Balances*, 1966), we first allocated the total of this item among different uses, in the following manner :

	(Rs. crore)
(i) Construction	32.6
(ii) Electrical equipment	2.9
(iii) Non-electrical equipment	1.4
(iv) Transport	5.7
(v) Metal products	5.7
(vi) Glass and glass wares	2.4
(vii) Final consumption	1.1
TOTAL	51.8

For the purpose of estimating incidence, we had to compress the above into a smaller number of groups as given below:

	(Rs. crore)
(i) Construction	32.6
(ii) Transport	5.7
(iii) Manufacturing	7.0
(iv) Domestic	6.5
TOTAL	51.8

Construction is broken down into (a) Government (b) residential and (c) others, on the basis of information obtained from the CSO. The tax yield from paints and varnishes attributable to government construction has been excluded from the allocable pool. Residential construction is broken into rural and urban on the basis of estimates obtained from the CSO. The tax yield attributable to residential buildings in

each sector is then apportioned among the different per capita expenditure groups in that sector in proportion to their expenditure on rent of (owned and rented) residential buildings. The amounts of tax yield attributable to 'others' is apportioned on the basis of expenditure on manufactured goods.

The share of tax yield attributable to 'transport' is allocated in the same manner as yield of other taxes attributable to transport (mentioned in earlier cases).

The share of manufacturing, item (iii), is allocated on the basis of expenditure on manufactured goods; and the share of domestic uses, item (iv), has been allocated on the basis of expenditure on furniture.

(B) Synthetic and organic dye stuffs—From the report of the Tariff Commission on the *Review of Dye Stuffs Industry* for the year 1974, we could get the following break-up of the uses of this chemical :

(i) Textile industry	80 per cent
(ii) Leather, plastic and printing ink for paper and coir	20 per cent

The share of tax yield attributable to the textile industry has been allocated to different expenditure groups in the urban and rural sectors on the basis of their total expenditure on woollen, cotton and silk fabrics. The tax yield attributable to leather, plastic, printing ink for paper and coir has been allocated on the basis of total expenditure of the households on (i) leather (ii) plastic articles (iii) books and periodicals and (iv) coir ropes and coir mats.

(C) Caustic soda and caustic potash—We have information about the end uses of these products from *Indian Chemicals and Pharmaceutical Industry—A Survey*, 1963-64 published by Indian Chemical Manufacturers Association.

The shares of the different end uses during the Third Five Year Plan have been assumed for the year 1973-74.

Industry	Demand (percentage of total)
(i) Paper and paper board	28
(ii) Rayon and staple fibre	23
(iii) Textiles	15
(iv) Soap	14
(v) Aluminium	7

(vi) Petroleum refining	2
(vii) Vanaspati	1
(viii) Dye stuffs	10
	100

The share of tax yield on caustic soda and caustic potash attributable to paper and paper board has been allocated on the basis of consumption expenditure on books and journals and newspapers and periodicals; that attributable to rayon and staple fibre has been allocated on the basis of expenditure on artificial silk. The shares of textiles and dye stuffs have been allocated on the basis of expenditure on cotton and woollen fabrics.

The shares of tax yield attributable to soap and vanaspati have been allocated on the basis of NSS consumption expenditure on soap and vegetable oil, respectively. The share of yield attributable to caustic soda and caustic potash used in the production of aluminium has been allocated in the same fashion as the tax on aluminium.

(D) Organic surface active agents—The yield from this item has been allocated on the basis of expenditure on manufactured goods.

(E) Calcium carbide, bleaching powder and sodium hydrosulphate—The yield from these items has been allocated on the basis of expenditure on manufactured goods.

(F) Soda ash—Information about its uses is available from *Indian Chemical and Pharmaceutical Industry—A Survey*, 1963-64. For the Third Plan period, the uses have been indicated as follows :

(Percentage of total)

(i) Laundry, *dhobi* and miscellaneous	37
(ii) Glass	31
(iii) Chemicals, caustic soda	12
(iv) Silicate	8
(v) Paper	4
(vi) Textiles	3
(vii) Sodium bicarbonate	3
(viii) Bichromate	2
	100

The shares of laundry, *dhobi* and miscellaneous have been allocated on the basis of expenditure by households on washermen, laundries, etc. Of the total share of glass, 50 per cent has been allocated on the basis of expenditure of households on crockery and other utensils, and the remaining 50 percent is attributed to construction. The distribution in regard to the tax yield of the share allocated to construction is the same as in case of other construction inputs.

The shares attributable to chemicals, caustic soda, silicate, sodium bicarbonate and bichromate have been allocated on the basis of expenditures on manufactured goods.

The share attributable to paper has been distributed on the *basis* of expenditure on books, journals and newspapers, etc., and that attributable to textiles on the basis of expenditure on cotton, silk and woollen fabrics.

(G) Rubber processing chemicals—The entire yield has been allocated on the basis of expenditure on road transport because most of the consumption of rubber is used in the preparation of tubes, tyres, etc., for motor vehicles.

(H) Carbon black—This is used mostly in the preparation of tyres and tubes and hence the whole of it has been distributed on the basis of expenditure on road transport.

(I) Optical bleaching agents—Expenditure of households on laundries has been taken as the basis of allocation.

(J) Other chemicals—the yields from the remaining chemical items like sodium silicate, cellophane, acids, camphor, menthol and glycerine, etc., have been distributed on the basis of expenditure on manufactured goods.

6. Cement

Cement is used mainly for construction. Only a very small part of it goes to other uses like production of asbestos, which is also used in construction. The total value of construction consists of (i) construction covered by the commodity-flow approach and (ii) construction not covered by the commodity-flow approach. Cement is used only in construction works covered by the commodity-flow approach. The total value of construction covered by the commodity-flow approach and the break-up thereof in 1973-74 have been supplied by the CSO. These are as follows:

	(Rs. crore)
Total value of construction covered by the commodity-flow approach	4780
of which	
(i) construction by and for government administration	1522
(ii) departmental enterprises	1162
(iii) non-departmental enterprises	816
(iv) construction in the private sector	1280

First, the total tax yield has been distributed among the shares of construction of the items indicated above. The share going to government construction is excluded. The share attributable to departmental enterprises relates mostly to railways, posts and telegraphs and road transport. Hence, the share of the tax yield attributable to item (ii) can be distributed among the expenditure groups on the basis of their total expenditure on road and railway transport and communication. The yield attributable to non-departmental enterprises has been allocated on the basis of expenditure on manufactured goods. Private construction can be broken up into private construction of residential buildings and others. On the basis of data published by the CSO it has been assumed that about 60 per cent of private construction goes for private residential buildings and the remaining part goes for non-residential construction. Hence, 60 per cent of the share allotted to private construction has been distributed among various expenditure groups on the basis of expenditure on residential rents and the remaining 40 per cent on the basis of expenditure on manufactured goods. No share has been allotted to agricultural goods because it is assumed that the nature of construction in the agricultural sector is mostly *kutcha* and that there is very little use of cement in such construction works.

7. Coal and Coke

This item is used in a number of ways. On the basis of information available in *Material and Financial Balances*, 1966, we could work out the percentage shares of different uses as follows: electricity thermal 25 per cent; railways 23 percent; pig iron 12 per cent; soft coke 8 per cent; cement 7 per cent; brick burning 6 per cent; chemicals 2 per cent; paper and paper board 3 per cent; foundries 2 per cent; fertilisers 2 per cent; cotton textiles 2 per cent; engineering works 1 per cent; ceramics and potteries 1 per cent; glass 1 per cent; jute 1 per cent; others 4 per cent. The allocation of tax yield has been done in the following

manner. In the case of electricity, 50 per cent on the basis of electricity consumption by households and 50 per cent on the basis of expenditure on manufactured goods; for railways on the basis of expenditure on railway fares; for pig iron on the basis of uses of pig iron discussed in the case of iron and steel; for soft coke on the basis of consumption of coke and coal given in NSS consumption data; for cement, as discussed in the case of cement; for brick burning, according to construction as discussed in the case of cement; for chemicals on the basis of expenditure on manufactured goods; for paper and paper board on the basis of expenditure on books, periodicals, papers, etc.; for foundries on the basis of expenditure on manufactured goods; for fertilisers on the basis of expenditure on agricultural goods; for cotton textiles on the basis of expenditure on cotton fabrics; for engineering works on the basis of expenditure on manufactured goods; for ceramics and potteries on the basis of expenditure on crockery; for glass, 50 per cent through construction as discussed in the case of cement and 50 per cent on the basis of household expenditure on "other utensils"; for jute, as in the case of jute manufactures; for others on the basis of expenditure on manufactured goods.

8. Tyres and Tubes

Production data in regard to automobiles are available in the annual report of the Directorate General of Technical Development (DGTD). The figures for 1973-74 are as follows:

	Quantity (nos)
a. (i) Commercial vehicles (buses and trucks)	40580
(ii) Passenger cars	36756
(iii) Jeeps	10015
(iv) Three wheelers	12646
b. Motor cycles	54085
c. Scooters	85639
d. Mopeds and scooterettes	29212

The Transport Research Unit of the Ministry of Shipping and Transport supplied the figures of the total number of registered vehicles, on March 1974, as follows:

	Quantity (nos)
(i) Motor cycles	827906
(ii) Auto-rikshaws and scooters	66718

(iii) Jeeps	79457
(iv) Private motor cars	573709
(v) Taxis	82524
(vi) Buses	97738
(vii) Goods vehicles	319856
(viii) Scooters	220225

The prices of tyres and tubes have been obtained from the *Index Numbers of Wholesale Prices in India*. The following were the prices in 1973.

(Price per unit)

	Tyres (Rs.)	Tubes
Dunlop C-49 giant (PV price)	1050.00	95.00
Dunlop fort covers	210.00	30.00
Motor cycles	93.00	16.00
Scooters (two and three wheelers)	68.00	11.00

For the purpose of measurement, we have classified all the vehicles given above into the following categories :

Name of the vehicle	Production	Registration	Price per unit Tyres Rs	Tubes
(a) Buses, trucks, etc.	40580	417594	1050	95
(b) Cars, taxis, jeeps, etc.	46771	7356690	210	30
(c) Motor cycles	54085	827906	93	16
(d) Three wheelers	12646	66718	68	11
(e) Scooter, two wheelers including scooterettes	114851	220225		

For working out the incidence, we have to divide the total number of registered vehicles into new and old. From the total number of registered vehicles we deduct the production data to get the number of old vehicles. The production data are taken to represent the number of new vehicles.

We have assumed that new vehicles absorb tyres and tubes (including the additional ones provided with the new vehicles) at the following

rates: buses and trucks—7, cars, taxis and jeeps—5, motor cycles—3, three wheelers—4, scooters—3.

We take the total consumption of tubes and tyres from two sides (i) production of new vehicles and (ii) demand for replacement for the old vehicles. Looking at the stock and flow figures of vehicles and assuming that tubes and tyres have an average life of not more than two years we deduce that 25 per cent of the tax yield can be attributed to new vehicles and 75 per cent to old vehicles. On the basis of information available about the number of new vehicles for each type, consumption of tubes and tyres per vehicle and the prices of tubes and tyres, it has been possible to work out the value of each type of tube and tyre absorbed during the year by new vehicles. Similarly, we have worked out the value of total consumption of each type of tube and tyre for replacement purposes. We have assumed that all the four wheelers consume twice the number of tyres and tubes as two wheelers and the number of old vehicles are equal to the total stock minus the production of new vehicles. Then for each type of tyre and tube we have worked out the total expenditure in relation to new vehicles as well as that for replacement. The total tax yield has been divided among different categories of tubes and tyres on the basis of their share in total expenditure. The tax revenue shares thus arrived at have been distributed on the basis of expenditures of households on each type of transport services. The share attributable to trucks, however, has been allocated on the basis of expenditure on manufactured goods.

9. *Copper and copper alloys*

On the basis of information contained in *Material and Financial Balances*, 1966, and *Input-Output Table for India*, 1963, the different uses of copper and copper alloys have been classified into the following categories:

	Percentage of total
1. Electrical goods	
(a) Refrigeration	1
(b) Telephone and Telegraphs	6
(c) Electric fans	2
(d) Others*	55
2. Non-electrical goods (including machinery and equipment)	
(a) Automobiles	6

(b) Railway equipment	Neg.
(c) Food processing machines	2
(d) Chemical industry equipment	12
(e) Utensils (domestic)	10
(f) Others**	6
Grand Total	100

*Includes electric motors, transformers, base copper conductors, PVC and VIR cables, paper insulated wires and cables, switch and control gear.

**Includes pumps and compressors, bolts, nuts, washers, diesel engines and metal products.

For the allocation of tax burden in regard to electrical goods, the methodology is as follows. According to proportions given in CSO's *Estimates of Capital Formation in India*, 1969, about 80 per cent of refrigeration products goes to households and the remaining 20 per cent to producer sectors. Thus 80 per cent of the total yield of tax on copper attributed to this item can be allocated to the group with per capita expenditure of Rs. 100 and above and the remaining 20 per cent on the basis of total expenditure on (a) allopathic medicines; (b) ice-cream and (c) jam and jellies. In the case of telephone and telegraphs, the tax yield has been distributed among various expenditure groups on the basis of household expenditure on telephones. The CSO assumes that 50 per cent electric fans are being used domestically and the remaining 50 per cent for commercial purposes. This assumption has been used here. The domestic share can be distributed on the basis of household expenditure on electric fans. The remaining 50 per cent can be allocated on the basis of expenditure on manufactured goods. The share attributed to the item 'others' under electrical goods has been allocated on the basis of expenditure on manufactured goods.

The share of non-electrical goods has been allocated in the following manner: (a) automobiles—household expenditure on road transport; (b) food processing machines—household expenditure on processed food; (c) chemical industry equipment—in the same manner as for all chemicals indicated above; (d) utensils—household expenditure on manufactured goods.

10. Aluminium

We have the estimates of the uses of this item from *Material and Financial Balances*, 1966, and *Input-Output Table for India*, 1963.

	Percentage of total
1. Electrical equipment	64
of which	
(a) Fans	1
(b) Refrigeration	1
(c) Radios, etc.	Neg.
(d) Others*	62
2. Automobiles	11
3. Food processing machinery	8
4. Textile machinery	2
5. Chemicals and pharmaceuticals	1
6. Building construction and furniture fixing	5
7. Domestic Utensils	9
TOTAL	100

*Includes ACSR conductors and accessories, A.A. conductors and accessories, other electrical manufacturing, PVC and VIR cables, paper insulated wires and cables.

Following the methodology of the CSO in regard to the estimation of capital formation, 50 per cent of the share attributable to fans and 80 per cent of the share attributable to refrigeration have been taken to be accounted for by domestic use. These portions can be allocated on the basis of expenditure on electric fans and on "other durable equipment".

The share of automobiles is allocated on the basis of expenditure on road transport. For others we have used the following methodology : food processing—expenditure on processed food by households; textile machinery—on the basis of expenditure on textiles; chemicals—on the same basis as the distribution of tax yield (aggregate) from chemicals; building construction and furniture fixing—on the same basis of allocation as for tax yield from cement for building construction; domestic utensils—expenditure on aluminium utensils.

11. Plywood

The pattern of use of plywood is not available separately. We have, however, information on the consumption pattern of wood. According to *Material and Financial Balances*, 1966, 78 per cent of the wood is used in construction and 22 per cent of it is used for manufacture of furniture and other purposes. Having no other basis, we have used the following proportions in respect of plywood: (i) 75 per cent for construction; and (ii) 25 per cent for furniture. Plywood is assumed to be used for permanent fixing and fitting in the construction of buildings. The share attributable to residential buildings is allocated to the construction of buildings for the group with per capita expenditure of Rs. 100 and above in the urban sector under the head "expenditure on rent on dwellings." The share attributable to non-residential buildings has been allocated on the basis of expenditure on manufactured goods. The share of the remaining 25 per cent has been allocated to different expenditure groups in the urban sector on the basis of expenditure on furniture.

12. Asbestos

The major part of this material is used in the construction of non-residential buildings like factory buildings, sheds, etc. A small part goes to the construction of residential buildings also. We assume that 75 per cent goes for non-residential buildings and 25 per cent for the construction of residential buildings. The share of tax yield attributable to non-residential buildings can be allocated on the basis of expenditure on manufactured goods and the remaining 25 per cent on the basis of expenditure on house rent by the households in the urban sector.

13. Mosaic tiles

These are taken to be used exclusively in the construction of residential buildings for the group with per capita expenditure of Rs. 100 and above in the urban sector. Hence the tax yield has been entirely allocated to this group.

14. Cinematograph films and projections

Allocation has been done on the basis of household expenditure on cinemas.

15. Crown corks and pilfer proof caps

Allocation has been done on the basis of household expenditure on beverages (aerated water).

16. Lead unwrought

On the basis of information contained in *Material and Financial Balances*, 1966, we have allocated this material to different uses in the following manner: automobiles 35 per cent; electricity 30 per cent; paints and varnishes 16 per cent; printing metals and alloys 13 per cent; chemical plants and equipment 4 per cent; and construction 2 per cent.

Tax yield has been allocated in the following manner: (a) automobiles—on the basis of expenditure on road transport; (b) electricity—50 per cent on the basis of household expenditure on electricity and the remaining 50 per cent on the basis of expenditure on manufactured goods; (c) paints and varnishes—on the same basis as for paints and varnishes; (d) printing metals and alloys—household expenditure on paper, periodicals and books; (e) chemical plants and equipment—on the basis of the distribution ratios used for all chemicals; (f) construction—as in the case of other construction inputs.

17. Electrical insulators, stamping wires, cables and others

50 per cent of the tax yield from these commodities has been allocated on the basis of expenditure on manufactured goods by households and the remaining 50 per cent on the basis of consumption of electricity by them.

18. Slides, zips and fasteners

The whole amount of tax yield from slides, zips and fasteners has been allocated on the basis of household expenditure on suitcases, attache and kitbag.

19. Rolling bearings, welding electrode and permanent magnet

The total yield from rolling bearings, welding electrodes and permanent magnet has been allocated on the basis of total expenditure on manufactured goods.

20. Safes, strong boxes, etc.

The tax yield from safes, strong boxes,etc., made of hard metals has been allocated to the group with per capita expenditure of Rs. 100 and above in the urban sector.

21. Rubber products (including synthetic rubber) other than tyres and tubes

There are three main uses of rubber products, namely, (i) leather footwear (4 per cent); (ii) jute textiles (5 per cent); (iii) household consumption (91 per cent).

The share of household consumption, i.e., item (iii) has been allocated to different expenditure groups on the basis of total expenditure on items like (a) rubber cushion and (b) footwear other than that of leather. The share attributable to leather footwear has been allocated on the basis of household expenditure on leather footwear which includes leather boots and shoes, leather sandles and chappals, and other leather footwear. In the case of jute textiles, the distribution has been made on the same basis as in regard to jute fabrics.

22. Chinaware and porcelain

These items are purchased by households as well as hotels and restaurants. As we do not have data on household expenditure on hotels and restaurants, we have allocated the entire yield on the basis of NSS household expenditure on crockery and chinaware.

23. Glass and glassware

Based on data contained in *Material and Financial Balances*, 1966, and *Input-Output Table for India*, 1963, we have allocated the yield to different uses in the following proportions: construction 17 per cent; electrical equipment 8 per cent; domestic purpose 42 per cent; and drugs and pharmaceuticals 33 per cent. In the case of construction we have first divided building construction into urban residential and urban non-residential. The share allocated to urban residential has been distributed on the basis of rents (urban dwellings). In the case of the share of non-residential buildings, the allocation has been done on the basis of total expenditure on manufactured goods. The share of electrical equip-

ment has been allocated on the basis of household expenditure on other non-durable electrical goods. The share attributable to domestic uses has been distributed on the basis of household expenditure on crockery and chinaware assuming that those who spend on crockery and chinaware spend on glassware also in more or less the same proportion. The share of drugs and pharmaceuticals has been allocated on the basis of expenditure on all types of medicines.

24. Typewriter ribbons

We have taken 50 per cent as being used by the government sector and the remaining 50 per cent by the private sector. The share of private use has been allocated on the basis of expenditure on manufactured goods.

25. Gases

Fifty per cent of the share has been allocated on the basis of expenditure of households on gases. The other 50 per cent has been allocated on the basis of expenditure on manufactured goods.

26. Synthetic resins and plastic materials

The tax revenue collected from this item has been allocated on the basis of household expenditure on plastic goods.

27. Linoleum

Allocation has been done on the basis of expenditure on manufactured goods.

28. Tin plates

Based on information contained in *Material and Financial Balances*, 1966 and *Input-Output Table for India*, 1963, the tax yields have been distributed in the following manner: construction 44 per cent; electricity 12 per cent; manufactured goods 33 per cent; and domestic utensils 11 per cent.

29. Zinc

The allocation of the yield has been done on the basis of expenditure on (i) manufactured goods 85 per cent; and (ii) domestic utensils 15 per cent.

30. Iron ore

The same methodology as for iron and steel.

C. Capital Goods and Partly Capital Goods

1. Internal combustion engines

Information about the uses of this item could be obtained from the *Input-Output Table for India*, 1963. It is used for (a) motor vehicles 80 per cent; (b) air and gas compressors, etc., 10 per cent; and (c) other industries 10 per cent.

The share of motor vehicles has been allocated in the same manner as done in case of motor vehicles discussed later. The share of air and gas compressors has been allocated on the same basis as for refrigeration because compressors are used mostly in the production of refrigerators. The share of other industries has been allocated on the basis of expenditure on manufactured goods.

2. Electric motors

According to the information contained in *Input-Output Table for India*, 1963, the uses of this item are as follows: (i) agricultural use 89 per cent; (ii) textile machinery 2 per cent; (iii) machine tools 3 per cent; (iv) air-conditioners 2 per cent; (v) photographic and optical goods 2 per cent; (vi) construction and machinery 1 per cent; (vi) ships and vessels 1 per cent.

The share of item (i) is allocated to different expenditure groups on the basis of expenditure on agricultural goods; item (ii) on the same basis as the allocation of tax yield from cotton textiles; item (iii) on the basis of expenditure on manufactured goods; item (iv) on the basis of household expenditure on air-conditioners; item (v) on the basis of expenditure on cinema; and items (vi) and (vii) on the basis of expendi-

ture on manufactured goods.

3. Office machines

The yield is distributed among different expenditure groups on the basis of expenditure on manufactured goods.

4. Power driven pumps

These pumps are used mostly in agriculture for the purpose of irrigation. The yield has been distributed on the basis of household expenditure on agricultural goods.

5. Fork lift trucks and platfrom trucks, coated abrassive and grinding wheels

The aggregate yield from all these items has been allocated to different expenditure groups on the basis of expenditure on manufactured goods.

6. Partly capital and partly household goods

A part of such goods is purchased by households and the remaining by entrepreneurs. The part attributable to entrepreneurial use in each case has been distributed on the basis of expenditure of the households on manufactured goods. For the remaining shares the methodology is indicated for each item separately.

7. Photographic cameras

According to the proportions in CSO's *Estimates of Capital Formation in India*, 1969, 50 percent of this item is taken to be used for domestic purposes and the remaining 50 per cent for entrepreneurial purposes. Thus 50 per cent of the yield has been allocated on the basis of expenditure on manufactured goods and the remaining 50 per cent has been allocated on the basis of expenditure on "other durable goods".

8. Motor vehicles

50 per cent of the motor cars produced in the country have been taken to go for entrepreneurial purposes and the remaining 50 per cent for domestic use. This percentage is based on the information obtained directly from car manufacturers. The share of domestic use has been allocated to the households having monthly per capita expenditure of Rs. 100 and above in the urban sector. The remaining 50 per cent has been allocated on the basis of household expenditure on manufactured goods.

9. Steel furniture

50 per cent of the steel furniture produced has been taken by the CSO as going for household use. Thus 50 per cent of the yield has been allocated to different expenditure groups on the basis of expenditure on furniture. The remaining 50 per cent has been allocated on the basis of expenditure on manufactured goods.

10. Wireless receiving sets

10 per cent of the total value of output is taken to represent capital goods and 90 per cent to represent consumer durables. Thus 90 per cent of the tax yield has been distributed among different expenditure groups in the rural and urban sectors on the basis of expenditure on radios; and the remaining 10 per cent on the basis of expenditure on manufactured goods.

11. Refrigerating and air-conditioning appliances

According to the CSO, 20 per cent is used by the entrepreneurs and 80 per cent by the households. But the latest information obtained directly from manufacturers like Kelvinator of India Ltd. and others indicates that about 70 per cent goes to households and 30 per cent to capital formation. We have used the latest information for working out the incidence. The tax yield attributable to households has been allocated to the group with per capita expenditure of Rs. 100 and above in the urban sector. The share going to entrepreneurs has been distributed on the basis of expenditure on manufactured goods.

12. Electric fans

50 per cent of the expenditure on them is taken to be by households. Thus 50 per cent of the yield has been distributed on the basis of expenditure on electric fans and the remaining 50 per cent on the basis of expenditure on manufactured goods.

13. Electric supply meters

It is assumed that 50 per cent of the purchases is by households and the remaining 50 per cent by entrepreneurs. The share attributable to households is distributed on the basis of consumption of electricity, and the remaining share on the basis of expenditure on manufactured goods.

D. Components of Capital and Partly Capital Goods

1. Motor vehicle part and accessories

70 per cent of the tax yield has been allocated to households and has been distributed on the basis of expenditure on cars. The remaining 30 per cent of the tax yield is allocated to different expenditure groups in the rural and urban sectors on the basis of their expenditure on manufactured goods.

2. Electric batteries and parts thereof, tool tips, bolts, nuts, etc.

The total yield has been allocated to different expenditure groups on the basis of expenditure on manufactured goods.

3 Parts of wireless receiving sets

The same methodology as for wireless receiving sets.

II IMPORT DUTIES

Imported items have been classified into the following groups for the purpose of working out the incidence :

A. Mostly in the nature of consumption goods;
B. Mostly in the nature of intermediate goods; and
C. Capital goods.

A. Import of Goods Mostly in the Nature of Consumption Goods

Most of these goods are consumed by the higher income groups. Therefore, the yield of import duties on them has been allocated to the group with per capita expenditure of Rs. 100 and above in the urban sector. A list of such goods alongwith the value of tax yield in each is presented in the following table:

TABLE A. 4

Imported Goods Assumed to be Consumed by the Highest Per Capita Expenditure Group in the Urban Sector

(Rs. lakh)

S. No.	Item	Revenue from the import duty in 1973-74
1.	*Ghee*	2
2.	Other milk products	1
3.	Other meat (animal products)	299
4.	Fish, fresh and dry	5
5.	Other vegetables	2
6.	Other fresh fruits	935
7.	Other drinking beverages	6
8.	Pickles and sauce	2
9.	Other processed food	224
10.	Betel nuts (*supari*)	3
11.	Cigarettes	26
12.	Leaf tobacco	
13.	*Hookah* tobacco	
14.	Cheroot	
15.	Other tobacco products	
16.	Foreign liquor	266
17.	Cloth for shirt, *pyjama*, *kurta*, blouses, etc.	132
18.	Cloth for coat, trousers, suit, overcoat, etc.	29
19.	Readymade garments	11
20.	Hosiery articles, stockings, *banian* and underwears	4
21.	Rugs and blankets	Neg.
22.	Cloth for upholstery, curtain, fabric cloth	7

23.	Cinematograph films	218
24.	Sports goods, toys, etc.	24
25.	Books and journals	1
26.	Tooth paste and tooth powder	Neg.
27.	Electric bulbs and tube lights	48
28.	Other toilet requisites	19
29.	Toilet articles	13
30.	Shaving blades	Neg.
31.	Other non-durable electrical goods	292
32.	Umbrella and rain coats	2
33.	Plastic goods	540
34.	Suitcase, attache and kitbag	3
35.	Foam rubber, cushion, (dunlop pillow type)	104
36.	Other musical instruments	26
37.	Jewels and pearls	320
38.	Enamel utensils	10
39.	Fountain pen	Neg.
40.	Spectacles	3
41.	Clock and watch	106
42.	Salt	1
43.	Homeopathic medicines	20
44.	Floor matting	11

There are some imported goods which cater for mass consumption. The methodology for each of these is given below :

1. Foodgrains and products like flour and starch

Allocation has been done on the basis of expenditure on foodgrains (rice, wheat, barley, jowar, maize, bajra) in the urban sector.

2. Babyfood and milk powder

From the information given in *Monthly Statistics of the Foreign Trade of India*, 1973-74 we find that most of the imports under this head are in the form of milk powder. Out of an import of Rs. 525 lakh worth of these goods, about Rs. 510 lakh were spent on dry milk powder and the remaining on varieties of condensed milk. We have assumed therefore that most of these imports are sold in the urban sector as under government milk schemes. Thus, we have allocated the entire yield on the basis of expenditure on milk by households in the urban sector.

3. Linseed oil, refined oil or essential oil (all sorts), edible oils and oil seeds

We have allocated the tax yield from these items on the basis of expenditure on these items by different expenditure groups in the rural and urban sectors.

4. Pepper, dry chillies and other spices

Allocation has been done on the basis of household expenditure on spices (pepper, dry chillies and other spices).

5. Paper—all sorts

The various types of paper that are imported can be broadly divided into (i) news print and (ii) others. Others include all sorts of high strength and special grade paper which are used mostly for packing and accounting, machines card index systems and computers and include carbon papers, etc. Out of the total value of imports of paper, news print paper accounts for about one third. The remaining two thirds are accounted for by all other kinds of paper. Having no other basis, we have allocated two thirds of the total tax yield among different expenditure groups on the basis of their expenditure on manufactured goods, while one third of the yield is distributed on the basis of expenditure on periodicals and newspapers.

6. Allopathic medicines, other drugs and patents

Allocation has been done on the basis of expenditure on allopathic medicines.

B. Imports Mostly in the Nature of Intermediate Goods

There are a large number of intermediate consumption goods which are imported from abroad but they are produced in the country also and their uses are more or less the same. The allocation of the import duty on all such imported intermediate goods as have supplementary domestic production is the same as for the excises on intermediate goods domestically produced. A list of such goods is given below :

Imports	Domestic production
Chemical products	
1. Manures, all sorts	1. Fertilisers
2. Paints, colours and painters' materials	2. Paints and varnishes
3. Dyes and dye intermediaries (i) Coupling dyes (ii) Dye from coal for fast colours (iii) Dye derived from coal tar (iv) Dyeing and tanning substances	3. Synthetic organic dyestuff
4. Sodium compounds	4. Sodium silicate
5. Caustic soda	5. Caustic soda and caustic potash
6. Soda ash and nitrate of soda	6. Soda ash
7. Calcium carbide	7. Calcium carbide, bleaching powder and sodium hydrosulphate
8. Acids (i) Acetyle salicylic acid (ii) Acid olic (iii) Betaoxy nephthoic acid (iv) Acid phospheric	8. Acids
Petroleum products	
9. Calcined petroleum coke	9. Coal, coke and *patent fuel*
10. Asphalt, crude and refined coal tar	10. Asphalt bitumen and coal tar
11. All sorts of mineral and industrial oils	11. Furnace oil
12. Diesel oil High speed diesel oil	12. Refined diesel oil and disel oil not otherwise specified
13. Lubricating oil	13. Blended or compounded lubricating oils and greases
14. Petroleum crude	14. As in the case of petroleum products
15. Kerosene	15. Kerosene oil
16. Motor spirit	16. Motor spirit

Metals	
17. Zinc white, zinc wrought and zinc sheets	17. Zinc
18. Steel	18. The total tax yield from imported steel has been classified into different shares from the point of view of uses and allocation has been made accordingly.
19. Copper (a) Copper wrought and manufactures of copper (b) Copper scraps (c) Copper unwrought ingots (d) Copper welding wires (e) Extended copper rods (f) Copper pipes and tubes (g) Copper wire	19. Copper and copper alloys
20. Aluminium (a) Aluminium in any crude form (b) Aluminium and conductors, sheets circles, strips and foils	20. Aluminium Aluminium sheets
21. Tin *black*	21. Tin *plates*
22. Lead wrought, sheets, ingots, pigs and bead	22. Lead unwrought
Other goods	
23. Rubber products	23. Rubber products
24. Cork manufacture	24. Crown corks
25. Building and engineering materials	25. Construction inputs
26. Marbles and stones	26. Mosaic tiles
27. Glass and glass wares including sheet and plate glass	27. Glass and glass wares
28. Wood and timber	28. Plywood
29. Artificial and synthetic resins	29. Plastic materials and synthetic resins
30. Electric valves	30. Electric valves and tubes
31. Asbestos manufactures	31. Asbestos

The yields from the following imported items can be apportioned among different expenditure groups in the rural and urban sectors on the

basis of expenditure on the relevant or related items as indicated in each case. Where the treatment is different it is separately dealt with.

Imported goods	NSS matching consumption items
1. China clay	1. China clay crockery—only in the urban sector for the groups with per capita monthly expenditure exceeding Rs. 55.
2. Chalk, lime (special kind)	2. Tooth paste, tooth powder
3. Cement, not otherwise specified	3. House rent in the urban sector only
4. Hides and skins (raw and salted)	4. Leather goods in the urban sector only for the per capita monthly expenditure groups of Rs. 75 and above
5. Coral, cowries and shells	5. Ornaments
6. Ivory manufactured	6. Ornaments
7. Seeds not otherwise classified	7. Agricultural goods
8. Rubber seeds	8. Rubber products
9. Hops (agent for beer and medicines)	9. 50 per cent allopathic medicine and 50 per cent foreign liquor
10. Barks and tanning	10. Leather goods
11. Cutch and gambier material (used by gold heaters)	11. Ornaments
12. Gums, resins and lac	12. Plastic goods
13. Plumbago and graphite	13. Stationery articles
14. Printers ink	14. Books, periodicals and newspapers
15. Essential synthetic oil	15. Refined oil
16. Fur skins	16. For the per capita monthly expenditure group of Rs. 100 and above in the urban sector under the head woollen fabrics

17. Wood pulp	17. As in case of paper
18. Silk worm cocoon	18. Silk cloth
19. Wool raw and wool tops	19. Woollen cloth
20. Raw cotton	20. Cotton fabrics
21. Raw flax, jute, raw hemp	21. Jute fabrics
22. Sisal and *aloe* fibre	22. Superfine cotton fabrics
23. Staple fibre	23. Cotton superfine fabrics
24. Artificial silk yarn	24. Artificial silk
25. Yarn (excluding cotton yarn)	25. Artificial silk
26. Glass bead and false pearls	26. Ornaments in the urban sector
27. Gold and silver sheets and plates	27. Gold and silver ornaments
28. Brass rods brass wires	28. Brass utensils
29. Yellow metal alloys	29. Ornaments
30. Plastic and rubber insulated wires	30. Electricity
31. Electrical accessories made of plastics	31. Electricity
32. Batteries	32. 50 per cent radios and 50 per cent torches
33. Molasses	33. Alcohol
34. Batteries for motor vehicles	34. Motor vehicles
35. Articles made of stone or marble	35. House rent in urban area in the per capita monthly expenditure group of Rs. 100 and above
36. Some other chemicals	36. As in the case of chemicals as a whole for Central excise
37. Saccharine alkaloids of opium and their derivatives and iodine in any crude form	37. On the basis of expenditure on allopathic medicines
38. Paints, solutions and compositions containing petroleum	38. Paints and varnishes
39. Silver wire, gold plates and gold leaf	39. Gold and silver ornaments
40. Stainless steel plates, sheets and strips	40. Steel utensils
41. Brass pipes, tubes and ingots	41. Fifty per cent on the basis

	of expenditure on manufactured goods and fifty per cent on brass utensils
42. Earthenware pipes and sanitaryware	42. 50 per cent on earthenware and 50 per cent on residential rent both in the urban sector for the groups with per capita monthly expenditure of Rs 75 and above.

The yield from the following items has been allocated to different expenditure groups on the basis of their expenditure on manufactured goods.

Titanium dioxide; ball bearings; roller bearings; all articles otherwise not specified; sulphur; jute bailing hoops; gums and stick on seed lac; batteries not otherwise specified; nickel pellets; covered crucibles for glass making; all non-ferrous alloys not otherwise specified; hardware iron mongering; non-ferrous nickel alloys; packing engine; 'lithopone; metallic ores all sorts; twist and yarn of flax and jute; nichrome and other electrical resistance wires; all non-ferrous metals; cobalt, chromium, tungsten, etc., antimony ore in any form; paste board, milk board and card board.

C. Imports of Capital Goods and Parts thereof

We can allocate only 10 per cent of the yield in 1973-74 assuming the average life of the assets to be 10 years. The basis of allocation in each case is indicated below:

Item	Basis of allocation
1. Iron and steel-railway track	1. 50 per cent on the basis of expenditure on manufactured goods, and the remaining 50 per cent on the basis of passengers' railway fares
2. Cutlery all sorts (2)	2. Allocated to the groups in the urban sector with per

	capita expenditure above Rs. 75 on the basis of their expenditure on cooked food
3. Metal furniture	3. 50 per cent on the basis of expenditure on manufactured goods, and the remaining 50 per cent on the basis of expenditure on furniture
4. Hurricane lanterns	4. 15 per cent (CSO estimate) is treated as capital formation and is allocated on the basis of expenditure on manufactured goods. The remaining 85 per cent is allocated to the per capita expenditure group of Rs. 100 and above in the urban sector
5. Zip fasteners	5. As in the case of domestic production but allocated to the per capita expenditure groups of Rs. 75 and above per month
6. Textile machinery	6. As has been done in the case of cotton and woollen fabrics
7. Printing and lithographic presses	7. Expenditure on books, newspapers, journals and periodicals
8. Agricultural implements	8. On the basis of expenditure on agricultural goods
9. Dairy and poultry farming appliances	9. Expenditure on milk products and poultry
10. Knitting machines	10. Expenditure on knitted garments (including cotton millmade, cotton handloom, cotton khadi and wool, art silk and pure silk)

11. Electric motors	11. As in the case of domestic production of electric motors
12. Boot and shoe manufacturing machinery	12. As in case of footwear
13. Cinema projecting apparatus	13. Household expenditure on cinema
14. Oil crushing machinery	14. Expenditure on all types of edible oils
15. Petroleum gas well drilling equipment	15. As in the case of petroleum products
16. Refrigerating machinery	16. As in the case of refrigerators
17. Sound recording appliances	17. Expenditure on cinema
18. Sugar manufacturing machinery	18. Expenditure on sugar
19. Machine for carding, spinning wheel, cotton textile machinery, textile machinery and parts and looms of all kinds	19. On the basis of the proportions obtained in respect of the domestic production of textiles
20. Power distribution transformers	20. As in the case of electricity
21. Electrical instruments, apparatus and appliances	21. As in the case of domestic production of electrical appliances
22. Electric medical apparatus	22. Expenditure on allopathic medicines
23. Wireless transmission apparatus	23. Expenditure on communication
24. Tramcars and components	24. Expenditure on conveyance in the urban sector
25. Railway materials, components and parts	25. As in case of railway track
26. Conveyance not otherwise specified	26. Expenditure on other conveyance
27. Carriage carts and parts thereof	27. Expenditure on road conveyance
28. Sparking plugs	28. Expenditure on cars, motor cycles and scooters
29. Single cylinder fuel injection pumps	29. Expenditure on cars
30. Nozzle holders	30. Expenditure on motor vehicles

31. Aeroplane parts	31. Expenditure on hired conveyance other than road, water-ways and railways
32. Optical instruments	32. Expenditure on spectacles
33. Photographic instruments	33. As in the case of domestic production of such instruments
34. Typewriters	34. As in the case of domestic production
35. Office machines	35. 50 per cent treated as government purchases; the remaining 50 per cent is allocated on the basis of expenditure on manufactured goods

In the case of the following capital goods the allocation of the tax yield has been done on the basis of expenditure on manufactured goods: Grinding wheels; Machinery like prime motors and boilers; Mining machinery; Carbon electric; Ships and other vessels; Components of machinery; Passenger lifts; Machinery and parts; Instruments, apparatus and appliances.

D. Imports of Partly Capital Goods and Parts thereof

1. Other furniture

It is assumed that the whole of imported furniture is meant for private household consumption for the group with per capita expenditure of Rs. 100 and above in the urban sector. Thus the entire yield is allocated to this group.

2. Electric fans

The entire yield is allocated to the group with per capita expenditure of Rs. 100 and above in the urban sector under the head 'electric fan'.

3. Motor cycle, scooter and parts thereof

The entire yield is allocated to the group with per capita expenditure of Rs. 100 and above in the urban sector under expenditure on scooters.

4. Motor cars

Government import is taken to be negligible. The whole of the amount is allocated to the group with per capita expenditure of Rs. 100 and above in the urban sector under the head of expenditure on car.

5. Complete wireless receivers

Allocated to the groups with per capita expenditure of Rs. 100 and above in the urban sector under the head expenditure on radios.

6. Refrigerators and parts thereof

The allocation is the same as in the case of domestic production.

7. Sewing machines

Half of the yield is attributed to domestic use by the group with per capita expenditure of Rs. 100 and above in the urban sector and the remaining half is allocated to different expenditure groups on the basis of expenditure on cotton and woollen fabrics.

8. Bicycles and parts thereof

Allocated to the households in the urban sector on the basis of expenditure on cycles.

9. Accessories of motor vehicles

The treatment is the same as in the case of domestic production of motor vehicles.

10. Rubber products other than tyres and tubes

The allocation has been done in the same way as in the case of domestic production of rubber products other than tyres and tubes.

11. Brushes all sorts

The yield has been allocated to urban households with per capita expeniditure of Rs. 100 and above under the head expenditure on toilet requistes.

12. Parts of shoe manufacturing machinery

Allocation has been done in the same way as in the case of shoes produced domestically.

13. Parts of electric medical appliances

Allocation has been done on the basis of expenditure on allopathic medicines.

14. Components and parts of amplifiers and loud speakers

The allocation has been done on the basis of expenditure on radios.

It may be noted that duties on some of the imported goods which were imported specifically for the government sector were ignored. These are mainly animals all sorts, horses of value exceeding Rs 2000, and globes for hurricane lanterns and chimneys and cadmium sulphide and uranium oxide.

III STATE TAXES

A. Sales Taxes

As indicated in the text, we were able to obtain esitmates of commodity-wise yield of sales tax (including Central sales tax) from 13 major States. On this basis, the commodity-wise yield of sales tax in all India (all States combined) was estimated.

The allocation of the burden of sales tax on commodities also subject to excise duties was done in the same manner as for the latter. The allocation of the burden of sales tax on other commodities did not raise any special problems as there were more or less corresponding entries in the NSS consumption data.

B. Electricity Duty

Statistical Abstract of the Indian Union, published by the CSO gives a detailed break-up of the uses of electricity in quantity for all the States

and Union territories taken together and also for individual States and Union territories. The latest *Abstract* Available is for the year 1974, which contains data for 1972-73. According to this information, the share of each type of use in the total consumption of electricity is as follows:

		Million kWh	Percentage of total
1.	Domestic	4309	8.78
2.	Commercial	2852	5.81
3.	Industrial power at low and medium voltage	4546	9.26
4.	Industrial power at high voltage	27698	56.43
5.	Agricultural	5918	12.06
6.	Traction	1761	3.59
7.	Public lighting	520	1.06
8.	Public water works and sewage pumping	1094	2.23
9.	Miscellaneous	390	0.78
	TOTAL	49088	100.00

In the absence of any other information, the share attributable to public lighting, public water works and sewage pumping and miscellaneous (all taken together) has been distributed among various expenditure groups on the basis of rents paid (actual as well as imputed) by urban households. This allocation is based on the assumption that, in the final analysis, the urban house dwellers bear the burden according to the housing facilities enjoyed by them. The share for agricultural use has been distributed on the basis of household expenditure on agricultural goods. The share of traction has been allocated on the basis of expenditure on railway fares and expenditure on manufactured goods, each getting 50 per cent.

C. Motor Vehicles Tax

The Motor Vehicles Tax collections can broadly be classified under (i) motor cycle; (ii) private cars (including jeeps); (iii) taxis inclusive of autorikshahs; (iv) buses (P.S.V.); (v) goods vehicles; and(vi)miscellaneous.

The tax revenue figures for each of these groups are available from the CSO's annual publication, *Statistical Abstract of the Indian Union*. The latest information related to the year 1970-71. The relative shares of the tax revenue of each of those groups obtaining in 1970-71 have been

assumed for 1973-74 also. In the case of motor cycles, private cars and taxis, the distribution among the various expenditure groups in the rural and urban sectors has been done in accordance with the relative shares of expenditure on these items as given in the NSS. However, care has been taken to deduct 4 per cent of the total tax yield (share of government vehicles) before the allocation. In the case of buses the allocation has been done on the basis of expenditure of households on bus fares. As regards goods and miscellaneous vehicles, 50 per cent of tax yield has been distributed among the various expenditure groups on the basis of expenditure on agricultural goods and the remaining 50 per cent on the basis of expenditure on manufactured goods.

D. Goods and Passengers Taxes

The report of the *Taxation Enquiry Committee, Uttar Pradesh*, 1974 gives data on the tax burden of the passengers tax (on 52-seated buses) and goods tax (on trucks with 9 tonnes RLW and 13 tonnes RLW) for 1972-73. The information is available for 8 States, namely, Uttar Pradesh, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Bihar, Gujarat and Madhya Pradesh. Such data are also available for Maharashtra. Information regarding the number of vehicles registered in India with the above break-up is available from *Statistical Abstract of the Indian Union*, 1974. The number of buses (52-seated) has been multiplied by the tax burden to get the total yield from the passengers tax. A similar exercise has been done for trucks (9 tonnes and 13 tonnes RLW) to get the total tax yield from goods tax. The proportions between the two tax yield figures have been applied to the all-India figure of passengers and goods tax yield in 1973-74 to work out the share of each of the items. The share allocated to passengers tax has been distributed among various expenditure groups on the basis of expenditure on bus fares; 50 per cent of the share of goods tax has been distributed on the basis of expenditure on agricultural goods and the remaining 50 per cent on the basis of expenditure on manufactured goods.

E. State Excise Duty

On the basis of the average of the figures, obtained from Uttar Pradesh, Gujarat, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan and West Bengal, we have broken down the aggregate tax yield into the following groups; (i) country spirit, (ii) country fermented liquor, (iii) opium and (iv) foreign liquor. The distribution has been done on the basis of expenditure on these items. Country spirit has been taken to represent country liquor and country fermented liquor has been taken to represent *toddy*.

F. Entertainment Tax

On the basis of data obtained for four States, namely, Uttar Pradesh, Karnataka, Maharashtra and Punjab, the aggregate tax collection figure is broken down into: (i) cinema theatre and (ii) 'fair'. The share of each group has been distributed among various expenditure groups on the basis of expenditure on the two groups of items.

G. Other taxes

They include mostly cess on sugarcane, tax on raw jute, tobacco duty and betting tax. The cess on sugarcane has been distributed on the basis of household expenditure on sugar and the raw jute tax has been allocated on the basis of expenditure on manufactured goods and agricultural goods as in case of intermediate consumption of jute. Tobacco duty has been allocated on the basis of expenditure on tobacco. Betting tax has been allocated on the basis of household expenditure on fair.